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SECTION 11. The Librarian shall cause to be kept a register of all books issued and returned; and all books taken by the members of the Legislature, or its officers, shall be returned at the close of the session. If any person injure or fail to return any book taken from the Library, he shall forfeit and pay to the Librarian, for the benefit of the Library, three times the value thereof; and before the Controller shall issue his warrant in favor of any member or officer of the Legislature, or of this State, for his per diem, allowance, or salary, he shall be satisfied that such member or officer has returned all books taken out of the Library by him, and has settled all accounts for injuring such books or otherwise.

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The Centennial Fourth.

The grestest day of all this greatest year is at hand and before another Passs shall have passed from us to yon, kind readers, the Centennial Fourth will have been hailed with rejoicing and celebration such as no day hss known since the first century of the republic began. While we ara now liugering on the verge of this peerless national rejoicing, let us instance a few thoughts which it is fittiug to remember,

What have we done iu a hundred yssrs? In the first plsce we have shown to the world the possibiliiy of a popular government. A people haa proved its right and ability to govern itself. We have triumphed over dissensions which would have wrecked most other governments, or else have placed one-half their people iu boudage. We have triumphed in such a way that there is neither victor nor vanquished, and our whole people are free, equal and fraternal to-day, as in the early happy days Where in the history of the world has there beeu snch a victory; where has war beeu so completely conquered?

Think for a moment of onr national growth One hnndred years sgo two and one-half millions of people rejoicsd ovsr the adoption of the Declaration of Independence; to-day, more than forty millions rejoice with full hearts and loud voice and declare again and again the brave words of the fathers of the republic. Theu there were 13 weak but hopeful colonies; now there are 37 strong and united States. Then the popular domain hugged the Atlantic shore, now it extends from ocean to ocean, snd the Pacific will sonnd a loud refrain to the rejoicings along the Eastern coast.

Nor has the growth of the oountry been in numbers alone. There has been a material prosperity keeping pace with the increase of population. The seed of liberty was planted on fruitful soil. The temple o. freedom and equal rights was erected in a land so rich in varied resources that its votaries were not nourished npon an idea alone, hut were led hy their own industry into the enjoymsnt of unequaled prosperity. The freedom to act, coupled with the materlal to act upon, hss won for us men from every clime, and the good land holds a good people. It is history as well as poetry which says to our country:

> "There's freedom at thy gates, and rest
> For earth's down-trodden and oppresst,
> A shelter for the hunted head,
> For the starved laborer t.il and bread."

The century which ranks first in our national history has no peer in the general advancement of mankind. No century has witnessed such grand indostrial achievements. In no century have bright thoghts turned so many powers and forces of nature to the service oi mankind. Never hefore has mechsnism lifted so great a weight from the hurden of muscle. What a tide of progress is called to mind by the mention of the single word—steam. During the centnry its greatest deeds have all been accomplished. The locomotive snorting upon mountain tops; the steamship cutting the waves and wind; the powerful stationary engine, locking in a narrow cylindsr the force of thousands of horses; all these are within the circle of the century. By the power of steam, miles have come to be counted in minutes; hnt this is only a trifling with time. The speed of intelligence waits not for such tardy csrriage. Over the mountains, across the plains, mounting the hills and threading the valleys of the East, plunging into the Atlantic, springing thence beyond the water, flying across the many kingdoms of Europe and laughing at the width of Asia, a thought from the Pac fic coast rings in the ears of the listener in China, almost before the lagging pencil can mark ont its course. Thie ie an every-day occurrence. We tbink no more of it than we do of the flash of a ray of sunlight, and yet it is wonderful beyond history, wonderful beyond even the imsginings of the fathers of the centnry. With such results accomplished through American invention and discovery, what less than prophecy do these words of Timothy Dwight, written at the heginning of the century, become:

> "Fair science her gates to thy sons shall nnbar,
> And the East see thy morn hide the beams of her star;
> New hards and new sages unrivaled shall soar,
> To fame unextinguished when time is no more."

To write the achievements of the first 100 years of the republic is really to write its history, for each period has some new and striking thought or deed. Thus has arrived the wonderful advancement of the country and the people. Progress has been continuous. The achievements of the past will serve to guide and impel the hand which will accomplish the deeds of progress which still lie before.

If it sfford satisfaction to review onr msterial progress, not less can he gained from the contemplation of our advancement in that which ministers to mental and morsl growth. Witnees our schoolhonses springing up every where close upon the heels of the pioneer; witness our higher schools and universities; witnese our vigorous youth in literature. No longer can the sneering foreigner ask "who reade an American hook?" for American hooke are covered with gold in Europe, and American authors are crowned with titulary honors hy the ancient universities of the old world. Intelligence presses home upon the dweller in this country upon the face of 5,000 newspapers; the refining and elevating influence of morality and religion descend from tens of thousands of pulpits; the spread of an enlightened public sentiment make right honorable and wrong perilous, throughout the length and breadth of the country. It cannot he denied that our good name muet he shown upon the background of some of the most villainous transactions known to history. The corruption which has been shown in high places has brought a blush to the face of the nation, hnt the condemnation which the wrong-doers have received shows that the national heart is right and the national conscience quick and active.

With just pride in the psst and with full confidence in the future, the people of the United States enter upon the second century of the nation's life. We are at peace with all the world. The time is propitious for still further progress along the line of advancement which we have heen pursuing. There is still much to be done in the way of promoting the prosperity of eome large classee of our population. In the rapid progrees of the last few yeare there have arisen some pernicious growthe. Powers have been confided to the few which helong to the many. Self interest has plumed itself under the guise of the general welfare and is still permitted to exalt itself even to the oppreesion of the many. It ie to the removal of these obstacles to true progress, and to place privileges and powers where they justly helong that the work of the future must he addreesed. Tbere are indications that thie work is now under way. The grand industrial classes of our population are advancing in mutual knowledge and in the intelligence which pertsins to their sncress. The future is full of promise that the great masses of our people will secure those reforms which their prosperity demands, and that their voice will he more clearly heard and more generally respected in the halls whence coms the laws. It is the advanca of right, and its progress is most hopeful for the republic. The end is sure, for

> "The eternal step of progress heats
> To that great anthem, calm and slow,
> Which God repeats."

Centennial Bells.

Ye belfry'd blacksmiths in the air,
Smite your sweet anvils good and strong!
Ye lions in your lofty lair,
Roar out from tower to tower, along
The wrinkled coasts and scalloped seas,
Till winter meets the orange breeze
From bridal lands that always wear
The orange blossoms round their hair.
Centennial Bells, ring on!

Pour ont, ye goblets, far and near,
Your grand melodious Iron flood,
Till pine and palm shall think they hear
The axes smite the stately wood,
Nor dream the measured cadence msant
The clock-tick of the continent!
The fo t-fall of a world that nears
The field-day of a hundred years.
Centennial Bells, ring on!

Ye blossoms of the furnace fires,
Ye Iron tulips rock and swing,
The People's Primal Age expires,
A hundred years the reigning king.
Strike one, ye hammers overhead,
Ye rusty tongues, ring off the red,
Ring up the Concord Minute Men,
Ring out old Putman's wolf again.
Centennial Bells, ring on!

Where prairies hold their flowery breath
Like statues in the marble ledge,
Where mountains set their glittering teeth
Through blue horizon's rugged edge,
And hold the world with granite grip
As steady as a marble lip.
And here, and there and everywhere,
With rhythmic thunder strike the air.
Centennial Bells, ring on!

Ring down the curtain on To-day
And give the Past the right of way,
Till fields of battle red with rust,
Shine through the ashes and the dust
Across the Age, and burn as plain
As glowing Mars through window pane.
How grandly loom like grenadiers
These heroes with their hundred years!
Centennial Bells, ring on!

Ring for the blue-eyed errand boy
That quavered up the belfry stair,
"They've signed it! Signed it!" and the joy
Rolled forth as rolls the Delaware.
The old man started from a dream,
His white hair blew, a silvery stream,
Above his head the bell unswung
Dumb as a morning glory hung;
The time had come awkited long,
His wrinkled hand grew young and strong,
He grasped the rope as men that drown
Clutch at the life-line drifting down.
The Iron dome as wildly flung
As if Alaska's winds had rung.

Strange that the founder never knew,
When from the molten glow he drew
That bell, he hid within its rim
An anthem and a birthday hymn.

So rashly rung, so madly tossed,
Its old melodious volume lost,
Its thrilled horizon rent and cleft,
Of sweet vibration all hereft.
And yet, to hear that tocsin break
The silence of a hundred years,
Its rude discordant murmurs shake
And rally out the soul in cheers
Would set me looging to be rid
Of sweeter voices, and to bid
Centennial Bells he dumb!

Although no mighty Muscovite,
No Iron welkin rudely hurled,
That hell of Liberty and Right
Was heard around the Babel world!
Land of the green and golden robe!
A three-hours' journey for the sun,
Two oceans kiss thee round the globe,
Up the steep world thy rivers run
From geologic ice to June.
A hundred years from night to noon!
In blossom still, like Aaron's rod?
The clocks are on the stroke of one,
One land, one tongue, one Flag, one God!
Centennial Bells ring on!

—*Ben. F. Taylor in Scribner's.*

Operating Hydraulic Nozzles.

Henry C. Perkins, of North Bloomfield, Nevada county, has recently patented through the Mining and Scientific Press Patent Agency a method of moving the discharge nozzle of hydraulic mschines from side to side, or so as to point in any desired direction. He accomplishes this by means of the dsflecting power of the stream from the nozzle itself, through the intervention of suitable plates.

The ordinary discharge pipe of a hydraulic machiue, such as is nsed for washing down gravel banks, is used. These nozzles are usually of large diameter and water is bronght to them nnder great pressure, so that it is very difficult to move the nniversal joint with which they are constructed, and many devices comprising powerful levers have been used for tha purnose.

Mr. Perkins has found, however, that by suitably manipulated tnhes, plates or rifles, the force of the stream issuing from the nozzle may be made to tnrn the pipe in any direction without the nse of any other device. For instance, a short section of tnhe is taken, which msy he somewhat larger than the nozzla; that is, if the nozzle is six inches in diameter, the interior diameter of the tnhe msy be seven inches, so that when mounted upon the pipe, jnst beyond or about the end of the nozzle. tha stream of water will pass through it without touching, hut if the tnhe be turned to either side, the force of the watsr acting against the side will cause the whole nozzle to move in that direction.

In order to mount the tnhe so as to move it readily in any direction, it is secured to one arm of a lever, while the other arm extends back along the line of the pipe. The fulorum of the lever is snpported upon a swivel joint which is capahle of heing turned in sny direction. This joint is snpported from helow from a ring snrrounding the nozzle, or gimhals may he fitted to support the deflecting nozzle. It will readily be seen that distinct deflecting plates might he snhstituted for the nozzle or tnhe or in some cases a rifle or plate might he mounted like a butterfly valve upon an arm passing through the side of the nozzle near its end, so as to stand in the stream, and hy turning the plate from side to side the desired effect might he produced. A rest serves to support the lever, and retain the deflector in a straight line when not in nse. By this means the prinoipal mschinery needed to operate these larga nozzles is done away with, and the labor is reduced so that a child could manage the largest machine.

The National Gold Bank and Trust Company have resumed general hanking husiness on tha northwest corner of California and Montgomery streets, in the rooms lately occupied by Wells, Fargo & Co.'s hank. The Trust Company hnilt up a splendid husiness hy affording proper and safe accommodations to the public. Unfortunately for the hank, (hut luckily for some others,) they received the hrunt of the panic after the failure of the Bank of California, and had to euspend, which they did in an honorahle manner, paying dollar for dollar, and still having a surplns. The company now has the respect and confidence of a host of good citizens, and they may confidently anticipate a prosperous and rising hueiness.

Connection Made.—The connection hetween the C. & C. Shaft and the California and Consolidated Virginia mines was made on the 24th inst. This is another outlet formed from the 1500-foot level of the honanza mines—a grand highway it might he called.

CORRESPONDENCE.

Some of the Mines of El Dorado County.

[By our own Correspondent.—No. 5.]

My correspondence in regard to mines in El Dorsdo county is sgain resumed somewhat abruptly.

The Original Blue Lead,

Near Spanish flat, owned in part hy Mr. Varozza, the accommodating landlord of the Cary house, Plecerville, wss visited for his sake, end the prospects were fonnd trnly enconraging. The lode is from three to four feet in width. Ore on dump looks as well es any I have seen in this county at the same depth. It is thought in the neighhorhood to he a fine mine, and that the ore will run anywhere from $10 to $80 per ton.

The St. Lawrence,

Kelsey district, is looked upon as one of the best mines in this country, es it for a long time paid handsome dividends. Preparations for opening np the mine anew sre going forward energetically nnder the management of Mr. H. Rosewarn, the new superintendent, a miner of much prsctical experience, snd hright anticipations are cherished here for the fnture prospects of this vicinity when the water is once lowered to the 800-foot level. The ore averaged about $22 per too, and it is said that the last taken out was the hest, being adjudged $30 ore. They have a 30-stamp mill, 14-inch engine, 12-inch hoistiug engine. They use one of the Wilcox pumps, which gives entire sstiefaction. Have a saw mill also, which proves itself very useful end conveuient.

The Mansfield,

One mile from the last, has heen opened hy two tunuels, one of 213 feet and auother of 230 feet, together with side drifts aggregating 230 feet. They are tunuing for two ledges, one of which is of a somewhat peculiar formation, some 17 fest in width. The mechiuery is said to he all iu good working order. Was informed by the superintendent thet the sinking of the new shaft was going on at the rate of three feet per day, with intention of driving it to the depth of 200 feet.

Iu thie connection may he meutioued a heautiful lode of fine looking ore just beiug opened here, called the Gold Deposit, hy Mr. J. L. Smith, who, by the way, is oue of the pioneer miners on this coast. The prospect looks flattering.

The Rosecrans,

Near Garden valley, is opened hy shaft, or rather incline, 18x6 feet, following the lode to the depth of ahont 70 feet. This mine has paid wonderfully in view of all the disadvantages under which it has lsbored. The lode is from four to six feet in width. The rock teken out in sinkiug incline was saved and crushed, amounting to about $6,000. There is a five-stamp mill conveniently situated to the mine, and all the arrangements have heen mede to put on a steam pump for raising the water, which will greatly fecilitate the operations. This mine hids fair to he one of a permanent character, the ore heing similar to that of its next adjoining neighhor,

The Taylor.

Yon have alreedy learned, perhaps, that the entire machinery of the Cedarherg mine, including a 10-stamp mill, hoisting works, air compressor and Burleigh drill, have heen purchased and transferred here, giving the company 20 stamps altogether. They have a shaft 400 feet and have commenced to sink enother 100 feet to open up another level. They strock a rich pay chute at the 100-foot level which was about 40 feet in length. At 200 feet it was 50 feet, and st the depth of 400 feet it lengthened to the distance of 260 feet, where the vein is fonnd to he about 13 feet in width. It shows throughout free gold and rich sulphnrets. Thie mine, like the Rosecrans, last described, on the same lode, is helieved to stand on a solid and substantial hasis, end to have opening up for it a hright futnre.

The Woodside Mine,

At Georgetown, hae a good prospecting mill of five stamps, and machinery of all kinds of the very h st qnality. The present sheft is 250 feet, hut off the line of the vein.

The oompeny are now sinking an incline from the foot of the shaft to follow the ledge down thr ugh a rich pay chute, which has paid as high as $40 per ton. $5,000 were taken out of this chimney within oue mouth's run. Mr. Gibbs, the superintendeut, showed me his mode of saving and reducing his sulphurets, which is so simple and effective as to call for a little descripuon in detail, end worthy the st-tention of mill-men. For saving the sulphurets a common rocker is kept in motion hy a helt connecting with the machinery, making about 30 oscillations per minute, and the grade of rocker beiog about four inches in 12 feet. The sulphnrets, after heiug thoroughly ioixed with sawdust, and with the addition of about five pounds of common tahle salt to the ton, are placed in a small furnace to he roasted. The sawdust helps to start the fire end the sulphur keeps it a-going. The sulphurets are hrought to a sufficient heat simply to destroy the sulphur, a greater heat not heing desirahle. A shovel-full is put into the furnace et a time snd the seme amount tsken from heneath the grate to ooe of Knox's grinding pans, where sufficient quicksilver has heen pleced to collect the gold. One men cen attend to the whole process.

The mines at Volcanoville, Georgia Slide end Greenwood will prohably demand another lettor from this county.

At Volcanoville,

Work was going forward in the way of developing two quartz mines, snd also on two large gravel claims, hesides a considerahle amount of mining hy drift and sluice, some of which is of sofficient importance to he noticed in detail.

The Oore Mine,

Belonging to one of your prominent real estate citizens, has heen worked for the past yesr; lode from three to six feet, somewhst hroken up near the surface, hut hecoming more defined es opened. A tunnel has heen run in immediately ahove the mill, connecting with an incline 65 feet, which has followed the ore down to the point of connection. Mr. E. Rodecker, the superintendent, informed me that some of the sulphnrets taken out near the surfece were almost three-fonrths gold, hy actual test on a small scale. If they could only he found in quentity, the great value of this mine could not he questioned. The ore, so far as milled, rons from five dollars to ten dollars per ton. It is said that with all the conveniences in the way of wood and water and facilities for getting the ore from mine to mill, five dollar rock onght to pay well. The capacity of the 10-stamp steam mill is about eight or ten tons for every 10 hours.

The Volcano Ledge and Mining Company

Heve located 1,500 feet south of the ledge, which has heen opened hy a shaft and drift from the bottom of it, cutting the vein at a depth of 50 feet from the surface. The lode, from foot to hanging wall, is ahout 14 feet; vein matter eight or nine feet. The company are now piping off the surface in order to expose the vein, and ere making good wsges. It is owned hy the Graves Brothers, superior miners from Grass Valley, who are fully persuaded that this is a hetter point for successful quartz mining than the former place. Mr. A. Graves furnished me with a fact thet had come under hie observation, which sesms worthy of heing published for further confirmation. It may he local in character and not of general application: Where a cross course comes in and the ledge is lost, from heing thrown out of its usual direction, it is invariably found again from 10 to 100 fest, hy drifting always to the left from the point where it ceases, and never on the right hand. If a fact, let the scientist give the canse.

The Volcanoville ridge has a generel elevation above the Middle fork of the American river of ahout 1,500 feet, and a heavy gravel deposit of from 25 to 300 feet in depth, and six or seven miles in length, the average hreadth heing nearly a mile. The mines tail on the north into the river, and on the south into Otter creek.

The Mount Hope Gravel Claim,

The property of the California water company, has a hank 230 feet high, the whole of which pays for washing and some strata exceedingly well. They have water during the whole season, using ahout 1,000 inches; pressure 300 feet; number four gient, latest patent, and tunnel flume three feet in width.

There are any amount of falls or dumps from 20 to 30 feet in hight, numerons inclines, and one fall of at leest 150 fest. It is a sight worth seeing to look into the flumes and see large rocks gliding swiftly down them, leaping from fall to fall, flying with lightning speed down incline after incline, then hurled as from a catapult to the foot of the largest fall, to he shattered amid dashing spay and sounds of thunder into ten thousand fragments on the crags below.

The useful and the heautiful in art and natnre are here combined to adminieter to the wants of man.

The Mt. Gregory Water and Mining Co.

Have 1,000 acres of mining ground on this same ridge, aud are at this time running one hydraulic claim. Their bank of gravel is from 80 to 100 feet high, most of it of a heavy quertz character, similar to that at Michigan Bluff, some of the largest houlders heing found here that have heen met with anywhere. Both fine and coarse gold is fonnd; sometimes a piece worth $50. Occasionally a little quertz gold has heen picked up. The average yield per cubic yerd so far as worked about 20 cents.

As in the former claim, ahout 1,000 inches of water is used at this time. They have one little giant, numher five, six-inch nozzle, 250 feet pressure, pipe 22 inches and 16 inches in diameter. The derrick is run hy a hurdy-gurdy wheel, and they have ell the fall required, in the direction of Otter creek. These two companies have ground that must he exceedingly valuable and conld not he hetter situated for working to good advantage, and are the hest gravel claims heing at present worked between the South and Middle forks of the American river. There is, however, a very large amount of similar ground here which will give out its gold for many years to come.

On the river below Volcanoville, work has hsen commenced on a new enterprise which, if carried out in accordance with the programme, will he an immense undertaking.

The Oliver Mining Company

Have secured in the counties of Placer aod El Dorado 78 claims of 1,500 foot each. They have a 100-foot lode, with greenstone slete for foot wall end serpentine on the east or hanging well. Two tunnels will he started from the river, one running north and the other sonth along the veio, with the view of securing hetter drainage and avoiding the great expense of sinking and hoisting. It will attain prohahly a depth from the surfece on the line of lode of 2,500 feet.

Ooe of the Cowles patent giant quartz mills is in process of erection with the view of working the vein matter, five tons of which, owing to its peculiar character, can hs crushed as cheaply and as easily as one of qusrtz

Spar, talc and porphyry streaked with ashestos are the principal components. A similar formetion was passed near Spanish Flat, which is said to he paying well for washing. The so-called sospstone mine (Buckeye claim) near Kelsey, is substantially of the same nature. If the theory of Mr. Oliver, the superintendent, is true, Volcan'e old forge was of the same material. As his hypothesis is hoth novel and originel, a little morsel hy way of dessert will he now served up. He helieves that this vein matter is the trne matrix of gold instead of quartz es generally received, the latter hsing only a receptacle, as auy other kind of matter might he if the gold came in contact with it hefore cooling after heing brought up from helow in the form of super-heated steem.

As this material makes a good fire proof clay, he thinks it almost self-evident that it has heen subjected to the greatest possible amouut of heet, and has heen thrown up from the vicinity of the great metalliferons store-house at the same time with the gold, and hy means of the same forces; quertz, on the contrary, has bsen formed from above downwards, and the fissures gradually filled during the process of cooling.

The gold in the Oliver is represented as very free, amalgameting readily and running about $17 per ounce, while assays of vein give en average result of one-half silver. The ore will first he worked for the gold, the sulphnrets concentrated, and afterwards reduced hy the silver process.

A Dividend Paying Mine.

The Sliger quartz mine is sitnated not far from Spanish dry diggings, in one direction, and from three to four miles northerly from Greenwood. The width of the lode at the present dspth is ahout 14 feet, hut ths psy ore is confined within the limits of ahout six inches, and extending along the foot wall. The last crnshing of 41 tons peid at the rate of $40 per tou. We were shown some hsautiful specimeus here, which hring ahout $40 per ounce, heing easily disposed of to lapidaries. Sometimes a single hlast has thrown out $5,000. This mine has heen worked for the past four yeers hy the present company, and a dividend of $5,000 has heen declared to the share (four full shares); snd hefore this notice appeers another dividend will have hsen made to the shareholdere of $7,000 more. They have a five-stamp water mill, all in good order. Economy is one of the mottoes, evidently, in the general working of the mine, which accounts in great pert for its success.

The north extension of the Cedarhurg, lying south of the Sliger and nearer Greenwood, is at present engeged io sluiciog down the hank near their lode. Meny rich and heautiful quartz specimens are found from day to day, worth from $5 to $100, and supposed to have h en hroken from their hest vein, which may he laid hare at almost any moment. One piece of over $1,000 was picked up not long since, and another some months ago, valued at $5,000.

The International Gold Mining Company

Comes next in order as you approach Greenwood, running for the same ledge as the Sliger and nortbeast of Cedarhurg. Has tunnel 275 feet, and another 67 feet lower 400 feet in length, connecting hy shaft with the upper works. Several drifts have heen run. In the main south drift from the lower tunnel some very rich sulphurets have heen found; average assays $200 per ton, some as high as $4,000. Small veins of quartz have heen encountered, which are evidently feeders pointing to the ledge. One seem has heen followed for the lest three weeks, that contains gold and specimens similar to those referred to in the last described claims, snd enough to pay the expenses of running. The work is now heing pushed under the superintendence of Mr. John Tuttle hy night and day, with the expectation of reachiog the main ledge within a run of 40 feet or more.

Before closing report of mines in this county a few cases of seem claime will he noticed. These are most numerous at Georgia Slide, Spanish dry diggings and at Greenwood. Where they are very small it does not pay to pass the quartz and dirt through the mill, although more gold could he taken from the claims than hy hydraulic. It would require too much time and labor. In this case the whole hank is pip d and sluiced.

On the Parsons claim, at Georgia Slide, some of the veins are from four inches to two feet in thickness. Here they have a mill end save the quartz for crushing, after having previously laid their lodes hare by a vigorous use of the hydraulic.

There are here in one place two veins not many feet epart, one with an eastern dip and the other a western, as if they would soon unite. Immediately over the hest pay ore there were a large number of smaller veins, branching off in different directions from the main lode and in all kinds of lines, direct, circular and more or lese angular, in very hard rock, indicating an enormone force at that point, leading one to think the ceuse of the rich chute might hear some relation to the facts here set forth. Mr. Hsneon, who has heen for a long time working this clsim, had come to the same conclusioo, snd pointed ont in other portions of the mioe similar indications, where he expected to fiod good paying chimneys. He is now sinking an incline on one of these, which he usually finds to pitoh north in the direction of the lode at an angle of ahout 45 degrees.

The old Taylor claim at Spsnish dry diggings is paying from six to ten onnces per week; six men employed. The Short Handle and Horse Power (Sites & Co.) paid well et one time, four men having taken out as much as $40,000 in three weeks. It is at present worked hy slnice, and is mekiug fair wages, hut as it lies flat machinery is required to work it with advantage.

The Pennsylvania, owned hy Mr. L. Sites, is 600 feet in length hy 400 in width, and is admirably sitoated for working hy slnice in wioter or hy hedrock tnnnel in summer. As Mr. S. was an old acquaintance, I was favored with some figures in regard to this claim which sre not generally known among hie neighhors. He had juet deposited 28 onnces which he had weshsd out with the aid of one man in seven or eight days. He frequently gets $50 and sometimes as high as $200 to the pen. This claim has paid him $10 per day since January last, or about 125 ounces, worth $17.50, during a period of five months. K.

Overland Chat.

[For the PRESS by MARY MOUNTAIN.]

No one cen fully realize the desolate ssmeness of Nevada scenery until they travel through and spy out the land.

Reno in the cool, clear air of morning had a brisk and husiness look with its clean, new houses and faces of

"Consolidated" Keenness,

And in several other little towns the homes looked as homelike ss is possihle with euch hleak surroundings; hut our pilgrims seemed to think it would he wild catty iodeed to take stock in the soil or visible productions of this famous country.

All along here our San Francisco stock hrokers hroke out in such eager excited talk oue might imagine them sniffing very olosely the richness of hidden treasure. The wife of oue of these was a friendly, chatty little hody, and told me they would have gone to see the old mother long ago if it had not heeu that

"Stocks Acted So Mean;"

And much of her Centennial pleasnre depends upon stocks hehaving as they ars expected to. I admired the good sense that had led her to trevel in a neat derk calico; and the skill of her cookery, toasting, hoiling and hroiling over the queer car stove was truly wonderful. When we reached Omaha this chrysalis became a huttsrfly and hardly a lady in San Francisco could excel her in richness of garments end jewelry.

At Ogden we hranched off to

Salt Lake City,

Accompanied hy the Germen professor and our little echool-me'am. We had hy this time a good right to say "our school-ma'am" for she was traveling alone and glad to he gathered under our wing.

Of course the Professor's little children were along, and a pleasure to heve them; for they are intelligent, petient and polite. Little Otto, the youngest, had heen homesick the day hefore and asked "Where, then, ie onr home, pepa?" The answer was, "Here, my child, in the seat with papa." So he tried to accept it and hegan to ask the other children to visit his home. How glad we were to leave those close homes and prance away to the heautiful valley with plenty of room! And now egein my adjectives hegin to weaken, for this valley and city and grand snrrounding chain of snow-capped mountains form together the most heautiful right I have ever seen.

Doubtless the ewift change from the ugliness of

The Alkali Desert

Tends to highten the charms of this perfect oasis that is now set in our memories as a joy forever.

The valley is larger, the city handsomer, the mountains whiter with enow and more complete in circle than I had expected, for they reach an arm along the northern houndary to keep off cold winds and nestle this darling nook in a climate full of health and sweetness.

As we ascend a terrace of the town the eye takes in the whole area of 20 miles wide, 25 miles loug, end close in the foreground are the houses of Brigham, the broad, low dome of the tahernacle, the temple slowly growing into a thing of heauty, and ah, "the whole city full" of pleasaut homes and neat, quiet streets.

The high-walled gardens are filled with froit trees, vegetahles, and a gay trimming of flowers and little white-headed children peeping through the getes.

If I say that the public buildings are handsome, the smoke of manufacturiog like a cloud in the distance, the Great Salt lake shining and still nnder the far off mountains, let no

(Continued on Page 6.)

MECHANICAL PROGRESS.

The Whitby Jet Manufacture.

The manufacture of jet ornaments has constituted the staple industry of Whitby, England, during the present century, but its most notable development may be said to date from the great exhibition of 1851. On that occasion the little Yorkshire seaport brought its distinctive trade into prominence for the first time, and the demand for its productions received a stimulus which has been renewed at subsequent world's shows. The growth of the trade may be judged when it is stated that in 1850 there were but 50 workshops in the town, while at the present time Whitby can boast of nearly five times that number, the annual value of the trade approximating to £100,000. The largest manufacturing concern is that of Messrs. Chas. Bryan & Co., in Wellclose square, the head of which is to be credited perhaps in a greater degree than any other person with furthering the development of the trade, both in its industrial and commercial aspects.

Jet is so admirably adapted as a material for mourning ornaments that we are quite prepared to hear that the productions of Whitby find acceptance in all parts of the world. That this peculiar industry should have centered itself in that town is due to the accidental fact of large deposits of the raw material existing in the cliffs of the neighborhood. These have been drawn upon to such an extent, however, as to compel the jet miners to open up other sources of supply. At the present time the greater portion of the jet worked up in Whitby is excavated from the hills of the Cleveland district, some eighteen miles inland.

What Is Jet?

There is some difference of opinion as to its exact nature. It has been regarded by certain geologists as petrified wood, that is to say, a description of coal, which it resembles somewhat closely in composition. Others incline to the belief that it is of animal origin, this supposition being based on the fact that bones have been found with their exterior converted into jet. It may safely be set down, however, as a bituminous mineral, and it appears probable that the fluid exudations of what is called the jet rock have impregnated both animal and vegetable substances, thus giving rise to the remarkable specimens of jet occasionally found. The jet deposits are found lying horizontally in the upper lias or alum shale, which formation fringes the Yorkshire coast for more than twenty miles. Two kinds of jet are recognized—the hard and the soft. The former is most highly esteemed, and is worth about 21s. per lb. It is not harder than ordinary coal, but is capable of being easily cut and carved, and of receiving a very beautiful polish. Spanish jet is imported to some extent, but is very inferior to the Whitby variety; that found in France is accounted worthless by our manufacturers, and is little used.—*British Trade Journal.*

HE VALUED HIS MACHINE HIGHER THAN HIS TITLE.—The late Baron Palm, of New York, when he came to this country brought with him a patent machine for pressing bricks, which he valued more highly than he did his patent of nobility. But before he became known as a brick-maker, he was much sought after by the leaders of fashion on the score of his being a real Austrian baron. The high priest of the Theosophists, Col. Olcott, in his address over the remains of his departed friend and disciple, said that his ancestors had been barons for a thousand years, but Baron Palm did not pride himself so much upon his descent from so long a line of ruffians and robbers, as he did upon his mechanical invention, which, he flattered himself, would be a better recommendation in our Republican society. But he was soon disillusioned. He had been introduced to a lady who treated him with extreme deference and politeness until he innocently began to discourse upon the merits of his patent machine, when she said to him, with an expression of scorn and contempt: "Why, I thought you were a nobleman, but I find you are only a brick-maker." "Just as if," said the baron, "a man cannot be a nobleman if he makes himself useful to his fellow beings."

THE MIKADO'S COACH.—Probably the most costly state chariot ever yet built has just been completed for the Mikado of Japan by Messrs. Morgan & Co., Her Majesty's coach builders. The body of the vehicle is of the finest Spanish mahogany, and fashioned after an old Flemish pattern which allows an unlimited amount of ornamentation and unexceptional interior comforts. It is considerably larger than European carriages generally, but the peculiarity of its construction admits of the draft being very light. The panels are painted a rose-pale green, with white and gold trellis and scroll ornaments, the gilding being very profuse. The metal appointments are silver-gilt, the door handles and lamps being massive and richly chased. Traditional emblems of Japan, conspicuously the tortoise and dragon, surmount each corner of the roof, in the centre of which is a Japanese crown. The interior is luxuriously upholstered with cloth of gold, rich Valenciennes lace, and green silk velvet ornaments. The under-carriage is scroll-shaped and richly carved and gilt, the color of the wheels matching the body of the vehicle. Permission has been sought to have the carriage exhibited at the forthcoming horse show at the agricultural hall.—*London Times, June 1.*

High Pressure Steam.

In mechanical engineering the past year has given us no remarkable novelty, although it has not been wholly barren of results. Renewed attempts have been made to introduce steam of very high pressure as a means of economizing fuel; and much ingenuity and energy have been, and will be, we fear, wasted in the pursuit of delusive advantages which never can be realized. All arguments in favor of high pressures are based on the assumption that by using them steam can be expanded a greater number of times than is possible when low pressures are employed, and that the more expansively steam is employed, the further a given weight of the fluid may be made to go. Thus, for example, if a given weight of steam is used without expansion, and does work represented by 1, by expanding it five times we can increase the work to about 2.6, and by expanding it 100 times we could raise the duty to about 5 6. Now, it is known that the gain due to expansion has nothing to do with the pressure; but the terminal pressure in a cylinder is settled by the amount of vacuum which can be obtained. The lowest practical terminal pressure is about five pounds on the square inch, but long before this point is reached the work done by the steam will be expended in overcoming frictional resistance; it will be useless work, in fact.

Experience has proved that the lowest available terminal pressure is eight pounds to the square inch. It is obvious that if we attempt to expand steam, say 50 times, we must have an initial pressure, under the conditions, of eight times 20, or 160 pounds on the square inch. If a 30-fold expansion be attempted, then the initial pressure must be 240 pounds. It is, then, only because engineers attempt to employ great measures of expansion that high pressure steam is regarded with favor.

Up to a period of 10 or 12 years since, it was taken for granted that steam followed Marriott's law in expanding, and the coincidence—for it is nothing more—of good diagrams with the operation of this law, lent additional strength to a pure delusion. Mr. Isherwood, of the United States, was the first to show in practice that when expanding in a steam engine, steam does not obey Marriott's law, and that its consumption increases enormously as the ratio of expansion is augmented. The influence of the condenser tells heavily against great measures of expansion. Watt's so called separate condenser is only equivalent in its effects to what would have followed if he had lengthened the cylinder of a single-acting engine, and worked the piston at one end of this cylinder while he condensed at the other. In a word, the phrase "separate condenser" is a misnomer, and conveys a false impression.—*The Engineer.*

Mechanical Value of the Diamond.

Steel and new alloys are now manufactured of such density as to necessitate the discovery of new means of working them, especially where truth and accuracy are required. Steel cutters may not hold their edge a sufficient time to traverse the full extent of a face on substances so intensely hard, therefore it is important a substitute should be found of such durability as to retain its cutting edge intact, producing the same truth and accuracy of surface at the end of the work as at the commencement. Such a tool, when known to exist, will no doubt prove a valuable acquisition, and he eagerly sought for. To obtain such a tool the Societe d'Encouragement pour l'Industrie Nationale, of Paris, are offering in 1877 a prize of 3,000 francs, for the artificial preparation of compact black diamond (commonly called bort or carbonate) for obtaining thereby a powerful means of action for working hard metal substances, etc.

Among the comparatively recent mechanical arrangements are many in which the diamond is made to play an important part; in fact there is no mineral or metal that can equal it in its diversified and prospective field of application. Diamond drills, for instance, have proved valuable for prospecting mines, many being now used for the latter purpose in England, on the Continent of Europe and in America. Again, the diamond is now also being largely used in America for channelling and quarrying stone, as well as working and carving it by rotary and traversing drills or bits of various sizes and shapes, armed on their surface with black diamonds or carbonates, which are shaped with sharp angular or curved cutting edges; these bits are made to traverse and rotate at a very high rate of speed, following the interior line of a templet, producing thereby beautiful patterns of panelling of any design or depth desired in stone. The rapidity with which the work is done, and the smoothness of finish, are something marvellous. These points are also used effectively for truing hardened steel faces, such as dies, etc., also chilled iron and paper calender rolls.

HAIR CLOTH.—The only manufactory in the world where they make hair cloth by automatic machinery is in Pawtucket, R. I. Horse's tails furnish the hair, and these are purchased in interior Russia at the semi-annual faire. The tails come from Siberia. About 600,000 horses' tails are used every year. The length of the hair ranges 12 to 36 inches. The 36-inch hair, however, is so scarce that not more than three pieces of that width are made in a year.

A PRIZE FOR INVENTORS.—The Societe Industrielle du Nord de la France offers a prize of 5,000 francs ($1,000) and a gold medal worth 500 francs ($100) for the best machine for combing cotton. The following are the conditions to be fulfilled: The production must be greater than that of any other machine; a kilogramme (two and one-fourth pounds) of cotton must be turned into tow for 10 centimes, including all expenses, and the machine must be worked efficiently at least three months in the north of France.

CARE IN HANDLING MACHINERY.—The general thoughtless handling of machines, cleaning parts of machines while in motion, adjusting parts which should be at rest while being acted on, and other habits contracted by familiarity, should be avoided. A machine ought not to be trifled with. It has no remorse or pity. Once in its power, there is no escape. It should be managed with caution and constant care, for in dealing with machinery it is always better to be foolishly careful than carelessly foolish.

SCIENTIFIC PROGRESS.

Newly Discovered Mechanical Action of Violet Light.

M. Paul Bert's recent investigations as to the cause of changes of color in the chameleon have led him to a discovery of considerable importance, since it indicates a mechanical effect of light, and more especially of the violet rays, hitherto entirely unknown. He traces the changes of hue of the reptile to minute corpuscles or chromoblasts, which are located either below the dermis or at the surface of the skin, according as they are affected by certain nerves which are respectively analogous to the vaso constrictors and vaso dilatators. When the chameleon is placed half in red light and half in violet light, obtained by passing sunlight through colored glass, the portion on which the red light falls remains of the normal yellow color, while that affected by the violet light changes to a greenish black hue. This same effect can be produced by suitable nerve excitations and divisions, showing that the accession of color on the skin is absolutely caused by the rising of the colored corpuscle to the surface; while, when the latter remains inert, the natural yellow hue of the creature continues unchanged. Hence it would appear that the colored corpuscles, like certain chemical substances, are not equally affected by all the rays of the spectrum, and that in the violet blue rays alone resides the property of mechanically moving the chromoblasts and drawing them to the surface.

Similar action on contractile substances has already been noted as caused by heat and electricity; but that light should possess an exciting effect of this description is certainly remarkable.

M. Bert proposes to continue his researches to determine the influence of light on contractile matters under other circumstances, and he especially hopes to discover the reason of the favorable influence of light on the skin of children and of lymphatic persons. It seems to us he might go further and observe whether the color in the human skin, either that normally existing, as in the case of negroes, or that obtained by direct exposure to sunlight (tanning or burning), is attributable to any similar cause.—*Scientific American.*

FIBROUS PUDDLED IRON.—In a paper addressed to the Academy of Sciences, M. H. Le Chatelier adds some important information to our knowledge of this most important of all metals. The fracture of a bar of puddled and rolled iron generally presents a fibrous texture, denoting a complete want of homogeneousness in the metallic mass. This is due to the presence of extraneous matter mechanically interspersed in the iron, and which has hitherto been considered to consist of scoriæ from the puddling furnace and oxides of iron; but no direct analysis had, until now, been undertaken to settle the question, and no attempt been made to separate these impurities from the mass. Following M. Schlœsing's plan for the analysis of cast iron, our author caused a stream of chlorine to pass over a piece of fibrous iron at a dull red heat. The metal was thus entirely volatilized, leaving behind a skeleton of the exact shape of the original piece, but of such extreme tenacity and lightness that it would fall to pieces by merely blowing upon it. The color of this residue is a greenish white; it consists in a great measure of silica, with a small proportion of oxide of iron—in fact, the scoriæ mechanically enclosed in the mass, and which resisted the action of the gas, while the iron and the metalloids combined with it were completely volatilized. The proportion of this residue is about one per cent. of the whole mass. But there is this curious circumstance to be remarked, that these extraneous particles are not capriciously disseminated, but are arranged with some degree of regularity. They are all similarly oriented; they lie in long parallel files in the direction along which the bar was rolled. If it be wire, the residue will be a bunch of whitish threads; if sheet-iron, there will still be fibers, but so joined together as to form leaves bound, as it were, in a book, and admitting of being separated with the blade of a penknife. This is naturally the cause of weakness in an iron bar.—*Galignani.*

MECHANICAL EQUIVALENT OF HEAT.—The mechanical equivalent of heat may be demonstrated by a lecture-room experiment devised by Puluj. He uses two truncated cast iron cones, one fitting into the other, the outer one stationary and the inner one revolving in contact with it. The power employed for this revolution is measured by a kind of Prony brake arrangement, and the temperature by a thermometer placed in a mercury bath in the cones. By accounting for the specific heat of the iron, the mercury, etc., the mean result of 57 experiments gave the consumption of about 1,500 foot-pounds of power employed to produce one unit of heat. This is about half of the results obtained by others, as Joule, Mayer, and others, who only required 772 foot-pounds to produce the same effect; but then it should be remembered that a small machine of this kind works to great disadvantage, there is especially much loss of heat, and therefore it is not intended to obtain correct numerical results, but is sufficient to establish the fact of the convertability of motion into heat, and that the heat which can be produced from consumption of 1,500 foot-pounds is at least one unit. The unit of heat is the amount of heat required to raise the temperature of one pound of water from 32 deg. to 33 deg. Fahrenheit.

THE ROOT-CAP OF A PLANT.—A recent writer remarks: "The idea held by the earlier botanists, that the tips of all roots consisted of spongy masses of tissue, by means of which plants were enabled to soak up their food from the soil, has, with the aid of the microscope, been entirely discarded. The term spongiole, which was given to these theoretical bodies, is a landmark of departed ignorance, and furnishes a striking contrast with the known structure (the root cap), with which the tip of every growing root is covered. With the leading botanists of to-day a root is considered to be an outgrowth protected by a cap. This definition seems very short, but if anything further is added, there comes with it a number of exceptions. The name which this covering to the root-tip has received is in itself very descriptive, as it is truly a cap, consisting of a number of layers of quite dense cells surrounding the extremity. These root-caps vary in size in different species of plants; sometimes they are so small that only with the high powers of the microscope can they be seen, while on the other hand they may be readily observed with the naked eye."

THE "PANUORA" ARCTIC EXPEDITION.—The *Pandora*, which went to the Arctic regions last year, with the twofold object of discovering relics of Sir John Franklin and, if possible, of making the northwest passage, but which met an impassable pack of ice, compelling her to return home, was, in the beginning of the week, removed to Portsmouth harbor. During the last winter various alterations have been made on board. Her commander, Captain Young, was sorely disappointed at not being able to push on last year, and he hopes, on this occasion, to have better fortune. The *Pandora* has two years' provisions on board, but the period of her absence is, of course, uncertain. She will take letters for the Arctic ships, and was expected to leave on Thursday, touching, it is thought, at Disco to coal and receive on board some Esquimaux dogs, and then push upward to the mouth of Smith's sound, and endeavor, if practicable, to communicate with Captain Nares' expedition. Smith's sound, it is hoped, will be reached about the end of July, after which Captain Young will, if everything goes well, endeavor to make his way through a northwest passage.—*Iron.*

SUCCESS OF ZINC AS AN ANTI-INCRUSTATOR.—The German industrial papers contain reports in regard to the success of zinc scraps as a remedy against the incrustation of steam boilers. Bruckman & Sons, of Heilbroan, report the following: In a steam boiler of 25 square meters (250 square feet) heating surface, and a new mud drum, 30 kilograms (64 pounds) of zinc scrape, large and small pieces, were placed; the feed water was the ordinary spring water of the city water works; after six weeks a gray slimy mass was found adhering to the boiler, which, however, was completely removed with the greatest ease. The boiler was then washed out by means of the spay from a hose, and became perfectly clean, so that the iron of the mud drum looked as black as when new, while in the boiler only here and there old remnants of scale were visible, but new deposits had not been formed. Remnants of the zinc were seen in small corroded fragments, and at the same spot where they had been laid down at first.

SCIENCE IN BRAZIL.—A Frenchman of science, M. Steenackers, the superintendent of telegraphs during the time of the "defence nationale," is conducting scientific instruction in Brazil. The government has given him a well fitted laboratory, and he finds his pupils intelligent and hardworking. His lectures are given in French, in the evening; they are noted down by the students, translated into Portuguese, and published in a special paper. Popular information on primary matters is very small. Certain local industries are curious; among them is the distillation of gas from the seeds of the castor oil plant. Cotton spinning and weaving works, with or without dye works, are not scarce. At Rio is a stearine candle factory, working successfully with the best modern appliances, saponifying by water under pressure, and distilling with superheated steam.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to June 8.		1 W'k to June 15.		1 W'k to June 22.		1 W'k to June 29.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill..	30c	....	....	....	....	....	....	....
Advance.....	10	....	....	....	....	....	....	....
Alpha.....	62½	53	59½	50	52	44	47½	46
Alta.....	3	2¾	....	....	3	....	....	....
Amer'n Flag..	....	....	....	....	....	....	....	....
Amer'n Flat..	....	....	75c	....	....	....	....	....
Andes.....	3	2¾	2¾	2¾	2¾	2¾	2½	2½
Alps.....	2¼	2	1¾	1½	1¾	1½	1¾	1¾
Amazon.....	....	....	50c	....	55c	50c	....	....
Balt'm'e Con	2	1⅞	2	1½	1½	1	1½	1½
Belcher.....	20¾	17½	18¾	17	17	16	17¾	16½
Belmont.....	3½	3	3	2¾	2¾	2¾	2¾	2¾
Best & Bel..	55	53	54¾	46	49	46	48¾	45½
Buckeye.....	....	....	....	....	....	....	....	....
Bullion.....	45	42½	43	41	42	37½	46	43
Caledonia...	9	8½	9	8½	8¾	7½	8½	8
California..	83¾	80½	84	74	76	70	75½	72¾
Challenge..	5	....	4¾	....	4¾	....	....	....
Chollar-Ptsi	86	82½	85½	83	....	....	81	77
Confidence..	21	19	20½	18¾	18	17	18¾	17
Con Imperial	6⅞	6	....	5¾	6¾	5½	6¾	6
Con Virginia	75¾	73¾	73½	61	64½	56½	63	57
Crown Point.	16	12¾	13½	10¼	10¾	9¾	10⅛	9¾
Coso Con....	55c	25c	....	....	20c	15c	35c	25c
Daney.....	....	....	50c	....	....	....	....	....
Dayton.....	5	4½	5¼	5	5	....	5	....
Eclipse.....	....	....	....	....	....	....	....	....
Empire (1d)..	....	....	....	....	....	....	....	....
Eureka(G V)	....	....	....	....	....	....	....	....
Eureka Con..	11¾	10¾	11¾	10¾	11⅜	11	16¾	10¼
Exchequer ..	20½	15	18⅞	10½	17	15	16⅜	16
Europa.....	....	....	....	....	....	....	....	....
Gila.....	87½c	42½c	87½c	75c	75c	....	....	75c
Globe Con...	30c	20c	25c	20c	....	....	....	....
Golden Char.	2¾	2¾	2¾	2¼	2¾	2½	2¾	2½
Gould & Car.	16	14¾	15¾	14¼	16½	13	16¾	15
Hale & Nor..	59	56	66	57	10⅞	8½	10¾	9
Ida Elmore..	....	....	....	....	....	....	....	....
Jefferson	1⅛	37½c	1	75c	1	75c	1⅛	1
Julia.....	10¼	9	10	8¾	9	7½	8¾	7¾
Justice.....	24¾	22¾	22¾	20	22	21	22½	22
Jackson.....	4	3⅞	3⅞	3½	4	3½	5	4
K K Coo.....	....	....	....	....	....	....	....	....
Kentuck.....	12½	12	12¾	12½	13½	12⅜	12⅞	12¼
Knickerb'r..	50c	25c	50c	25c	....	....	....	....
Kossuth....	87½c	75c	1	87½c	90c	75c	87½c	50c
Lady Bryan..	62½c	30c	50c	30c	40c	20c	80c	10c
Lady Wash..	2¾	2½	2¾	2	2¾	2½	2¾	2½
Leo.....	....	....	....	....	....	....	....	....
Leopard.....	6¼	5¾	7½	6¼	7¼	6¾	7¼	6¾
Leviathan....	40c	25c	30c	....	25c	60c	15c	....
Mahogany....	....	....	....	....	....	....	....	....
Mansfield	....	....	....	....	....	....	....	....
Meadow Vly..	1½	1	1½	1	1½	1	1½	1
Mexican.....	33	31	32½	27½	30¼	24	29¾	27¾
Mides.....	....	....	....	....	....	....	....	....
Mint.....	45c	40c	40c	....	....	....	....	20c
Monitor-Bel.	....	....	....	....	....	....	....	....
Newark.....	....	....	....	....	....	....	....	....
New York....	1	75c	1	87½c	75c	50c	87½c	75c
Niagara.....	....	....	....	....	....	....	....	....
Northn Belle	46	40	43	36	45	40	42	37
New Coso....	75c	40c	1¼	1½	1¼	1⅛	2	1¼
Occidental..	4½	4	4¾	4½	4¾	4½	2¼	....
Ophir.....	57	54¼	56⅝	51½	52½	46	51½	48
Or Gold Hill.	75c	50c	....	....	....	....	....	....
Overman.....	63	61¼	63	54	65¾	53⅛	64	57
Pacific.....	50c	....	....	....	....	....	....	....
Phil Sheridn	....	....	25c	....	1¼	1	1¼	1
Ploche.....	....	....	....	....	....	....	....	....
Poorman	25c	15c	25c	17c	60c	10c	65c	60c
Prospect.....	6	5¾	8¼	6½	7¼	7	7	6¼
Prussian.....	1¼	1	1¼	....	....	....	....	....
Ray & Ely....	9	8	11½	9	9½	8	9	8
Rock Island..	1⅝	50c	2	1⅜	1½	....	2	1½
Rye Patch....	....	....	....	....	....	....	....	....
Savage.....	18¾	16¾	18½	17⅜	19⅞	16¾	23	19⅞
Seg Belcher..	70	....	....	....	71	70	75	74
Sierra Nev'da	13¾	13	13¾	12	12½	9¾	14¼	13
Silver Hill..	9	8	7½	3	3	6½	7	....
Sth Chariot..	25c	20c	25c	12½c	25c	....	40c	....
Succor.....	62½c	50c	62½c	40c	50c	45c	62½c	40c
Union Con....	12	11½	12	10	11½	9⅝	11½	10½
Utah.....	22	20½	20½	20	19¾	10	19	17
Wells-Fargo.	25c	20c	25c	12½c	20c	15c	20c	19c
Woodville....	1⅜	1	1⅜	1	1¼	1	1¼	1
Yel'w Jacket	35¾	31	36⅝	28¾	31½	29	32½	29½

Sales at S. F. Stock Exchange.

FRIDAY, A. M., JUNE 23.

255 Alpha.....47@48
60 Bullion.....44@43¾
620 Best & Belcher..48½@48
160 Belcher.....16¾@16⅝
2655 Con Imperial.....8@6⅝
360 Caledonia.....8¾@8½
1455 Con Virginia.....62½@63
325 California.....75⅜@75⅞
415 C Point.....10⅜@10¼
2 Chollar.....79@81
10 Confidence.....18½
220 Exchequer.....16¾@16⅝
370 Gould & Curry.16⅛@16⅜
245 Hale & Nor.....10@10¾
720 Justice.....23⅛@23¾
80 Julia.....8⅝@8⅜
2305 Lady Bryan.....10@25c
1045 Mexican.....29¾@29¾
193 Ophir.....51@51½
2400 Overman.....64@62½
100 Succor.....40c
2760 Savage.....20⅝@2⅜
585 Sierra Nevada.....14@13¾
165 Utah.....19@18¾
455 Union.....11@11⅛
1910 Yellow Jacket..32½@31⅞

AFTERNOON SESSION.

30 Andes.....2⅛
70 Alpha.....46¾@46½
100 Alps.....1⅜
25 Best & Bel.....46¼
170 Baltimore Con.....1⅝@1⅞
100 Belmont.....2⅜
950 Cosmopolitan.....32½c
845 Con Virginia.....60@60½
1000 Coso Con.....16c
100 Challenge.....4½
630 Con Imperial.....6¾@6¾
410 California.....73½@73¾
75 Crown Point...10⅜@10¾
460 Eureka Con.....10⅝@10¾
50 Florida.....50c
80 Gould & Curry.....16
20 Gila.....75c
915 Gen Thomas.....3¾@4
420 Golden Chariot.....2½
610 Hale & Nor.....9⅝@9⅞
800 Hussey.....90@95c
450 Jackson.....4@4¼
450 Justice.....23@22¾
500 Lady Wash.....2¾
50 Leopard.....6¾@7
1040 Mexican.....27½@27⅝
100 Mint.....20
100 Morning Star.....4
100 Modoc.....3½
325 New York ...87½@75c
60 Northern Belle..42@41½
310 Ophir.....49@49¾
25 Occidental.....2¼
100 Poorman.....60c
300 Phil S eridan.....1@1¼
140 Ray & Ely.....8⅝@8
1035 Savage.....20½@21½
225 Woodville .....1¼@
930 Yellow Jacket. 30½@30¾

SATURDAY, A. M., JUNE 24.

50 Alpha.....46
75 Andes.....2½
165 Best & Belcher.....47
100 Baltimore Con.....1¾
20 Bullion.....44
145 Belcher.....16¾
125 Crown Point..10¼@10½
661 Con Imperial.....6¾@6⅝
30 Confidence.....18
980 Con Virginia.....60½@60¾
300 California.....74½@74¾
10 Caledonia.....8¾
190 Chollar.....16⅞
50 Exchequer.....16¾@16⅝
10 Eureka Con.....10⅝
120 Gould & Curry.....15¾

335 Ophir.....48¾@49½
50 Overman.....36@35¾
400 Panther.....1⅝
30 Raymond & Ely....8¾@8
150 South Chariot.....40c
410 Sierra Nevada.13¾@13⅝
300 Union Con.....12
70 Union.....11⅞@11½
520 Yellow Jacket.....31

TUESDAY, A. M., JUNE 27.

710 Alpha.....47@48½
120 Andes.....2¾@2⅝
440 Best & Belcher....48¼@47
257 Baltimore Con....1⅞@1¾
25 Belcher.....16¾@16⅝
400 Con Virginia.....57½@57
50 Caledonia.....8½
2420 Con Imperial.....6@6⅝
1105 Crown Point.....10@9¾
180 Chollar.....74
705 California.....72⅞@72¾
480 Caledonia.....8¾@8½
90 Exchequer.....16¾@16⅝
350 Gould & Curry....15¾@15
370 Hale & Nor.....9¾
255 Justice .....22¾@22
360 Julia.....7¾@7⅝
50 Kentuck.....12¾@12⅝
240 Kossuth.....50@75c
1340 Lady Bryan.....80c
70 Lady Wash.....2¾@2⅝
780 Mexican.....27¾@28¼
300 Monumental.....15c
100 Morning Star.....4½
25 Overman.....56@57
145 Ophir.....48@48⅝
100 Prospect.....6½
50 Rock Island.....1⅝
795 Sierra Nevada.....13@18⅞
615 Sierra Nevada.....13¾@14
40 Seg Belcher.....74
200 Utah.....17½
100 Union.....11@11⅞
675 Virginia.....25¾
100 Ward.....13¼
885 Yellow Jacket.....29½@30

AFTERNOON SESSION.

230 Alps.....1¾@1⅝
85 Alpha.....47½
50 Belmont.....1¾
30 Belcher.....17
95 Best & Belcher..46½@47
130 Con Virginia.....57¾
50 California.....72⅜@72
65 Con Imperial.....6¾
70 Crown Point.....10
40 Dayton.....5
450 Eureka Con.....12½@13⅜
140 Gen Thomas.....3@3¼
200 Golden Chariot.....2½
225 Gould & Curry.....15@15⅛
520 Hale & Noroross.9¾@9¾
200 Hussey.....90c
60 Justice.....22¼@22½
30 Jefferson.....1
200 Jackson.....4⅞@5
1075 Julia.....7¾@7⅝
155 Caledonia.....8¾@8¾
560 Exchequer.....16¾@17
270 Gould & Curry.16¾@16⅝
370 Hale & Norcross.....10
550 Justice.....22¾@22½
285 Julia.....8¾@8¾
70 Kentuck.....13@13¼
1410 Lady Bryan.....20@25c
2235 Mexican.....29¾@30
260 Ophir.....51@51½
695 Overman.....63@63¾
1925 Savage.....18½@18⅝
1495 Sierra Nevada..11¾@12¼
70 Seg Belcher.....71@71
100 Utah.....19¾
745 Union.....11¾@11⅞
2180 Yellow Jacket..32¼@33

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A.M., JUNE 22.

560 Alpha.....48@49
725 Best & Belcher..49@48¾
270 Belcher.....16¾@17
200 Confidence.....18¾@18½
215 Crown Point...10¾@10⅝
1699 Con Imperial....6¾@6¾
1169 Con Virginia....61½@60
1405 California.....75@75½
155 Caledonia.....8½@8¾
560 Exchequer.....16¾@17
270 Gould & Curry.16¾@16¾
370 Hale & Norcross.....10
550 Justice.....22¾@22
285 Julia.....8¾@8¾
70 Kentuck.....13@13¼
1410 Lady Bryan.....20@25c
2235 Mexican.....29¾@30
260 Ophir.....51@51½
695 Overman.....63@63¾
1925 Savage.....18½@18⅝
1495 Sierra Nevada..11¾@12¼
70 Seg Belcher.....71@71
100 Utah.....19¾
745 Union.....11¾@11⅞
2180 Yellow Jacket..32¼@33

THURSDAY A.M., JUNE 29.

425 Alpha.....46@47
100 Amazon.....60c
70 Andes.....2⅜
10 Baltimore Con.....1¾
40 Best & Bel.....46½@46¾
55 Belcher.....17@16¾
60 Chollar.....78⅜@78
50 California.....73
240 Crown Point...10¼@10
940 Con Virginia....58@58½
360 Eureka Con....13½@13⅝
36 0 Con Imperial.....6⅝@6
50 Confidence.....18
110 Caledonia.....7⅞@8
50 Dayton.....5
110 Gould & Curry.....15¼
1955 Globe.....35@30c
135 Julia.....7¾@7⅝
270 Justice.....22¼@22¾
100 Kossuth.....1¾
40 Lady Wash.....2⅜
675 Mexican.....28¾@28¾
100 Mornigo Star.....4
200 New York.....87½c
50 N Con Vir.....15c
200 North Carson.....25c
195 Ophir.....49¾@49½
20 Overman.....59½
100 Prospect.....6⅝
50 Sheridan.....1½
25 Seg Belcher.....75
1030 Savage.....19¾@19¼
475 Sierra Nevada...14¼@14
500 Succor.....40@42½@
85 Utah.....17
395 Virginia.....2¼
100 Wells-Fargo.....19c
120 Woodville.....1¼
300 Yellow Jacket..31¼@31⅝

AFTERNOON SESSION.

70 Alpha.....47@47½
80 Belmont.....2⅛
30 Belcher.....17¼
500 Coso Con.....35c
1025 California.....73⅝@73½
85 Con Virginia....58@58½
225 Eureka.....13¼@13⅜
650 Gila.....1@87½c
300 Gen Thomas.....3
275 Golden Chariot.....2½
20 Gould & Curry.....15¾
550 Hale & Norcross 9¾@9¾
85 Imperial Con.....6
1240 Jefferson.....1@1¼
300 Justice.....22¾@22⅝
305 Jackson.....4@4¼
695 Leopard.....7¾@7
1 00 Modoc.....4½@4¼
80 Meadow Valley.....1⅝
20 Mexican.....28⅞@28⅝
60 Northern Belle.....38@37
300 New Coso.....2@1¾
185 Ophir.....50¼@50
100 Paother.....1¾
50 Poorman.....6¾
50 Ray & Ely.....8½
70 Savage.....19¼
145 Sierra Nevada.....14⅞
330 Yellow Jacket..31¼@31⅝

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thureday from Advertieements in the Mining and Scientific Preee and other S. F. Journale.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt.	Levied.	Deling'nt.	Sale.	Secretary.	Place of Business.
Cole S M Co	Washoe	28 5 00	June 14	July 19	Aug 9	J F Llghtner	309 Montgomery st
Crown Point G & S M Co	Nev	26 1 00	June 13	July 18	Aug 8	Chas E Elliott	419 California st
Coquille Black Sand M Co	Oregon	3 20	June 24	Aug 8	Sept 21	F F Reynolds	111½ Leidesdorff st
Eclipse & Lec M Co	Cal	25	June 22	July 22	Aug 5	D Buck	309 Montgomery st
Eureka Con M Co	Nev	2 1 00	May 26	June 30	July 20	W W Traylor	309 Montgomery st
Europa M Co	Washoe	8 25	June 19	July 25	Aug 15	R B Noyes	419 California st
Florida S M Co	Washoe	5 25	June 19	July 27	Aug 24	L Hermann	220 Sansome st
Gould & Curry S M Co	Nev	26 1 50	May 18	June 23	July 13	A K Durbrow	309 Montgomery st
Hale & Norcross S M Co	Washoe	50 1 50	May 16	une 21	July 12	J F Lightner	Nevada Block
Kossuth M Co	Washoe	6 50	May 29	June 29	July 19	E F Stone	419 California st
Lady Bryan M Co	Washoe	12 75	May 26	June 28	July 19	W H McClintock	419 California st
Leviathan M Co	Nev	3 50	May 19	June 20	July 11	F E Lnty	507 Montgomery st
Newark S M Co	Ely District	12 50	May 16	June 20	July 11	Wm Willis	309 Montgomery st
N Con Virginia M Co	Nev	3 25	June 3	July 7	July 29	J Maguire	419 California st
Niagara G & S M Co	Nev	2 15	June 12	July 13	Aug 1	W R Townsend	Nevada Block
North Dayton M Co	Nev	2 10	June 21	July 21	Aug 10	R S Culverwell	330 Pine st
Omega Table Mt M Co	Cal	11 5	June 23	July 31	Aug 21	David Wilder	328 Montgomery st
Poorman G & S M Co	Idaho	6 50	May 19	June 23	July 13	W Willis	309 Montgomery st
Prospect G & S M Co	Washoe	1 1 00	Apr 24	May 29	June 19	J P Moore	320 Sansome st
Savage M Co	Washoe	24 2 00	May 31	July 6	July 25	E B Holmes	309 Montgomery st
Sierra Nevada S M Co	Nev	19 2 00	May 23	July 26	July 14	W W Stetson	309 Montgomery st
South Chariot M Co	Idaho	17 30	May 26	July 5	July 27	W H McClintock	419 California st
Trojan M Co	Washoe	2 30	June 14	July 20	Aug 10	D Wilder	328 Montgomery st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Aureola G & S M Co	Nev	1	10	June 17	July 20	Aug 5	T S Fitch	240 Montgomery st
Black Hawk Coal M Co	Cal		5	Mar 18	May 20	July 8	H A Powell	520 Montgomery st
Beaver M Co	Nev	1	10	May 20	June 24	July 15	W G Hughes	314 Montgomery st
Big Bar M & M Co	Cal	1	1	May 29	July 3	July 22	J M Buffington	311 California st
Buckeye G & S M Co	Nev	17	50	May 19	June 22	July 11	C A Sankey	331 Montgomery st
Chollar Potosi M Co	Washoe	10	5	June 26	July 23	Aug 16	W E Dean	419 California st
Daney G & S M Co	Nev	1	15	May 15	June 20	Ju y 13	G R Spinney	320 California st
Eagle S M Co	Nev	4	25	May 16	June 26	July 24	H L Byrne	533 Kearny st
Enterprise Con M Co	Cal	8	15	June 15	July 15	Aug 8	F J Hermann	418 Kearny st
Equitable Tunnel & M Co	Utah	12	20	May 13	June 5	July 5	C S Heiss	Merchants' Ex
Glencoe Con G M Co	Cal	1	5	June 12	July 14	Aug 9	L Leavitt	309 Montgomery st
Gen Thomas M & M Co	Nev	1	5	May 10	June 15	July 8	W Willis	309 Montgomery st
Hope Quicksilver M Co	Cal	1	3	May 12	June 17	July 10	Jacob Hardy	410 California st
Howard Hill G M Co	Cal	6	2 50	June 12	June 17	F J Hermann	418 Kearny st
Kelsey G & S M Co	Cal	16	10	June 6	July 11	July 31	J H Sayre	330 Pine st
Kern River Hydraulic M Co	Cal	1	10	May 16	June 24	July 14	W F Bogart	328 Montgomery st
Ida Elmore M Co	Idaho	20	1 00	June 26	July 31	Aug 21	W Willis	309 Montgomery st
Mansfield G M Co	Cal	1	25	May 19	June 19	July 12	J M Buffington	311 California st
Modoc Con M Co	Inyo Co Cal		1 00	May 3	June 16	July 10	P M McLaren	328 Montgomery st
Overman S M Co	Washoe	35	3 00	June 26	July 31	Aug 21	G D Edwards	414 California st
New Coso M Co	Inyo Co Cal		3	May 9	Juoe 14	July 12	D F Verdonal	409 California st
New England T & S Co	Cal	2	10	June 10	July 20	Aug 10	C C Tripp	401 California st
Nonpareil G M Co	Tuolumne Co Cal	1	00	May 9	June 12	July 3	A Du Pratt	508 Jackson st
San Jose M Co	Nev	12	5 00	June 14	Ju y 17	Aug 22	A O'rrigan	407 Front st
Oro Fino M Co	Idaho	2	75	June 6	July 12	Aug 8	W H McClintock	419 California st
Pictou M Co	Washoe	10	25	May 24	June 27	July 15	S Phillips	408 California st
Rising Star G M Co	Cal		10	May 16	June 17	July 15	J W Coppage	320 Pine st
Rock Island G & S M Co	Washoe	11	50	June 26	July 26	Aug 22	J W Clark	418 California st
Silver Sprout M Co	Cal		10	Mar 18	June 14	July 10	T B Wingard	328 Montgomery st
Silver We-t Con M Co	Nev	6	10	May 24	July 8	Aug 5	F R Bunker	606 Montgomery st
South St Louis M Co	Nev	1	10	June 6	July 13	July 30	R S Noyes	419 California st
Sierra Nevada M Co Garden Valley	Nevt		20	May 15	June 21	July 6	S S Murfoy	607 Montgomery st
Washington Blue Gravel Co	Cal	1	60 00	June 1	July 15	Aug 15	H Steinegger	Britton & Key
Woodside M & M Co	Cal	5	25	June 16	July 17	Aug 17	S M Cutler	226 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Best & Belcher M Co	Washoe	W Willis	309 Montgomery st	Annual	July 10
Belmont M Co	Nev	W H McClintock	419 California st	Annual	July 14
Chollar Potosi M Co	Washoe	W E Dean	419 California st	Annual	July 10
El Dorado South Con M Co	Nev	W Willis	309 Montgomery st	Annual	July 3
Eagle S M & M Co	Nev	H L Byrne	533 Kearny st	Anoual	July 3
Great Eastern Con Q M Co	Cal	W H Widman	415 California st	Annual	July 3
Kennedy M Co	Cal	A Wissel	Jackson, Amador & Co	Annual	July 3
Lady Franklin M Co	Nev	Called by Trustees	507 Montgomery st	Special	July 26
Overman S M Co	Washoe	Called by Trustees	414 California st	Special	July 25
Overman M Co	Washoe	Geo D Edwards	414 California st	Annual	July 13
Utah S M Co	Washoe	G C Pratt	309 Montgomery st	Annual	July 11

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	O D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	June 19
California M Co	Washoe	C P Gordon	309 Montgomery st	2 00	June 11
Con Gold Hill Quartz M Co	Washoe	R Wegener	414 California st	25	April 17
Cooe Virginia M Co	Washoe	Chas H Fish	401 California st	2 00	June 11
Comsnohe M & M Co	Nev	W W Traylor	Nevada Block	25	June 19
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	2 00	April 11
Empire M Co	Sierra Co Cal	Chas Colliehonn		5 00	May 15
Empire M & M Co	Washoe	W E Dean	414 California st	25	April 17
Imperial S M Co	Washoe	W E Dean	414 California st	25	April 17
Leopard M Co	Nev	R H Brown	402 Montgomery st	75	Feb 15
Northern Belle M & M Co			309 Montgomery st	1 00	May 15
St Patrick M Co	Cal	D F Verdenal	409 California st	20	Mar 10
West Domstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Feb 24

California Board—Latest Sales.

WEDN'SDAY, A. M., JUNE 28.

10 Alpha.....47½
300 Alpine.....4@5
50 Amazon.....60c
50 Andes.....2⅝
51 Best & Bel.....46¼
10 Baltic.....40c
100 Crown Point R.....30c
100 Crown Point.....10
5 California.....73⅝
50 Con Virginia.....57½@56¾
65 Eureka Con.....13½
10 E Point.....1⅝
150 Erie Con.....1
545 Exchequer.....16¾
460 Gila.....1@87½c
30 Gould & Curry.15½@15⅝
10 Hale & Norcross.....9½
500 International.....1⅝
80 Justice.....22¼@22½
40 Julia.....7⅝
50 Kossuth.....72½c
140 Lady Bryan.....77½c
300 Knickerbocker.....80@85
100 Mint.....31c
1000 Monumental...12½@10c
120 Mexican.....28@28⅝
200 Niagara.....2½
50 N Coso.....1⅞@1½
100 Nevada.....31½c
1800 North Mon.....55@42½c
195 Ophir.....48½@49¾c
200 Oso.....2½
100 Prospect.....6½
200 Phoenix.....1⅛@1.05
100 Phil Sheridan.....1¼
200 Poorman.....60@62½c
320 Rock Island.....1⅝
350 S Barcelona.....19@14½
50 S Chariot.....35c
1000 Superior.....70
100 Succor.....50c
50 S Ophir.....1
130 Savage.....19½@19¾
500 Union Flag.....50c
30 Union.....11⅜
120 Woodville.....1⅛@1.20
60 Y Jacket.....30½@30¾

AFTERNOON SESSION.

100 American Flat.....37½c
50 Amazon.....55c
50 Belcher.....17
50 Best & Belcher.....46½
60 Con Virginia.....58¾
15 Crown Point...10¼@10
545 Cosmopolitan.....30@3 c
460 Con Imperial....6¾@6 05
145 Gila.....1@87½c
150 Eur Con.....13@14½
10 Golden Chariot.....2⅝
250 Gila.....1.05@1⅛
140 Gold & Curry.15½@15⅝
170 Hale & Norcross.9¾@9⅝
50 International.....1½@1⅝
250 Jefferson .....90c@1
320 Julia.....8
300 Knickerbocker.....80@85
100 Lady Bryan.....75c
70 M Valley.....1.20
15 Mexican.....28½
100 Mansfield.....25c
100 Monumental.....10c
100 Mint.....91c
200 Niagara.....10c
100 N Coso.....1½
150 Prospect.....6½
55 Rock Island.....1½@1⅝
20 Ray & Ely.....8½
1075 Stock Broker.....3 c
640 Silver West.....2
30 S Barcelona.....17c
25 Sierra Nevada.....14
10 Savage.....19½
150 Tyho.....1¾4
10 Woodville.....1⅛

METALS.

[WHOLESALE.

THURSDAY, M., June 29, 1876.

American Pig Iron, ₰ ton	33 00	@	36 00
Scotch Pig Iron, ₰ ton	35 00	@	37 00
White Pig, ₰ ton	— —	@	38 40
Oregon Pig, ₰ ton	— —	@	32 50
Refined Bar, ₰ lb	— —	@	— 4¼
Boiler Nos. 1 to 4	— —	@	— 5½
Plate, No. 5 to 9	— —	@	— 5½
Sheet, No. 10 to 14	— —	@	— 5¾
Sheet, No. 16 to 20	— —	@	— 5¾
Sheet, No. 22 to 24	— —	@	— 6
Sheet, No. 26 to 28	— —	@	— 6½
Horse Shoes, per keg	5 50	@	8 00
Nail Rod	— 10	@	— —
Norway Iron	— 9	@	— —
Rolled Iron	— 6	@	— —
Other Irons for Blacksmiths, Miners, etc.	— —	@	— 4¼
COPPER.—			
Brazers	— 37½	@	— —
Copper Tin'd	— 40	@	— —
Sheathing, ₰ lb	— 24	@	— 40
Sheathing, Yellow	— —	@	— 25
Sheathing, Old Yellow	— —	@	— 12½
Composition Nails	— 24	@	— —
Composition Bolts	— 24	@	— —
STEEL.—Spring Cast, ₰ lb	— —	@	— 25
Anderson & Woode' American Cast	— —	@	— 15
Drill	— —	@	— 16½
Flat Bar	— 18	@	— 22
Plow Steel	— 9	@	— 10
TIN PLATES.—			
10x14 I C Charcoal	10 00	@	10 50
10x14 I X Charcoal	10 50	@	11 00
Roofing Plate I C Charcoal	10 00	@	— —
Banca Tin	28	@	— 28
Australian	— 18	@	— 22
ZINC.—By the Cask	— —	@	— 11
Zino, Sheet 7x3 ft, No 7 to 10 ₰ lb	— —	@	— 11
do do 8x4 ft, No 11 to 14	— —	@	— 12
do do 8x4 ft, No 8 to 10	— —	@	— 12½
do do 8x4 ft, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	3 60	@	3 75
QUICKSILVER, per ₰	— —	@	— 47½

LEATHER.

[WHOLESALE.]

WEDNESDAY M., June 28, 1876.

City Tanned Leather, ₰ lb			22@29
Santa Cruz Leather, ₰ lb			22@28
Country Leather, ₰ lb			22@29
Stockton Leather, ₰ lb			25@29
Jodot, 8 Kil., per doz			$50 00
Jodot, 11 to 13 Kil., per doz			68 00@ 79 00
Jodot 14 to 16 Kil., per doz			82 00@ 94 00
Jodot, second choices, 11 to 16 Kil. ₰ doz			57 00@ 74 00
Cornellian, 12 to 16 Ko			57 00@ 67 00
Cornellian Females, 12 to 13			63 00@ 67 00
Cornellian Females, 14 to 16 Kil			71 00@ 76 50
Simon Ullmo Females, 12 to 13, Kil			58 00@ 62 00
Simon Ullmo Females, 14 to 16 Kil			66 00@ 70 00
Simon Ullmo Females, 16 to 17, Kil			72 00@ 74 00
Simon, 18 Kil. ₰ doz			61 00@ 63 00
Simon, 20 Kil. ₰ doz			65 00@ 67 00
Simon, 24 Kil. ₰ doz			72 00@ 74 00
Robert Calf, 7 and 9 Kil			35 00@ 40 00
French Kips, ₰ lb			1 00@ 1 15
California Kip, ₰ doz			40 00@ 50 00
French Sheep, all colors, ₰ doz			8 00@ 15 00
Eastern Calf for Backs, ₰ lb			1 00@ 1 20
Sheep Roane for Topping, all colors, ₰ doz			9 00@ 13 00
Sheep Roans for Linings, ₰ doz			5 50@ 10 50
California Russett Sheep Linings			1 75@ 4 50
Best Jodot Calf Boot Legs, ₰ pair			5 00@ 6 25
Good French Calf Boot Legs, ₰ pair			4 00@ 4 75
French Calf Boot Legs, ₰ pair			4 00@ — —

Pacific Board—Latest Sales.

WEDN'SDAY, A. M., JUNE 28.

30 Alpha.....47⅜@47⅝
30 Andes.....2¾@2⅝
35 Belcher.....16⅞@17
50 Baltimore.....1⅝
70 Best & Bel.....47@46⅞
1400 Con Imperial....6¾@6¾
50 California.....73
170 Con Virginia....57¼@57⅜
200 City of Boston....37½c
5 Dayton.....5
10 Erie Con.....1
60 Gould & Curry.....15¾
60 Hale & Nor.....9⅞
200 Justice.....22

Mining Share Market.

Either the public has become so much interested in the coming Centennial celebration that they take no interest in the stock market, or has become apathetic for other reasons, but at all events there has been no animation whatever for a week past. The whole line of stocks is weak, from highest to lowest along the whole range. As a great amount of money will soon be required for use in handling the California wheat crop, there seems to be no likelihood of there being any great improvement in stocks this summer, unless there shall be made a grand strike in some of the mines. Many millions of dollars will be required for the moving of the wheat crop, and it will be a long time before this money is again free and placed where it can be used in stocks. Perhaps after the holidays there may be some improvement. The stock boards will adjourn for this week until Thursday, July 6th, at 12 M.

The only topic in stock circles of special interest is the anticipated election fight for the control of Savage. Contradictory statements of James Keene, J. G. Fair and others concerning the management of the mine have been published. The election takes place on the 20th of July, and an effort is being made to oust Flood & O'Brien from the management. The "ontside" party allege, as reasons for their proceedings, that the mine has been systematically mismanaged, heavy assessments have been unnecessarily levied, and the majority of the stockholders are dissatisfied. So stands the case at present, and it would be premature as yet to advance an opinion regarding the result. The affair, however, is the prime topic on the street and in mining circles, and excites a very general interest and excitement.

On the Comstock the *Enterprise* expects soon to see a season of greater activity than ever before. The two huge new mills of the Bonanza mines are being rapidly pushed to completion, and the new and powerful machinery of the Savage mine and the Hale & Norcross will shortly start up and drain those water-logged mines, when the miners will again be able to descend to the lower levels.

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE.

New Claim.—Alpine *Chronicle*, June 17: We learn that a new claim—the Jennie Nettle—has been started up at Monitor by Matthew Nettle. Our Monitor friends are getting somewhat excited over the mining prospects of their district, and they have good reason for it. Outside of the Tarshish, or Schenectady claim, there has been no legitimate mining at our sister town until within the past six or eight months, when the Advance shaft was started for deep mining, agreeably with the report of J. Ross Browne to the Government in the early days of our county. He said that we would have to go deep for paying ore, but that we would be well paid by so doing, as we would open up inexhaustible mines of the precious metals; and the shafts now being sunk in the county are tending to verify his report.

The Exchequer.—The mine is being retimbered in many places, preparatory to more active operations when the new furnace is erected at the mill. At the mill the old furnace and building are being removed to make room for an O'Harra champion furnace of a capacity of 30 tons a day; and to keep in tune with the furnace the mill will have 10 stamps added to it while the furnace is going up. The saw mill has been getting out timbers for the new furnace building. Manager Chalmers has placed his residence at the mill in fine order, and it is now as comfortable as an old English mansion, and everything about the place betokens an intention on the part of the manager to make it a permanent home—a good sign that the mine is not going to collapse.

Lady Franklin.—Work on the mine will probably be commenced soon and pushed forward with energy. This mine is in Scandinavian canon, and about two miles from our town. It joins the Exchequer mine and is a most valuable property. The company have a U. S. patent to it. If this mine is worked as it should be, it will not be long before it will pay a dividend.

AMADOR.

Daytown Mining Items.—Cor. Amador *Ledger*, June 24: Within the last few days it has been discovered that there is a continuous quartz ledge running through the west side of town, which is thought to be rich in gold and sulphurets. The ledge has been located by Messrs. Belding, Henderson, Murdie and Thomas. The work of sinking an additional 50 feet in the shaft of the Bonanza mine has just been completed. They are now opening up a new level. Everything looks flattering. The Crown Point company are now crushing some of their rock at the Centennial mill, with satisfactory results. Drytown is looking up. Persons who have not visited the place lately would be struck with the altered condition of affairs for the better.

BUTTE.

Claim Sold.—Oroville *Mercury* June 23: Last week we stated that Dr. A. K. Stearns had gone to San Francisco to consult with Hon. G. O. Perkins and Mr. Kelley in regard to building a new mill for their mining claim. Instead of building they sold the claim to Messrs. Craig & Co. for the sum of $20,000, cash down. A new mill will soon be erected.

CALAVERAS.

Quaker City.—Calaveras *Chronicle*, June 24: Everything is progressing finely at the Quaker City mine, near the Junction. Levels are being run at the depth of 200 feet, with fair prospects of striking the ore body at a short distance. Prospecting is the order of the day, and the managers of the mine show no disposition of falling into the very common error of erecting expensive machinery until developments warrant the outlay.

Grasshopper.—The machinery at the Grasshopper mine at Mosquito is now running nicely, keeping the works free from water. Labor is progressing, prospects are brilliant and everything lovely.

Rich Rock.—A lot of quartz from the mines belonging to Gase & Co., Glencoe district, lately crushed in Garland's mill at Mosquito, paid an average of $62 per ton. We learn that the company have sunk a shaft about 90 feet deep on the ledge, and that the prospects for the development of a first-rate mine are very flattering.

San Bruno.—A new pump for the San Bruno mine at Mosquito passed through here Wednesday last. We believe it has not been put into the shaft yet, the old one having sufficient capacity to keep the mine free of water. We understand that a good sized ledge, composed of rich rock, has been struck in the east level.

Josephine.—We continue to hear very favorable reports concerning the Josephine mine at West Point. Splendid ore is being obtained and operations are being vigorously pressed.

South Calaveras.—Vallecito Cor. *Chronicle*: The Morseville mining company have resumed work on the old "Tyler" mine, located near Murphys, and are taking out some of the richest ore ever shown in the county. The company have erected an arastra and mill, and have been steadily engaged crushing rock during the past six months, the ore yielding the unusually large average of $80 per ton. The Frazier mining company's claim, about a mile west of Murphys, is supposed to be an extension of the Tyler. The company have been taking out rock for several months past, and are intending to erect a mill as soon as practicable. The Elizabeth Tilton and Ward Beecher Consolidated mining company's claim is located two miles north of Vallecito, on Kelly's gulch. Rock of extraordinary richness is being taken from the mine. The company lately commenced crushing with their improved water mill, and results so far are highly satisfactory.

EL DORADO.

Union Mine.—El Dorado *Republican*, June 22: Under the superintendence of Dan C. Wickham this mine, more familiarly known as the Church Union, situated about three miles north-west of El Dorado, is developing into a splendid property. Formerly the machinery was run by steam, and was shut down several years ago because it failed to pay under extravagant management. Last fall the present owners had all the works remodeled and rebuilt to run by water power, and everything works to a charm. These changes made an immense saving in running expenses, estimated to be fully $40 per day. They are now taking out very fine ore, the shaft being down about 300 feet, and pays better and better as they advance. It is estimated that the mill, a ten stamper, is now turning out $300 per day on an average. Twenty-one men are employed about the mine.

KERN.

Rich Developments.—*Southern Californian*, June 22: From Mr. Joseph Ginaca and Mr. J. S. Collins, who arrived from the mountains on Monday, we get tidings of the Harley mine, the Consolidated Buunell company, above Kernville. The tunnel has now advanced 150 feet and the developments continue very flattering. The tunnel is completed and a fine head of water has been flowing through it for six weeks past to the lower mill site. The mill building, offices and shops are finished, and the only delay in the placing of the machinery is the want of brick, now being made near the mine. The buildings of Ruby City are being rapidly constructed, and the promise of a town rivaling the prosperous town of Kernville is exciting a good deal of attention. It is expected to have the ten stamps running within a month, with plenty of high grade ore to keep them working an indefinite time. Another company is about to commence work on a continuation of the Harley ledge. Several other ledges have been discovered which remarkably rich croppings, and located. There seems no doubt now that the Harley mine is the main vein and the others are tributary to it. The face of the tunnel is doubtless in the mother lode. It is said to be impossible to find a specimen of any size in the Harley tunnel which will not assay $100 per ton. The work is being prosecuted with great vigor night and day, with from 30 to 40 men. Fifty men are employed in different branches of the enterprise. The Harley company is composed of Chas. Harley, Joseph Ginaca, J. S. Collins, A. O. Collins, John Dunn and L. W. Burr. The mining prospects of Kern county grow in prominence, and with the advancement of the enterprises now inaugurated we should rank the first in the State. The recent locations, with the reports of experienced prospectors, indicate the Ruby mountain to be teeming with mineral wealth.

PLACER.

Dutch Flat Items.—Placer *Argus*, May 24: Mining in and around town is in a flourishing condition, encouraging reports being had from all the claims. On Saturday last a blast of 250 kegs of powder was exploded in the Polar Star claim. The drifts were from 40 to 120 feet in depth, and there were five chambers or T's. The results of the explosion were all that could be expected. Water was turned on Monday morning and washing resumed. The tunnel in the Yankee claim is being pressed forward rapidly, work being continued day and night, and is advancing at the rate of about seven feet daily. The water supply in all the ditches is yet full, and may be expected to continue so for probably a month yet. The intense warm weather of last week, by melting the snow rapidly, will have the effect to diminish the flow earlier than would otherwise have been the case.

Mining Items.—Dutch Flat *Forum*, June 22: The Elmore Hill, Pacific, Dunning, Franklin and Boston claims continue washing. The Lekamp and Summersett claims have just been cleaned up and are now refitting. The Badger and Yankee claims, since the plug in the Badger shaft was cleared out, have been washing ten hours a day. At Gold Run the Indiana Hill and Cedar claims have cleaned up since our last report, and with very satisfactory results. Both of these claims have refitted and are washing again. The Gold Run, North Star and Sachs claims continue washing.

Water Supply.—The ditches of the Cedar creek, South Yuba canal and Minor's ditch companies continue to convey their full capacity of water, and it is supposed that they will do so for at least a month to come.

Green Valley Mines.—The Green Valley mining company is progressing rapidly with the shaft, which is now down 80 feet, and still in quicksand. The water which drove them out at 15 feet is kept under control by a cast iron pump worked by an overshot wheel. They will reach bedrock in about 10 or 15 feet more. The Superintendent, V. Souder, was under the impression that there was another channel further in the hill, so accordingly set men to work running a tunnel in bedrock. He was correct. At 72 feet they ran through the bedrock into a channel of washed gravel which prospects well in fine gold; the depth of this channel is not known yet, but is supposed to have been the main river bed at one time. The Hidden Hill mining company made another partial clean-up last week, the result being over 100 ounces of coarse gold. They have still considerable bedrock to clean, which will pay well. Their dividend this year will be large. The Beardsley claim and Norvey & Co. are still drifting and doing well.

Iowa Hill,—Placer *Herald*, June 24: We learn from ex-supervisor Van Vactor, of Iowa Hill, that quite a number of the hydraulic mines in that district are still running at full blast. The season, to be sure, is getting well advanced, the harvest is nearly over, and yet it is gratifying to know that, with scarcely an exception, those mines in the district which are properly opened and well fitted up, have yielded during the season very encouraging results.

PLUMAS.

Shoo Fly Claims.—Plumas *National*, June 24: Mr. F. Atherton, of Shoo Fly, was in town on Monday, and brought along a nice little sack full of splendid looking dust, the result of a short run in his claims. His ground is first-class and when he gets his improvements made he will develop something very rich.

North Fork Items.—The North Fork company at Dutch Hill, under the admirable management of Mr. S. Scott, are pushing the work in all three claims. Your old townsman, Jno. E. Smith, is foreman of the hydraulic works at Barker hill, and is cutting dirt very rapidly with a fine head of water from the "big pipe." The pump engine at Cumming's hill works well, and large returns are expected from that claim. At Carriboo, all the water that will run through two large giants under a pressure of 320 feet is being utilized, night and day. This claim is fitted up in good shape, and all the gold in the claim will certainly be saved. The boulders in the face of the claim are heavy and necessarily cause slow work. A large derrick will be put into use as soon as the claim is thoroughly opened. Orton, Keep & Co. have struck good looking gravel on the same channel that Keefer is working, near the Deadwood bridge.

Items.—Work on the Pierson blue gravel claims, near Nelson, has been resumed. A shaft will be sunk, and a water wheel will do the hoisting. We will have some good reports from this claim this season. The Smith Bros.' claim at Butterfly has been paying big in coarse gold, and we hear of nuggets weighing $50 having been found lately. The Maxwell company are pressing work on their canal down the river. Our old townsman, John Dow, was in town the other day. John says the East Branch is lovely, and the miners all prosperous and happy. Harry Gregg has sold the Grass ledge, near Cherokee, to the Green Mountain company. He now has a contract for hauling quartz to Dixie mill. The Argentine mill will be put upon the Buchanan mine, near Indian valley. The rock now being crushed in the Crescent mill is paying $20 per ton.

SONOMA.

Important Developments.—Sonoma *Democrat*, June 24: Tuesday, in the shaft of the Taylor Mountain coal mine, two and a half miles from Santa Rosa, important developments were made. Coal in considerable quantity was struck, which far exceeds in quality anything heretofore taken out in this section. A cube of coal about a foot in hight and from eight to 10 inches in width was exhibited this morning, and created quite an excitement in the city. It is a lignite of very superior quality, harder and more compact in structure than that mined at Mount Diablo. The fracture is different from most of the Pacific coast coal which we have seen. Its solidity indicates a less percentage of water, and it will not, in consequence, slake as readily as the Mount Diablo and Coos bay coal. It leaves a light, white ash, and but little of it. It does not leave more than one-third as much ash as the Bellingham bay coal, and is free from the earthy matter which characterizes that coal. In short, it is equal to the very best coal yet found on the Pacific coast, and if it proves on further development to exist in quantity, it is without exception the most important discovery yet made for the future welfare of this city.

Nevada.

WASHOE DISTRICT.

Sierra Nevada.—Gold Hill *News*, June 22: Sinking the new shaft is going steadily forward, the bottom in soft porphyry mixed with a white, calcareous marl, full of sulphurets of iron. There is no flow of water at the bottom, it being caught by the tanks above. On the 1000-ft level the main south drift is steadily advancing, following the east wall of the ledge, the face in clay and porphyry, mixed with light streaks of quartz. Its length is 540 feet. The main north drift on that level is in 450 feet, the face in porphyry and clay. On the 1200-ft level the main south drift has been advanced 250 feet, and the main north drift 150 feet, both in very encouraging ledge material. The main east drift from the 1500-ft station is in a distance of 600 feet, the face in hard porphyry.

Con. Virginia.—Daily yield, 500 tons of ore, keeping the mills running up to their full crushing capacities. The mine is looking well throughout, and promises a rich yield of good ore for a long time yet to come. The west drift from the C. & C. shaft has been advanced for the past two weeks at the unprecedented speed of ten feet daily, and if no unforeseen circumstance prevents, will connect with the drift going east by next Saturday. The north drift on the 1700-ft level is steadily advancing, the great heat allowing of but slow progress. Sinking the C. & C. shaft is making good progress. The frame of the new amalgamating mill is up and the other portions of the work well advanced.

Ophir.—Daily yield, 300 tons of ore. The ore is of good quality and is being reduced at the mill as fast as it is extracted. The ore stopes on the 1600-ft level are showing splendidly, both north and south. The north drift on that level completed the connection day before yesterday with the north winze from the 1465-ft level, thus affording a much better circulation of air, and greatly aiding the operations on the entire 1600-ft level. The face of the east cross-cut on the 1100-ft level is still in quartz and low grade ore. About 200 tons of ore is being hoisted daily for the California mine. The hydraulic works for elevating the ore to the dump at the railroad is working splendidly.

North Con. Virginia.—The excavations for the heavy foundations of the new pumping machinery are completed, and a large force of workmen are busy putting in the stone foundations. A portion of the pumping machinery is already on the ground ready for erection. Cutting out for the bob pits and water tanks in the shaft is going ahead rapidly.

Bullion.—The north drift on the 2000-ft level has been greatly delayed during the past week by the stoppage of the Imperial pumps. However, the work will be resumed in the face of the main drift in a day or two more, when it is confidently expected that the main ledge will be cut. On the 1700-ft level the upraise is making good progress with a fair prospect of soon connecting with the winze from the 1400-ft level, as the workmen can now distinctly hear the sound of each other's work.

Gould & Ouray.—Repairing the main shaft is making better progress than for some time past. The foundations for the new pumping machinery are being forwarded at a very rapid rate; in fact the entire preparation for the erection of the machinery is now in an advanced state, and its completion is but a matter of a very short time. The boilers which are to furnish the steam for driving the exhaust air mill at the mouth of the old lower tunnel are in place, and everything will be ready to start up the entire machinery in a very few days.

Rock Island.—A day or two ago a heavy flow of water was encountered in the face of the main west drift on the 850-ft level, partially flooding that station and causing a temporary suspension of the work on that level. At the time of striking the flow of water the face of the drift was in a much livelier and better formation, carrying streaks of finer quartz and clay than has been before encountered in that direction.

California.—Daily yield, 350 tons of ore. The ore is of the usual rich quality, and the ore breaste continue to open up splendidly. Beyond this there is but little to be said of the mine. The yield of bullion for the month of June will reach, if it does not exceed, that of May. The erection of the new 80-stamp mill is going rapidly forward and it will soon be ready for the reduction of ore, and when completed will add at least 350 tons more per day to the reducing capacities of the Consolidated Virginia and California mines.

Savage.—The hoisting engines are in place almost ready for starting up. The coping stone for the sole platee of the huge pumping engine are in place and are being dressed ready for the reception of the engine itself. The huge driving wheel is being placed in position and it will be now but a very short time before the whole will be ready for work.

Mexican.—The connecting of the north drift on the 1600-ft level of the Ophir with the bottom of the north winze from the 1465-ft level has greatly benefited the circulation of air in the Mexican drifts, and will now permit of the immediate commencement of crosscuttiug the ore vein at different points on the 1465-ft level.

West Belcher.—Work in all the prospecting drifts steadily advancing. The ore dump will be completed and ready for the reception of ore in about two weeks' time. As soon as that is finished, shipping and milling ore will be commenced.

Imperial.—Daily yield, 30 tons of ore, of a good quality. The north winze on the 2000-ft level is down 86 feet, the bottom still in rich ore. Sinking the south winze on the same level, to complete the air connection with the Yellow Jacket, is making the usual fair rate of speed.

Belcher.—Daily yield, 400 tons of ore. The ore stopes going south on the 1500 and 1200-ft levels are still showing finely. The erection of the new pumping machinery is being rapidly pressed toward completion. A large number of mechanics are employed on every portion of the work, and the site of the air shaft presents a lively, determined and business-like look. The shaft will be completed ready to commence the hoisting of water from the 1700-ft level by the time the pumping machinery is completed.

Hale & Norcross.—The yards surrounding the works present a crowded, busy aspect. On every hand are piles of huge castings, pump columns and other portions of the new machinery now in course of erection. The foundation for the new pumping engine is ready for the coping stone, and the erection of the entire machinery is being advanced at a very rapid rate. The clearing of the shaft of the old pumps and columns and the enlargement of the tank stations and bob-pits is going steadily ahead.

Yellow Jacket.—Sinking the north winze below the 1040-ft level is making good progress. Driving the south cross-cut on the same level is going steadily forward, the face still in porphyry mixed with quartz.

Crown Point.—The main south drift on the 1700-ft level is being pushed ahead, the face still in quartz and low grade ore. The production of ore has been cut down to just enough to keep one mill, the Rhode Island, employed.

Superior.—The new machinery being completed, with a good house over the shaft and works, sinking is resumed in the shaft, which is 110 feet deep. Considerable water has to be raised, but it is easily handled.

Lady Washington.—The additional pump, for the working below the 200-ft level, has arrived, and will be put in immediately.

North Careon.—The introduction of water by a mile or so of pipes laid from the flume of the Virginia and Gold Hill water company being completed, the new works have started in full operation to-day and work is resumed in the mine.

Twin Peaks.—The splendid vein of regular Comstock ore found at the 75-ft level is showing better and more extensive than at last report. It gives good assays and bids fair to develop into a bonanza.

Justice.—Daily yield, 60 tons of ore. The ore is of a good quality, and the stopes at all points are showing splendidly. The mills are kept running up to their full crushing capacity. The face of the south drift on the 800-foot level is showing finely, also, the north drift on the same level. The north drift on the 1000-ft level has encountered some very fine quartz and ore.

Overman.—Daily yield, 30 tons of ore. The ore stopes on the 900 are showing somewhat better than for some time past. The main west drift on the 1200-ft level has penetrated to the west side of the ledge, and two drifts have now been started, one north and the other south, to determine the value of the vein.

Chollar Potosi.—Daily yield, 120 tons of ore. Sinking the main incline is making good progress. Sinking the new combination shaft is also making excellent progress. The erection of the huge pumping engine for this shaft is going steadily forward. The hoisting engines are now nearly ready to start up.

Julia.—The flow of water from the 1800-ft level still continues quite strong and the water very hot. Both the main south and west drifts on that level are steadily advancing, the face of both showing fine quartz and low grade ore.

Silver Hill.—The recent flow of water is drained from the main incline, and the sinking is again making good progress.

Caledonia.—The flow of water is still strong, but the pumps are gradually lowering it; proving that the supply is slowly decreasing.

Ward.—Sinking the main shaft is making splendid progress. A set of timbers, making five feet, is added each day to the depth. The erection of the foundation for the new hoisting works is going rapidly ahead.

Prospect.—Sinking the shaft is going ahead at the rate of three feet per day.

Belcher.—Small streaks of favorable looking quartz are met with in the face of the west drift.

Nevada.—Face of the main west drift continues in low grade ore, with streaks of porphyry and clay.

South Consolidated Virginia.—West drift showing considerable good ore and very encouraging prospects.

Dayton.—Sinking the main shaft has been resumed. The new lift pump is working splendidly.

Vivian.—Yielding the usual amount of good milling ore from the old stopes and breasts, with a fair contribution from the 1200-ft level.

Lady Bryan.—The excavations for the new machinery are steadily progressing.

Consolidated Justice.—Good ore is being taken out from the upraise for milling, and the face of the main north drift is showing finely.

Alta.—The new pumping machinery will, it is confidently expected, be ready for full service in a very few days.

Brooks.—Preparations for the erection of the new and more powerful pumping machinery have been commenced.

Oregon.

Virtue Mine.—*Bedrock Democrat*, June 14: On last Wednesday another clean-up was made at the Virtue mine mill of $10,000 and the bullion shipped to San Francisco. Superintendent Hyde is working this mine very economically and making good returns for the owners. The new hoisting works building is about completed and reflects credit on the workmen, Messrs. Crabill & Sprague; the furnace is up, and the boilers, of the latest and most improved pattern, are set and ready for operation, and the balance of the machinery will soon be put in place, after which we expect to hear of large and quick yields from this mine. The mine is now of such a nature that there can be none of the stock bought in the market at San Francisco. This speaks well for the Virtue mine.

Foundry.—It is with pleasure that we announce the fact that Superintendent M. Hyde, of the Virtue mine, intends to erect an iron foundry in our city, where all castings necessary for quartz mills and other machinery can be procured. He has all the machinery and material necessary for the business, and expects to have the foundry in operation early in July. He has an experienced foundryman engaged, and intends to do good work and furnish first-class castings.

Idaho.

Local Mining Notes.—Idaho *Avalanche*, June 24: We have nothing new to report this week in connection with the situation of mining affairs. The general impression is that one or two of the mines hitherto remaining idle will start up in July. The great point with the companies is to wipe out as much of the indebtedness as possible and reduce the bulk of the claims against the mines, so that as few barriers as possible will exist in the way of resuming work. We earnestly trust that all parties interested will see the necessity of making every sacrifice possible consistent with the public good. It may be many long months before these suits are decided, and in the meantime much valuable time is being frittered, summer is passing away and the season for getting supplies to the mines for the fall and winter campaign will soon be at an end. The salvation of the camp depends upon the resumption of work this summer, and to this end we appeal to every claimant to make sacrifices now and take his chances for making up losses out of future operations.

(Continued from Page 2.)

one think I am forgetting the farms, those gems of

Lillie Farms Well Tilled

That not only dot the valley hut cover it with closest links of verdure. We can have no quarrel with the religion of these farmers es we look upon the work of their hands and see that industry snd economy are blessed here as they deserve to be everywhere. Crops are not far advanced, some just out of the grounds and the tallest grain only a few inches high; but these are the last days of May, and they say the season is not forward as usual. Pasture grass ia rank and rich; good hutter on our table, and all food good and cheep both at Ogden and Salt Lake.

We visited the tabernacle, and were pleased to find the inside so bright and cheerfnl. Wreaths and immense hanging haskets and vases are greefully hung in the wide dome, and in the central sisle is a large marhle basin ornamented with crouching statues, and here, when Sabbath days are warm, ths fonutain pleys for the cooling of the people. Twelve thousend can be seated here, and for exit 20 doors, nine feet wide, open outward. The tabernacle is only used for summer worship, as there is no heating apparatns.

And how shell I describe the organ? It is immense and heautifnl, larger than many a modest cottege I have known, and it tekes four men to hlow it. Our guide said it is the largest organ in the world and thoroughly Mormon in design and execution, wholly the product of home talent and home material. This guide or janitor of the holy places was quite an elderly man, nimble and talka'ive. As we asked after the health of Brigham, he straightened himself and answered with enthusiasm, "I am happy to say, sir, that

Our Presidenl

Is again in excellent hesith and is making a trip in southern Utah. He is 75 years old today, and looks ahout 60. Why, sir, he walks off as straight and strong as I do," and upon this, away he went leading the way to the tabernacle, and put us all to shame, for his dapper legs sped along over the walk as though the springs had been newly oiled and meant to run forever. We afterward met him on the street, outpecing everybody, and could not help laughing at the pains he took to impress us with the spirit and extreme youthfulness of

Veteran Mormons.

Of course we were too polite to ask him how many wives he has.

We went into the art gallery. Well stocked with the usual pictures and excellent stereoscopes, at San Francisco prices.

This day (June 1st,) was not only Brigham's birthday, but monthly fast day with the Mormons, and services were held in all the werd churches. We went into the one near Brigham's house and saw two of his wives, rather heavy, ordinary lookiug women, with ruffled gowns and stylish hats. The service was condncted hy the President's brotber, Joseph Young, and the prayer wes very fervent, after the ancient Methodist style in manner and expression.

Nothing could exceed the zeal with whicb he demanded blessings for the saints, and especially for Bro. Brigbam. "O, Lord, hless him in his hones and in his flesh; in his head and in his body, and in his stomach; bless him, O, Lord, in all the functions of his tahernacle." This was twice repeated like a lesson, and is correctly reported. If prayer can hold him together, Bro. B. will last a long time yet.

The exhortation was lively and reproachfnl, for the saints had not come up gladly to the house of the Lord, and the few who were present took meekly the censure that should have fallen upon the absent. There were present only 13 women, five men, including the speaker, and a few children.

A man with a loud clear voice played the organ and "carried the tune" at such a rate we could hear no voice hut his, although some of the women moved their lips as if faintly helping.

As our time was limited, we could not qnite finish the usuel course of sight-seeing, but returned well satisfied to Ogden on a special train that took up a director and the president of the road to inspect the break in Weber canon.

The Engineer.

A Railroad to go Across the Eastern Continent.

The great feat accomplished hy the United States in connecting the Atlantic and Pacific oceans by a railroad across the United States is stimulating enterprise in Europe, and it is now proposed—indeed, the plan is matured—to connect the Atlantic and Pacific oceans by a railroad through Central Asia. At a conference of the geographers, recently held, Col. Bagdanowitz explained some of the details of the road, which, it is expected, will overcome one of the greatest obstacles to the extension of civilization—namely, the separation of a large part of Asia from Europe by vast deserts, in which no means of transit but a railroad could he of any use. A railroad alone can develop the resources through which it would pass. The mineral wealth of Siberia and the Ural mountains is well known. The exploration and mining of their region would be encouraged and their resources developed. It is proposed that the road shall start from Nijnii Novgorod, in Russia, where now is the extreme eastern station in the network of European railroads. It will run along the Volga, the Kama to Ekaterinhurg, on the Asiatic side of the Ural mountains; then enter Asia, proceed in the direction of Truemen and Gmsk, at the Irtish, across the river, proceed by the way of Kainsk to Tomsk on the Tem, a branch of the Obi, and across the river. Tomsk is the principal center of commerce of Western Siheria; thence the road will run directly to Irkutsk, at Lake Baikal; thence the road is to pass to the frontier of Chins, and thence it is no longer an exclusively Russian hut an international undertaking. The first section, from Nijnii Novgorod to Tomsk, runs on perfectly level ground (the so-called steppes), eimilar to our prairies. In the second section, from Tomsk to Lake Baikal, the country is rolling and interspersed with rivers end streams; but the greatest hight is only 3,500 feet, and the largest rivers are but very moderate width and depth. The only serious difficnlties, as we have said, lie at the Chinese frontier, and they are inferior to those overcome in the Rocky mountains and the Sierra Nevada by the American engineers. Russia has raised in 15 years more than $1,000,000,000 with which to construct 15,000 miles of railroad, and can easily find $300,000,000 or $400,000,000 to construct a line of such value to all the civilized world.—*Iron and Metal Review.*

The Flooding of the Sahara.—Mr. M'Kenzie, with a party of ten, will leave London in the heginning of next month for Western Africa, for the purpose of meking the necessary surveys preliminary to turning the waters of the Atlantic into the great sink or basin which extends from the valley of the Bella to Timbnctoo. He is very confident that a canal eight or nine miles long will accomplish the great operation which he contemplates, and hring the mysterious capital of equatorial Africa within six or seven days' sail of the Thames. If he snceeds, there can be no doubt as to the immense development of trade that will ensue; aod to some extent the condition of the natives will doubtless be ameliorated, although the introduction of Enropean civilization has not always proved an unalloyed good to the negro races. And even if the main project fail, there can be little difficulty in estahlishing a good land route, with a base at some of the points accessible to shipping; for the climate at this point, on the parallel of the Canary islands, unlike that of the present commercial depots, suits European constitutions well enough.

A New Drawbridge.—A recently patented drawbridge, designed to afford perfect facilities for crossing navigable streams without impeding navigation, is the invention of Lieut.-Com. H. H. Gorringe, U.S.N., of Washington. The bridge is composed of a number of floats, each pivoted or hinged at one end, the other end being moored to anchor piles hy means of a chain passing over a windlass on the swinging end of the draw or leaf. By revolving the windlass the draw or leaf may he swung clear, so es to afford vessels a single passage ns wide as the length of the draw; a reverse motion of the windlass closing the draw and opening the roadway. Since this operation may be performed with either or all of the floats, vessels may pass trough the bridge at any point selected, or the whole width of the river may he thrown open to navigation. The inventor, among other things, claims "cheapness aud facility of construction, greater security than ordinary bridges, freedom from obstruction to navigation, and from risk of damage hy freshets, moving ice end other floating hodies "

The Pneumatic Railway in Paris.—The *poste atmospherique*, for the dispatch of messeges between Paris and Versailles, has just been completed, and is nearly 13½ miles in length. The tubes, which are made of bress, are 13 feet long, three aud a half inches in diameter and two-fifths inch thick, are laid at a depth of eight feet from the snrface, on a flooring of wood, and are pitched both inside and out. The route outside the walls of Paris is elong the highway No. 10. Inside the city they are suspended in the sewers. At the Bridge de l'Alma the tube hifurcates, one portion passing to the Palace de l'Elysee, the other to the Central telegraph office. At Versailles the terminus is in the new hall now heing huilt on the left wing of the palace.

The East River Bridge.—The question of continuing work on the East river bridge will shortly he argued hefore the United States Circuit Conrt in New York city. A lessee of one of the United States bonded warehonses, sitnated on the river side above the piers of the bridge has presented a petition for an injunction, restraining the mayors of New York and Brooklyn, tbe hridge company and others interested, from building the bridge "over the East river at the hight of 135 feet above mean high water, or at any other hight that shall obstruct, impair or injuriously modify the navigation of said river." The petitioner declares that the structure would irreparahly injure his husiness.

Multiple Drilling Machine.—The *Engineer* shows a multiple drilling machine, especially adapted for drilling plates in position on straight or hog-backed girders. The drills may he adjusted at any distance apart, and to suit varying pitches of holes, and while they may be brought together within three and three-fourths inches, the driving wheels, by passing each other upon different levels, may be nearly six inches in diameter. The feed is automatic or independent at will.

Results of Captain Eads' Work.

Miller, Dolhonde & Co., of New Orleans, say: We have some intereating and valuable news to impart to our friends and correspondents, and which will benefit also the general interests of this city and those of the Mississippi valley. Captain Eads' jetties are improving daily, and this week a large steamship, drawing 14½ feet, came through them (the Sonth pass) without meeting any impediments, and before winter, from present indications, that route will be the favorite and shortest one to and from the ocean for the port of New Orleans, and will give all the weter necessary for the largest vessels. The public news from Washington to-day is thet parties from New York represent the feeling there regarding the jetties as entirely confident. Commodore Garriaon, who has heen watching their progress with a view of placing a line of steamships between New Orleans and Brazil, hes made no halt in his preperations. Dom Pedro has heen approached, and there are assurances thet his government will pay half of what may be necessary to carry the mails, and movements are afoot to secure a contingent contract from our government for carrying the mail. At present there is ample tonnage here for cotton, but on account of insufficient water yet at the mouth of the river, vessels cannot take all the freight they can carry to load deep with, such as grain and provisions, hut in a few months our Western friends will have no cause to complain, and will be realizing the full benefits of this port and market, which will prove in the near future the best in this country for the distribution of cotton, provisions, breadstuffs and Western produce genera ly. This city will have different railroads running to Texas within this year —and, with the above all accomplished, New Orleaus will offer the hest field for capitalists and manufacturers; property and business will increase materially. Thus is the public benefited by the labors of the skillful engineer.

Another Ship Canal Projeot.—A import ant water cut-off is suggested by the leading commercial journals of Europe at the present time. It is a ship canal from Bayonne, in the Bay of Biscay, through Toulonse to Ayde, which is two miles from the Mediterranean. This improvement, if constructed, would make almost a bee line from Plymouth, England, to Malta, and save the long run down the coasts of Portngal and Spain. This at present amounts to some hundreds of miles. When all the advantages of the projected improvement ere carefully considered, its paternity can readily he fixed. It is England that would profit most from such a shortening of the road to India. With a ship canal across the southern end of France, vessels could leave Liverpool or any other English port, pass readily and quickly into the Mediterranean, and from that sea by the Suez canal into the Arahian sea, and thus reach her possessions in India.—*Times.*

Monolithic Aqueduct.—The aqueduct from La Vanne to Paris, 135 miles long, is nearly entirely of *beton Coignet*. The Fontainebleau section of 37 miles, over dry quicksand, is composed of a series of arches, some of them 50 feet high. Eight or 10 bridges of spans from 75 to 90 feet, are also of *beton*. For foundations and gravel walls, the composition is send two and one-half, gravel two and one-helf, hydraulic lime one, Portlend cement one-fourth. For pillars, abutments, etc., sand four, hydraulic lime one. The other portions, sand four, hydraulic lime one, Portland cement one-fourth to one-half.

Engineers in Her Majesty's Service.—The report of the parlimentary committee into the position of the engineers in her Majesty's service has heen issued. Its chief recommendations are thet engineers shall he executive officers, chief inspectors and inspectors to rank with captains, chief engineers with commanders, and engineers with lieutenants. A considerahle increase of pay, compulsory retirement, and appointment of chief engineers to ships under a commander. The recommendations will greatly add to the nnmber of that class, and therehy facilitate promotion.

The New Silver Bill.—The new silver hill introduced hy Senator Christiancy as a suhstitute for the Fiuance Committee's silver hill, now pending in the S nete, contains the following es its main features: Silver coins of 25 and 50 cents to be made legal tenders for $10, and smaller silver coins for the amonnt of $5. A new silver dollar of double the value of the half dollar is to be coined and made a legal tender for amounts not exceeding $10. Silver bnllion, in bars, stamped by the mints with their tare, weight and finenesa, and also existing trade dollars, are to be made legal tender for the payment of all debts, according to their market valne as compared with the present gold standard. The market value of silver is to be determined and publicly announced from two to three days before the first of each month by a board, consisting of the Secretary of the Treasnry, the Director of the Mints and the United Statea Treasnrer. The bill also authorizea the mints to issue quartera, payahle in the minta' silver bara, and provides that silver coin shall be exohangeable for United States notes at their nominal valne, which shall thereupon be permanently retired and made part of the sinking fund. It is also provided thnt the Treasury maintain silver bullion at its market valne for silver dollara, United Statea notes or gold coin, or may he purchased hy means of the present hullion fund.

The St. Lawrence Mine.

The El Dorado *Republican* says: It is hardly necessary to say that our mines have been in disrepute for years. The reason for this we have repeatedly explained. One reason is lack of energy and capital on the part of resident holders of the mines to open them. Another is the predominant disposition of those interested in mining property to cry down all claims in which they are not directly interested. But probably the chief reason of our mines heing in bed repute is the successive failures, after the expenditure of large sums of money, although in nearly every case these failures can be traced to incompetency, extravagance, or downright thievery. Mines that have paid hundreds of thousands, and even millions, over working expenses, are closed down for went of means to continue operations when a bad piece is struck, hecause the money has all heen paid in dividends, that is, where it has not all been squendered hy the officers in stock and fast living, and before satisfactory arrengements can he made to continue the work, the mine gets into bad repute and is sold ont for a song. There are half a dozen mines in the county, which, if properly managed, would prove to be as good as any in the State, and among the best of those are the St. Lawrence and Pacific. The time is not distant when these mines will get into the right hands, and the reputation of El Dorado county mines be redeemed. We intend mentioning some of these from time to time, and commence with, hecause it has heen the first in the list to he so redeemed,

The St. Lawrence Mine.

On Friday lest we visited this mine for the first time in about two years. Considering that the works had been closed down for ahout a year, we found everything in much better condition than any one could reasonahly expect, and under the present personal superintendence of H. Rosewan, a man of great experience, good judgment and quick perception, everything is rapidly being put in the best possihle shepe for steady and permanent work. The shaft of the mine is down, on an incline, to the depth of 800 feet, the actnal perpendicular depth beirg about 550 feet. It is a douhle shaft, with double track for care, and a ladder way outside, all timbered in the most substantial manner. The mine hes never heen prospected, the ore heretofore worked hsing nearly all taken from the main shaft, which paid from $8 to $25 per ton. The last work done in the mine hefore it was shut down developed ore tbat would go as high as $75 to $100 per ton. This was at the 800-foot level. Under the new management—A. Mierson and Thomas Alderson, of this city, having the controlling interest in it, men who have heretofore been eminently successful in their undertakings, and whose integrity is unimpeachahle—the shaft is to be extended 200 feet as rapidly as possible. Should the ledge average one-half as well for that distance as it does where work was left off a yeer or more ago, the company will be enabled to pay a dividend or two out of the rock taken from the shaft alone. It is the intention, when this work is accomplished, to hegin sinking a perpendicular shaft nearly due east from the present works and drift hack to the old works, giving them between 600 and 700 feet of solid ore to work through, and in the meantime the old works can be thoroughly prospected and worked out. There can he no doubt that this is one of the hest mines in the State; the parties interested in it, however, are not anxious to have its merits spread before the world at present, preferring to wait and let actual results under economicel and honest management speak for the mine. There is no doubt but that we have got to attein greater depth on sll our quartz mines hefore anything like permanent success can be attained. The St. Lawrence is down the deepest of any mine in the county, and the extent and character of the rook at the lowest level warranta the belief that at a depth 200 feet greeter the mine will prove a reel bonanza.

The mill aud hoisting works are of the very best end most approved mining mechinery. The mill contains 30 stamps, and all of the latest improvements for saving the gold. There is also a first-class saw mill atteched for getting out timbers for the mine. This machinery, together with the buildings as they now stand, cost between $70,000 and $80,000, and conld not be replaced for much less. The works will oe in full operation hefore Octoher, when a force of from 75 to 100 men will be required in various departments, mnkiug St. Lawrenceburg one of the liveliest camps in the county, and when the shipments of treesure fairly begin, trom their magnitude it will he the most noted.

The Reno *Gazette* of Jnne 6th says: A strike waa made in the Bishop mine yesterday at Pyramid lake. Samples of the ore were shown us this afternoon, and they show very well. The noticeahle change is from the yellow chloride on the anrface to the green chloride and copper stain. Old miners will understand the importance of thia change, and competent judges estimate that this ore will assay at least 50 per cent. more than tbe original ledge material. This new ore hody is at least four feet in width, and if these mines keep on improving we will cease talking of ore and confine ourselves to bullion.

A Black hills miner, named J. C. Dodge, was attacked a few daya since by Indians and defended himself till all his cartridges but one had been exhauated and he was about to he taken prisoner, when with it he hlew out his hrains.—*Territorial Enterprise.*

A Prosperous Era in Quartz Mining in Calaveras County.

The Calaveras *Chronicle* says: There has never been so prosperous an era in the quartz mining interests of this county, since the inception of that industry, as at present. There is more life, more energy and activity being evinced than have ever before characterized mining operations, and the result is a very marked and flattering improvement of the condition of mining affairs generally. No other county in the State is advancing so rapidly in the way of mining development as this, and if anything can be judged from the progress being made, the day is not far distant when Calaveras will take the first place in the list of mining counties. In fact, there are a greater number of quartz ledges in process of development in Calaveras to-day than in any other county on the coast, while new enterprises are being constantly undertaken and the field of operations enlarged. The truth of the whole matter is that this county offers better inducements for investment in quartz mining ventures than any other section of the mineral belt, and its advantages are becoming apparent and being appreciated. The whole central portion of the county, from the Mokelumne on the north to the Stanislaus on the south—embracing an area fully 30 miles in length by 12 in width—is literally ribbed with gold bearing veins. The extent of mining country is so large, so much greater than that contained in any other section of equal area, that it is as yet only partially prospected, although there is no lack of paying, permanent, fully developed mines to prove the general good character of the ledges. Within the past year the attention of mining men has been directed to these advantages Calaveras possesses as a favorable locality for operations, and it is to the influx of capital that has followed that the rapid advancement of development is attributable. It is no exaggeration to say that more labor and money have been expended upon quartz lodes and in building mills in this county during the past 12 months than for five years previous, while it is equally true that the great degree of success achieved will stimulate increased activity in the future. For some reason capital fought shy of Calaveras until within the last year or two, and it required the conclusive proof of development, together with a final though tardy appreciation of the fact that for extent, number and richness of its lodes this county stands unrivaled, to induce the co-operation of moneyed men. It used to be said that "Calaveras ledges were all barren," and although the declaration was as false as it was absurd, it exerted an evil influence that retarded development and created a prejudice against the county so deep seated that nothing short of absolute proof to the contrary could up-root it.

The activity and energy at present being displayed, however, together with the flattering prospects for the future, are rapidly making amends for the delinquencies of the past and playing an important part in placing Calaveras where it belongs—at the head of the rank of mining counties. Work is being actively pushed forward in all the principal districts. New ledges are being prospected, abandoned mines reclaimed, mills erected and in fact all the labor consequent upon successful quartz mining is being vigorously prosecuted. The shipments of bullion are steadily increasing, and although the product has yet by no means reached its maximum, it compares favorably with that of any other county and is five times in excess of what it was two years ago.

The improved condition of the quartz mining interest is especially true relative to the northern and eastern portions of the county. In the vicinity of Mokelumne Hill and to the eastward, embracing Glencoe and West Point districts, an unusual degree of activity is observable and gratifying success is being met with.

We give the names of a few of the principal mines in those districts that have within a comparatively short time passed into the hands of capitalists, simply for the purpose of showing with what eagerness men of means are investing in this county: The Enterprise Consolidated and Josephine, at West Point; the San Bruno, Grasshopper and Glencoe Consolidated, at Mosquito; the Quaker City, at Chile Junction; the Lamphear, in Spring gulch, and the Boston, near Buckeye. All of the mines mentioned have lately passed into the hands of incorporated companies and are being systematically worked upon an extensive scale. They are all supplied or being furnished with the machinery necessary for their complete development, and are showing the most favorable indications of proving permanently productive mines. The Gwin, the representative mine of the county, is paying handsome monthly dividends, and other mines still in first hands are also proving largely remunerative. We repeat that the country has never before experienced so prosperous an era in quartz mining, and that the promise of the future is even more encouraging than the realization of the present.

Improved Zinc White.—According to the Austrian chemical society, M. Orr produces a very beautiful zinc white by the following process: Sulphuret of raw barium is washed, and the liquid obtained is mixed with equal quantities of chloride and sulphate of zinc. The precipitate is collected, pressed and dried. It is then heated on a hearth, and, while hot, is thrown into cold water. This last treatment produces a mass of great density, and the material, after washing and grinding, is of great purity and whiteness.—*Scientific American.*

Useful Information.

Testing Oils.

It is very desirable to those in the business to possess the means of testing the oils they buy and sell as lubricants for machinery, and to ascertain whether the same be pure or mixed with some cheaper oil. Unfortunately the simpler tests are few, and such as they are cannot be said to be greatly superior to the judgment derived from the look, taste and smell of the article examined. Various devices are extant to test the lubricating properties of oils, that is, their power of reducing friction to a minimum, but beside being expensive their successful use requires certain knowledge and experience not generally possessed by the dealer. One of these devices consists of a cap over a journal or bearing, and on that is a weighted lever like a scale beam, which presses with a certain weight on the revolving journal. In this cap is a recess in which is inserted the bulb of a thermometer. The ratio between the weight and the heat developed by a certain number of revolutions, with a definite quantity of the oil on the bearing, is an index to the value of the oil.

Other machines are constructed on the same general principle, viz., the generation of friction and the measurement of the heat produced while being supplied with oil. However, in practice we are generally very well able to judge of the lubricating value of an oil by its appearance on a piece of glass, noting its viscosity or cohesion of its particles and its apparent resistance to the touch, and its feeling of smoothness. This is what we call "body" in an oil. As we said, the practical tests as to the purity of an oil are few. For instance, with the petroleums, they all mix in any proportion and the most rigid chemical test would fail to show the admixture of another of the species. We may, however, easily prove the admixture of animal or vegetable or resin oils in petroleum by a very simple test. This is simply by an alkali, and the most ready and convenient is ammonia, or, as commonly called, spirits of ammonia. If lard, whale, or fish oils or resin be present, and a little of the ammonia added, there will be a partial saponification of the mass, which will have the appearance of cream, and in the case of resin the mass will nearly solidify or have the consistence of butter.

To test for foreign or suspended impurities in an oil it is a good plan to take a piece of clean blotting paper and put on it a few drops. The bibulous paper will then absorb the oil and the impurities or particles of sand or free carbon, or whatever they may be, will be left on the surface. These may be seen with the naked eye or a magnifying glass of even feeble power. —*American Manufacturer.*

How to Clean Kid Gloves, etc.—"Laws of Life" gives the following recipe for cleaning kid gloves, etc.: Get gasoline, which can be procured at the drug store at 40 cents a gallon. Lay your glove on a long, flat bottomed dish like a common vegetable dish, and cover it with the gasoline; rub soiled spots with a clean white rag, squeeze, not wring it, with your hand as dry as you can, lay it on clean old muslin, take one corner of the muslin and rub the fingers and thumb out smooth, rub soiled spots if any remain, inflate by blowing into it, then pin on a cloth out-of doors to dry. The process should be gone through very quickly, as the glove is injured by remaining in the liquid; not more than 10 minutes being occupied in cleaning the pair of gloves. This will be found excellent economy. Clean cashmere lace by dipping or rinsing it in the gasoline, being careful not to rub so as to get the meshes and figures out of place. Dry it out of doors, then lay it on a cloth in good form, and place between the leaves of a book to press. If it is desired to whiten unbleached Valenciennes lace, lay it on a cloth and cover with magnesia or baby powder, leaving it over night. Blow off the dust and repeat if need be.

To Remove Spots from Carpets.—Mix half an ox's gall with one quart of water; wet and rub the spot with this. Then, with a clean scrubbing-brush, warm water, and soap, scrub the spot well, and wet and half wring a clean floor-cloth in clean cold water and rub the soap and gall out of the carpet; rub the spot with a dry, coarse cloth until it is nearly dry, then pin a piece of thin brown paper over the spot, to prevent the dust from settling on it while wet, and leave it to become perfectly dry. If the spot occurs near the side or end of the carpet, undo a few tacks and slip under the spot a thickly folded coarse towel to absorb the water which runs through, and prevent the wet carpet from lying in the dust; after washing the spot, remove the folded cloth and slip in its place a piece of brown paper, and leave this till the carpet is perfectly dry.

It is said that leather may be affixed to metal so that it will split before it can be torn off, by means of the following composition: A quantity of nut-galls reduced to a powder is dissolved in eight parts of distilled water, and after remaining for six hours is filtered through a cloth. This decoction is to be applied to the leather. Then take a similar quantity of water and add to it one part (by weight) of glue, which is to be held in solution for 24 hours, and then applied to the metals, which should first be roughened and heated. The leather is then laid upon the metal and dried under pressure.

Paper Blankets.—A suggestion, says the *British Mail*, that has frequently been made in the newspapers that a sheet of brown paper used as a bed covering between or on top of other wrappers, will impart additional warmth and be as serviceable as a blanket, has been acted upon by a Mr. Loder, who has taken out a patent for paper blankets. They are perforated at distances of about four inches, in order to promote the ventilation which the density of the brown paper material interrupts. These paper blankets will be a great boon to the poor, and as they are clean, economical and ready for use in any emergency, they will be acceptable in hospitals, for the supply of which Mr. Loder has already obtained two or three contracts. In schools and private families their cleanliness and comfort will bring them into much service, and in hot climates, where blankets are liable to be infested with insects, these paper coverlets will be found to be very desirable.

Adulteration of Sugar.—A case of adulteration of sugar, recently tried at Marseilles, has excited a good deal of attention there. Fraud of the kind had long been suspected by the customs officials, and the cargo of sugar in the present case was from Reunion. The Reunion sugars of brown hue are very rich in saccharine matter, and well suited for mixture. It was first thought that the sugar had been mixed with pounded bricks and sand, but on analysis the added matter was found to be slag (a sort of opaque glass formed in the working of various metals, or vitreous lava from volcanoes) along with sand, and an economy of 12 fr. per 100 kilos. was anticipated. The slag has a bright granular fracture, so that it makes a very good imitation of sugar. The sand was added to make up the weight.

Fire Proof Suit.—An extraordinary fire-proof suit, invented by a Swede named Oestberg, was recently exhibited in Vienna, in the presence of the Emperor William and several other distinguished personages. One Captain Ahlstrum, clothed in the suit, walked into an immense fire, prepared for the occasion, of wood saturated with petroleum. The account says: "The heat of the fire was so intense that no one else could approach within eighty paces without being burnt or scorched, but the Captain walked around in the glowing pile perfectly undisturbed, leaning on the burning wood, and finally seated himself on the coals." After remaining in the fire a quarter of an hour, the salamander came out perfectly unharmed, and without "the smell of fire upon his garments."

To detect leaks in gas pipes, apply soap suds to the suspected leaky joint. The formation of bubbles will show any escape. This is safer than trying the joint with a lighted match. If the leak occur in the branch of a bracket or chandelier, it is repaired by soldering with plumber's fine solder; if it be a very small one, heat the piece first with a spirit lamp, and fill the aperture with cement.

A Good way to fasten screws that have become loose, is to fill up the holes tightly with cork. Screws and irons so secured will remain perfectly tight, as when put into new wood.

Good Health.

Position in Sleeping.

It is better to go to sleep on the right side, for then the stomach is very much in the position of a bottle turned upside down, and the contents are aided in passing out by gravitation. If one goes to sleep on the left side, the operation of emptying the stomach of its contents is more like drawing water from a well. After going to sleep, let the body take its own position. If you sleep on your back, especially soon after a hearty meal, the weight of the digestive organs, and that of the food, resting on the great vein of the body, near the back bone, compresses it, and arrests the flow of the blood more or less. If the arrest is partial, the sleep is disturbed, and there are unpleasant dreams. If the meal has been recent or hearty, the arrest is more decided, and the various sensations, such as falling over a precipice, or the pursuit of a wild beast, or other impending danger, and the desperate effort to get rid of it arouses us; that sends on the stagnating blood, and we wake in a fright, or trembling, or perspiration, or feeling of exhaustion, according to the degree of stagnation and the length and strength of the effort made to escape danger. But when we are not able to escape the danger, when we do fall over the precipice, when the tumbling building crushes us, what then? *That is death!* That is the death of those of whom it is said, when found lifeless in their bed in the morning: "They were as well as they ever were the day before," and often it is added, and *ate heartier than common!* This last, as a frequent cause of death to those who have gone to bed well to wake no more, we give merely as a private opinion. The possibility of its truth is enough to deter any rational man from a late and hearty meal. This we do know with certainty, that waking up in the night with painful diarrhea, or cholera, or bilious colic, ending in death in a very short time, is properly traceable to a late large meal. The truly wise will take the safer side. For persons who eat three times a day, it is amply sufficient to make the last meal of cold bread and butter and a cup of some warm drink. No one can starve on it, while a perseverance in the habit soon begets a vigorous appetite for breakfast, so promising of a day of comfort.—*Hall's Journal.*

A New Anæsthetic.

Dr. W. Preyer, of Jena, Saxony, has repeatedly found that a concentrated solution of lactate of soda in water, administrated as a hypodermic injection, or in sufficiently large quantities introduced in an empty stomach, causes a sensation of fatigue and sleepiness perfectly similar to that of a natural sleep, provided, of course, that no disturbance of the senses is applied to keep the person awake. Similar symptoms show themselves after the drinking of large quantities of fresh milk, and more so of milk which has become slightly acid, also of buttermilk either sweet or acid, and even of concentrated sugar-water. The sleep thus produced shows itself sooner among young animals than old ones; more among those which have a more excitable reflex nervous disposition than among those in which it is weaker; among rats, cats, pigeons and frogs sooner than among rabbits and marmots; it also shows itself sooner in small animals than in large ones, and sooner during cold than during warm weather.

Man is very variously affected by lactate of soda; some experience an uncontrollable somnolence after having in the morning, on an empty stomach, drank a glass of thick milk or concentrated sugar-water, or a solution of half an ounce of sugar in four ounces of water; but others will feel no effect. Dr. Preyer thinks that the effects of the lactate of soda deserve to be experimented upon as an antipyretic, as a sedative in mania and certain forms of convulsive affections, on account of the promptness with which it produces muscular relaxation. Every time he observed hypnotic effects of this salt, he found that the respiration became slower and deeper, the irritability diminished, and that, at least among cold-blooded animals, the temperature went down under the influence of strong doses, which are well supported, without ever leaving any inconvenient result. *Exchange.*

Defective Plumbing.—Dr. Robinson, the medical officer at Dover, has recently called attention to the serious results arising from defective plumbing. As an instance of this he says a family had been made ill by a joint of the water pipe having been repaired with white lead, while the cistern, which had also been packed with the same dangerous material, had been used before properly dry. In another case he mentions a family had been poisoned by water from a tank placed under a bed-room floor, the water having been contaminated by the overflow pipe being connected with a foul sewer. It is astonishing to find such gross neglect of well-known sanitary principles, and we fear the only remedy will be to compel builders to submit every plan of a new building, alteration, or repair, to properly qualified authorities, and to make any breach of such a duty a serious offence, punishable by law. We know this is theoretically done now, but it is only in theory, for it is a well-known fact that our water and sewer arrangements are practically done anyhow, just to serve the whim of an individual and effect the saving of a few shillings expense. In short, speculative building is a great curse at the present time, but tenants are themselves much to blame for not properly ascertaining how houses are drained, and how the water is connected, before taking a house to live in.

Grapes in Fever.—Dr. Hartsen, in *Centralblatt fur die Med. Wissenschaften*, recommends grapes as a valuable diet in fever. The grape contains a considerable amount of hydro-carbonaceous matter, together with a certain quantity of potassium salts, a combination which does not irritate, but on the contrary soothes the stomach, and consequently is used with advantage, even in dyspepsia. While considering the carbo-hydrates contained in the grape, we must not neglect the organic acids, particularly tartaric acid. Dr. H. thinks the nourishing influence of these acids too much neglected. It is indeed known that they are changed to carbonic acid in the blood, and are excreted as carbonates in the urine. Possibly careful research might show that, under some circumstances, the organic acids are changed to fats. Dr. H. believes that the organic acids should be ranked with the carbohydrates as food. When fresh grapes are not to be had, raisins or diluted wine might be used.

How to Check Coughs.—Dr. Brown-Sequard, in his late Boston lectures, says that there are many facts which show that morbid phenomena of respiration can always be stopped by the influence of arrest. Coughing, for instance, can be stopped by pressing on the nerves of the lip in the neighborhood of the nose. A pressure there may prevent a cough when it is beginning. Sneezing may be stopped by the same mechanism. Pressing in the neighborhood of the ear, right in front of the ear, may stop coughing. It is also preventive of hiccough, but much less so than of sneezing or coughing. Pressing very hard on the top of the mouth inside is also a means of stopping coughing. And he adds that the will has immense power there. There was a French nurse who used to say, "The first patient who coughs here will be deprived of his food to-day." It was exceedingly rare that a patient coughed then.—*Baltimore Physician and Surgeon.*

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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We wish to thank those subscribers who send in their renewals to the PRESS promptly as regularly as the year comes round. It saves us much expense in commissions for collections and renewals. May we not request more of our good patrons to do so!

SAMPLE COPIES.—Occasionally we send copies of this paper to persons who we believe would be benefited by subscribing for it, or willing to assist us in extending its circulation. We call the attention of such to our prospectus and terms of subscription.

THE ORIGINAL ARTICLES in this paper are mostly set in solid type, giving to our columns one-third more reading than is contained in ordinary leaded matter.

Our latest forms go to press on Thursday evening.

DOUBLE SHEET ISSUE—24 PAGES.

San Francisco:
Saturday Morning, July 1. 1876.

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PRISMOIDAL ROAD AT SONOMA LANDING.—On Monday last the work of building a prismoidal railroad from the steamboat landing on Sonoma creek to the town of Sonoma was begun. The experiment will be limited to a section of two miles. If this section shall work satisfactorily, when finished, the road will be extended to Sears' point, and from there to the town of Sonoma. From Sonoma it is intended eventually to build it to Santa Rosa, the ultimate terminus.

A New Volume.

With the present number we commence Volume XXXIII of the MINING AND SCIENTIFIC PRESS. In thus entering upon a new term it is needless to inform our patrons that the PRESS has kept full pace with the general prosperity which has attended mining operations of late throughout the Pacific coast, and that we take a just pride in recording, year after year, fresh evidences of success in our efforts to furnish our readers with a first-class industrial journal for the progressive people of this coast. As a special evidence of our desire to keep fully up with the times and to make good our intent, we call special attention to the twenty-four page edition of to-day. Realizing that the miners and mechanics are as patriotic as other classes of the community, we have prepared, at considerable expense, a number of appropriate illustrations and timely articles in keeping with the Centennial year and "the day we celebrate." This must, moreover, be our excuse for omitting our usual mining and mechanical engravings; but as the Centennial does not come very often we trust our readers will appreciate our efforts to furnish an appropriate paper for the times.

For the future, we have only to say that we will continue, as in the past, our utmost endeavors to make the PRESS all that is desirable as a medium for the collection and dissemination of whatever can be made useful in advancing the mining, mechanical and general interests of the Pacific coast. While laboring faithfully and industriously in our chosen field we owe our patrons and readers many thanks for the unmistakable evidences of appreciation with which they have received our efforts.

It will still, as heretofore, be our aim to stimulate all honorable enterprises, to raise a warning voice against all wild and reckless speculations, to record passing events, to marshal in appropriate order all the important discoveries and suggestions of the day, whence our readers may extract lessons of wisdom, whether in the paths of science or industry. Our journal becomes, in this way, with its faithful record of all that is useful or instructive, indispensable to the miner, mechanic or artisan, and a work of reference which will be sought for in every library.

We will, of course, continue to uphold the mining interests of the coast in every proper way. That is, the contents in this connection will be such that they can be relied on without reservation. Unswerving from what we believe to be the truth, we will at the same time act liberally, but without prejudice. There is something above mere money making to be looked to, for we are not working for any temporary objects, but intend to build up a paper allied with the permanent interests of the country. It may not be pecuniarily profitable to us individually, but we hope to keep up a paper which will be an honor to those we represent.

We hope, however, to have what assistance is possible to this end from all lovers of science, mechanics and mining. Many of our subscribers could easily aid us and others in their calling by occasionally writing for the PRESS on appropriate topics. We will treat the efforts of all with respect, and the writers be sure to receive a reward they cannot be cheated out of—a consciousness that they have been of assistance to others.

We trust it is needless to urge upon our readers the necessity of promptly renewing their subscriptions. The paper speaks for itself by the character and variety of its contents. Everything that untiring industry and reasonable expense can accomplish will be done to render the MINING AND SCIENTIFIC PRESS a journal which shall be creditable to the interests it represents, and of special value to its large circle of industrial and progressive readers.

Heavy Machinery for the Comstock.

Messrs. Parke & Lacy, 417 Market St., agents for the Burleigh drilling appliances, and for general mining machinery and machinists' tools, are just shipping a lot of heavy articles up to the Comstock. Among them is a large lathe—seven foot swing and 22 foot bed—for George Emmet's Gold Hill foundry. There is also a 48 foot planer, 16 foot bed for the same foundry. Parke & Lacy are also shipping two Burleigh drills, and a large No. 4 air compressor for the Ward mine. The superintendent of this mine says he is going to sink the shaft quicker than any similar work has been performed on the Comstock lode. With this object in view, he has purchased the heavy machinery referred to. The progress of the shaft will be watched with interest by mining men. An air compressor and tank are also being sent to the Julia mine. The shaft in the Julia is the deepest on the lode. The mine has already several Burleigh drills and a compressor, and the pumping and hoisting machinery is of a capacity to work to a depth of 2,500 feet. The present compressor furnishes air to the mine and three sets of drills, but the new compressor and tank are required for an additional supply of air.

READING THE DECLARATION IN 1776.

THE FOURTH ON MT. DAVIDSON.—A large beacon fire is to be lighted on top of Mount Davidson, Nevada, on the night of the Fourth of July. The beacon fire will be visible from all parts of Virginia, also Gold Hill, Silver City, Dayton, Washoe valley, Carson valley, Genoa and all the surrounding country east of the Sierra Nevada range. It is estimated that the beacon light will be seen for a distance of 200 miles.

GOLD has been discovered at Calpella, in Mendocino county, and a company formed for the purpose of working the claim.

The Title-Deed of Our Liberties.

The Declaration of Independence and Many Interesting Facts Concerning It.

The Independence of the United States dates from the Fourth day of July, 1776, and the glories of this Centennial year culminate on the hundredth anniversary of that day, July 4th, 1876. The great event of the day one hundred years ago was the formal signing of that grand document known as the Declaration of Independence. It is appropriate to the present to refresh our memories concerning the sterling deeds of that early time and to fill our minds with double weight of the reverence and rejoicing with which we have been taught from childhood to greet the coming of the nation's birthday.

To aid our readers to this patriotic sentiment we reprodnce the grand, ringing sentences which compose the instrument which gave form and unity to the revolutionary effort, and mention many interesting facts concerning it which recent research has brought to light.

The Declaration of Independence.

On another page we print the declaration with the type woven into the outline of the historic "Liberty bell" which rang out its adoption to a waiting people.

How the Declaration Was Written.

For the following interesting facts concerning the Declaration we are indebted to a timely and well written article in *Scribner's Magazine* for July, reviewing the historical facts which led to the Declaration. As is generally known, the Declaration was written by Jefferson. He was unsurpassed in his time in power of expression. He accordingly framed it; Franklin and Adams suggested a few verbal amendments; Sherman and Livingston had none to offer, and the document stood ready to be reported to the Congress.

Some of those who throng to Philadelphia this summer may feel an interest in knowing that the "title-deed of our liberties," as Webster called it, was written in "a new brick house out in the fields"—a house still standing at the south-west corner of Market and Seventh streets, less than a quarter of a mile from Independence square. Jefferson had there rented a parlor and bedroom, ready furnished, on the second floor, for thirty-five shillings a week; and he wrote the Declaration in this parlor, upon a little writing-desk, three inches high, which still exists. In that modest room we may fancy Franklin and Adams listening critically, Sherman and Livingston approvingly, to what was for them simply the report of a committee. Jefferson had written it, we are told, without the aid of a single hook; he was merely putting into more systematic form a series of points long familiar.

Signing the Document.

Jefferson used to relate, "with much merriment," says Parton, that the final signing of the Declaration was hastened by a very trivial circumstance. Near the hall was a large stable, whence the flies issued in legions. Gentlemen were in those days peculiarly sensitive to such discomforts by reason of silk stockings; and when this annoyance, superadded to the summer heat of Philadelphia, had become intolerable, they hastened to bring the business to a conclusion. This may equally well refer, however, to the original vote; flies are flies, whether in July or August.

American tradition has clung to the phrases assigned to the different participants in the scene: John Hancock's commentary on his own bold handwriting, "There, John Bull may read my name without spectacles;" Franklin's, "We must hang together, or else, most assuredly, we shall all hang separately;" and the heavy Harrison's remark to the slender Elbridge Gerry, that, in that event, Gerry would be kicking in the air long after his own fate would be settled. These things may or may not have been said; but it gives a more human interest to the event, when we know that they were even attributed. What we long to know is, that the great acts of history were done by men like ourselves, and not by dignified machines.

Reading the Declaration.

On the fifth day of July, Congress sent out circulars announcing the Declaration. On the sixth the document appeared in a Philadelphia newspaper and on the eighth it was read by John Nixon in the yard of Independence hall, as shown in our illustration. Before the reading, the king's arms over the door of the supreme court room in Independence hall were torn down, and these trophies were burned in the evening in the presence of a great crowd and amid the joyful pealing of the old Independence bell.

Facts About the Signers.

Even those who look with the greatest pride and hope upon the present and future of this nation, must admit that the Continental Congress contained in 1776 a remarkably large proportion of able and eminent men. The three most eminent delegations naturally were from what were then the three leading States—Virginia, Massachusetts and Pennsylvania. Virginia contributed Thomas Jefferson, who framed the Delaration; Richard Henry Lee, whose resolutions preceded it; Francis Lightfoot Lee, his brother; Wythe and Braxton, who had stood by Patrick Henry in the old House of Borgesses; Nelson, who had first proposed organizing the Colonial militia of Virginia, and who

(Continued on Page 17.)

California Harvest Scene—Dr. Glenn's Farm in Colusa County.

We present on this page an engraving drawn from the oil painting of Andrew P. Hill, painted for G. W. Hoag, representing a "California Harvest Scene." It will give those at a distance a good idea of the magnitude with which agricultural operations are carried on in this State.

It is peculiarly a California scene. The immense separator and the engine to drive its hungry jaws and rattling beaters and shelving screens, the ever widening circle of the headers and header wagons, the mules dragging away the quickly accumulating straw, the owner in his carriage and the overseer on horseback supervising the small army of men required to do the work, the bright sunlight flooding the scene—all these are characteristics of our peerless harvest scenes.

The scene is laid on the magnificent property of

Dr. Hugh J. Glenn,

In Colusa county. As Dr. Glenn is one of our farmer princes, it is interesting to note the steps by which he reached his success and gained his fine estate. Dr. Glenn was born in Augusta county, Virginia, Sept. 18th, 1824. In 1831 his father moved to Paris, Missouri, and Hugh went to school, finishing a good common school education at the age of 17. In 1843 he passed a season behind the counter of a dry goods store and afterwards studied medicine, finishing his medical reading in 1846. At the breaking out of the Mexican war Dr. Glenn served under Sterling Price, returning in 1847 to resume his medical studies under Prof. McDowell, at the State medical university of Missouri. In the spring of 1849 the doctor received his diploma, and returned home, as he says, "to fulfil a contract with a certain young lady, made some seven years prior to that event." He was married on the 13th of March, 1849, to Miss Nancy H. Abernethy.

When Dr. Glenn married he had but $110, with which he purchased a quarter interest in an ox team, consisting of four yoke. On the 3d of May following he left the Missouri river for California, with the ox team. He arrived in Sacramento in the latter part of August, 1849, and camped near or on the site of the Golden Eagle hotel. Dr. Glenn went to the mines, where he was successful. After a few months he sold out his claim, and bought some teams and freight wagons, and followed teaming until he met with an opportunity of selling out with a handsome profit. Then he bought a lot and put up a livery stable in Sacramento, which he sold soon at a good profit. On the 9th of June, 1850, he returned to Missouri. He says, "at that time I had $5,000, and felt richer than I ever have since, or ever shall, though I may be worth millions." From 1852 until the breaking out of the great rebellion Dr. Glenn was engaged in buying and selling horses and mules, and driving them to California and the Southern States.

Dr. Glenn made his first purchase of the Jacinto grant in December, 1867. He has now 45,000 acres under cultivation. He farms 15,000 acres himself, and rents 10,000 acres to G. W. Hoag, 10,000 acres to Pike Gupton, and 10,000 acres to Isaac Bayless. He has on his property 150 miles of fence. The average yield of wheat on these lands has been 25 bushels per acre in favorable seasons. Of this year's crop Dr. Glenn says although he has on hand 325,000 (140 lb.) sacks, he thinks they will not hold the wheat.

George W. Hoag.

On his 10,000 acre farm, Mr. George W. Hoag has everything arranged for complete independence in farming operations. He has his own machine shops, blacksmith shops, boring, turning and planing machines, buzz saws, etc. He manufactures his own wagons, separators, headers, harrows and nearly all the machinery and implements used. Perhaps we cannot give a better idea of the magnificent breadth of this establishment than by enumerating some of the leading items of men, animals and implements employed. He has employed about 45 men in seeding and 100 in harvest. He has also 200 header horses and mules; 55 grain headers and other wagons; 25 eight-mule gang plows; 21 eight-mule harrows; 100 sets of harness; 10 12-foot headers; three sulky hay rakes; nine eight-mule cultivators; two Gem seed sowers; four Buckeye drills; six mowers; one 48-inch separator, 36 feet long and 13½ feet high, when mounted, capacity 10 bushels per minute; one 40-inch separator, 36 feet long; two 40-foot elevators for self feeder; one steam barley or feed mill; two 18 horse-power engines.

The Monitor Separator.

A prominent feature in Mr. Hill's painting and in our engraving is Mr. Hoag's mammoth separator, the "Monitor." The "Monitor" is a combination of the "Pitts," "Geyser," and "Vibrator" machines, and was built at Mr. Hoag's shops, on the Glenn farm, under his supervision. This separator threshed on the 8th of August, 1874, 5,779 bushels of wheat. The machine is represented in active operation in the picture, and we give for the benefit of many of our readers who are not familiar with such a scene the following brief description of the threshing: First the "circle" is made. It is the starting point in the field where the machinery is placed. The "circle" is made by the headers in advance of the separator and engine. After the grain is cut from the "circle," which usually embraces a space of 100 to 125 acres, the separator and engine are drawn in and the work of threshing commences. The working force to run the machine is 56 men, 7 headers, 21 header wagons, 96 horses or mules. The average run of the machine is 1,700 sacks, containing 2¼ bushels each per day. The utmost capacity of the machine is 3,000 sacks, or 6,750 bushels per day. The harvesting force cut and thresh simultaneously, and in fifteen minutes from the time the header begins in the grain, the wheat is in the sacks.

Such in brief are the facts connected with the scene which we present to our readers. In the breadth and scope of its representation the picture is symbolic of our California agriculture. It is the embodiment of enterprise, of action and of success. It is a stirring scene. It is fitting to awaken among our friends abroad a new appreciation of what may be styled the magnificent in our agriculture.

It is but justice to Mr. Hill to state that in the necessary space of a newspaper illustration his painting is much condensed and the effects of the branches are but feebly reproduced.

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A CALIFORNIA HARVEST SCENE.

Electricity Against Gas.

The Great Northern railway company of France has undertaken a series of experiments which seem to indicate the approach of a great revolution in the mode of lighting public buildings and thoroughfares. To judge from the reports recently published, electricity seems destined to eclipse gas altogether. A few weeks ago a three-horse power Gramme machine was employed to light the luggage department of the Paris Great Northern railway station. This room or hall measures 20,000 cubic feet and is generally illuminated by twenty-five gas burners. The new electric light was placed at a distance of ten meters from the ground, and gave a light of a peculiarly soft character, which renders the use of the full globe employed to check the irritating glare of gas quite unnecessary—a fact of some importance, as it tends to augment the economy realized by the new system. The light continued to burn the whole evening with great regularity, excepting, of course, when it was purposely lowered. The success attained was so conclusive, if we may believe accounts, that the company intend illuminating the vast structure, containing 300,000 cubic meters of space, where the trains arrive, by the same process. For this purpose electric lanterns, if we may so call them, of exceptional power, will be placed at a hight of twenty meters. They will be placed at the four summits of a rectangle, so there will be no shade or dark corner in the whole edifice. The goods station at La Chapelle will also be lighted in a similar manner.

M. Tresca, an energetic advocate of the electric system, has been able at last to estimate the amount of power required to produce a given quantity of light by the magneto-electric machines. In this respect former experiments had been eminently unsatisfactory, and M. Tresca gives an exhaustive description of all the difficulties that had to be surmounted, in a report which is inserted in the minutes of the Academy of Sciences. The results have been obtained chiefly from two machines—the first giving a light equivalent to 1,850 carcel burners, that consume 40 grammes of oil per hour, and the second equal to 302 similar burners. With the former it is easy to read at a distance of 21.50 m., and with the latter at 7.70 m. The reflection also from the walls is so strong that persons can read at these distances, even when holding the book with its back to the light. From a lamp equal to 100 burners the same result can be obtained at a distance of five meters. Four electric lamps of this power have been in use during the last year in the factory of Messrs. Hellman, Ducommon & Steinlen, of Mulhouse, and give a satisfactory light over an area of 1,850 square meters. The most important and crowning fact, however, is the assertion that the electric light is 100 times less expensive than oil, and 50 times cheaper than gas. Should a prolonged and practical application of the new system prove this startling comparison to be correct, we may look forward to a great change, which will ultimately compel the gas makers to, at any rate, make a great alteration in their scale of charges, if it should not interfere even more seriously with their interests.—*The Builder.*

Testing Oils.

It is very desirable to those in the business to possess the means of testing the oils they buy and sell as lubricants for machinery, and to ascertain whether the same be pure or mixed with some cheaper oil. Unfortunately the simpler tests are few, and such as they are cannot be said to be greatly superior to the judgment derived from the look, taste and smell of the article examined. Various devices are extant to test the lubricating properties of oils, that is, their power of reducing friction to a minimum, but beside being expensive their successful use requires certain knowledge and experience not generally possessed by the dealer. One of these devices consists of a cap over a journal or bearing, and on that is a weighted lever like a scale beam, which presses with a certain weight on the revolving journal. In this cap is a recess in which is inserted the bulb of a thermometer. The ratio between the weight and the heat developed by a certain number of revolutions, with a definite quantity of the oil on the bearing, is an index to the value of the oil.

Other machines are constructed on the same general principle, viz., the generation of friction and the measurement of the heat produced while being supplied with oil. However, in practice we are generally very well able to judge of the lubricating value of an oil by its appearance on a piece of glass, noting its viscosity or cohesion of its particles and its apparent resistance to the touch, and its feeling of smoothness. This is what we call "body" in an oil. As we said, the practical tests as to the purity of an oil are few. For instance, with the petroleums, they all mix in any proportion and the most rigid chemical test would fail to show the admixture of another of the species. We may, however, easily prove the admixture of animal or vegetable or resin oils in petroleum by a very simple test. This is simply by an alkali, and the most ready and convenient is ammonia, or, as commonly called, spirits of ammonia. If lard, whale, or fish oils or resin be present, and a little of the ammonia added, there will be a partial saponification of the mass, which will have the appearance of cream, and in the case of resin the mass will nearly solidify or have the consistence of butter.

To test for foreign or suspended impurities in an oil it is a good plan to take a piece of clean blotting paper and put on it a few drops. The bibulous paper will then absorb the oil and the impurities or particles of sand or free carbon, or whatever they may be, will be left on the surface. These may be seen with the naked eye or a magnifying glass of even feeble power. —*American Manufacturer.*

Care in Handling Machinery.—The general thoughtless handling of machines, cleaning parts of machines while in motion, adjusting parts which should be at rest while being acted on, and other habits contracted by familiarity, should be avoided. A machine ought not to be trifled with. It has no remorse or pity. Once in its power, there is no escape. It should be managed with caution and constant care, for in dealing with machinery it is always better to be foolishly careful than carelessly foolish.

The Fourth in Philadelphia.

A dispatch from Philadelphia furnishes interesting information of the way the nation's birthday will be celebrated in the "Cradle of Liberty." The ceremonies will take place at Independence hall, beginning at an early hour with a review of the military from in front of the hall on Chestnut street. A stand, capable of accommodating 100 to 150 persons, is being erected for the purpose. The literary exercises, under the auspices of the United States Centennial Commission, will take place in the square immediately in the rear of Independence hall, where a platform of sufficient capacity to accommodate some 4,500 persons, among whom will be the guests of the city, musicians, etc., will be provided. The exercises will commence immediately after the termination of the military review, at about 10 o'clock, and will be initiated by the Right Rev. Bishop Simpson, the ecclesiastic successor of the chaplain of the Continental congress.

Overture, "The Great Republic," by George T. Bristow, of New York, member of the jury on Musical Awards.

Chorus.

Reading of the Declaration of Independence from the original document by Richard Henry Lee, of Virginia, grandson of the mover of the Declaration.

Hymn of welcome, by Oliver Wendell Holmes, written to the music of Keller's hymn—orchestra and chorus.

National ode by Bayard Taylor.

Greeting from Brazil—a hymn composed at the request of his Majesty, Dom Pedro, Emperor of Brazil, by the distinguished Brazilian, Carlos Gomez, and dedicated to the American people.

Oration by William M Evarts.

Hallelujah—Orchestra and chorus.

Doxology—"Old Hundred."

Gilmore will be given charge of the orchestra, with Carl Zentz as chorus master.

The period to be covered by the programme is estimated not to exceed three hours. Invitations to witness the demonstrations of the evening of the 3d, and to participate in the observances of the 4th, have been sent by General Hawley to Governors of all the States and Territories of the Union, and from several, assurances of their intention to be present have been received.

The First Declaration.

Before the document known as the Declaration of Independence was adopted, the Continental Congress, in the earlier months of 1776, had for many days been steadily drifting on toward the distinct assertion of separate sovereignty, and had declared it irreconcilable with reason and a good conscience for the colonists to take the oaths required for the support of the Government under the crown of Great Britain. But it was not till the 7th of June that Richard Henry Lee, of Virginia, rose and read these resolutions:

"That these United Colonies are, and of right ought to be, free and independent States; that they are absolved from all allegiance to the British crown, and that all political connection between them and the State of Great Britain is and ought to be, totally dissolved.

"That it is expedient forthwith to take the most effectual measures for forming foreign alliances.

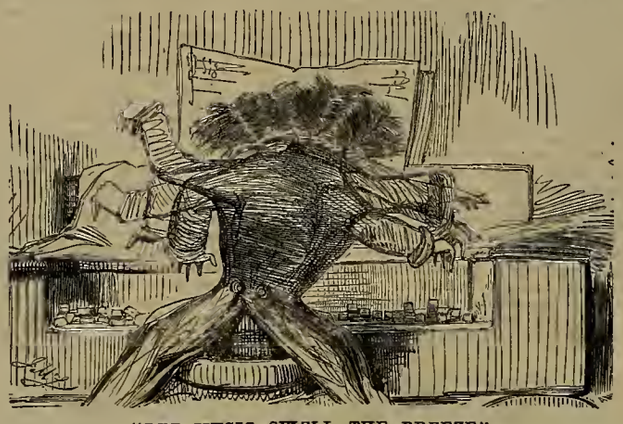
"That a plan of confederation be prepared and transmitted to the respective colonies for their consideration and approbation."

These resolutions were presented under direct instructions from the Virginia Assembly, the delegates from that colony selecting Mr. Lee as their spokesman. They were at once seconded, probably after previous understanding, by John Adams, of Massachusetts, Virginia and Massachusetts being then the leading colonies. It was a bold act, for it was still doubtful whether anything better than a degrading death would await these leaders, if unsuccessful. These resolutions were debated from time to time until the second day of July, when they were adopted by the vote of 12 colonies. New York, though not voting, ratified the vote by a convention within a week. The Declaration of Independence was then written.

VENTURA COUNTY.—Mr. McArthur writes to us that he mailed some time since a manuscript of notes taken during his tour through Ventura county. They never reached us. We hope Mr. McArthur will reproduce them for us.

Jefferson's Marriage.

The affair was quite a little comedy in some aspects, and ended as all comedies should, with everybody made happy. "Belinda" had been married many years, and her old admirer was approaching 30, when he met with a young lady of 22 who produced a strong impression upon him. She was a little above the medium hight, slender, but elegantly formed. A fair complexion, with a delicate tint of the rose, large hazel eyes, full of life and feeling, and luxuriant hair of a rich soft auburn, formed a



"LET MUSIC SWELL THE BREEZE"

combination of attractions which was eminently calculated to move the heart of a youthful bachelor. In addition to all this, the lady was admirably graceful: she rode, danced, and moved with elegant ease, and sang and played on the harpsichord very sweetly. Add still to these accomplishments the possession of excellent good sense, very considerable cultivation, a warm heart, and a considerable fortune, and it will not be difficult to understand how the youthful Mr. Jefferson came to visit very frequently at the lady's residence, in the county of Charles City. It was called "The Forest," and the name of the lady was Mrs. Martha Skelton. She was a daughter of John Wayles, an eminent lawyer, and had married in her 17th year, Mr. Bathurst Skelton, who, dying in 1768, left his young wife a widow at 19. As the three years of mourning began to expire, the beautiful young lady found herself besieged at "The Forest" by numerous visitors. Of these, three were favorites with the fair Mrs. Skelton, of whom Mr. Thomas Jefferson was one. The tradition runs that the pretensions of the rivals were decided either by the musical accomplishments of the young counselor or by the fears of his opponents. The tale is differently related. One version is that the two unfortunate gentleman encountered each other on Mrs. Skelton's door-step, but hearing Jefferson's violin and voice accompanying the lady in a pathetic song, gave up the contest thenceforth, and retired without entering, convinced that the affair was beyond their control.

The other story is that all three met at the door and agreed that they would take their turns. Jefferson entered first, and the tones of the lady in singing with her companion deprived the listeners of all hope. However this may be, it is certain that the beautiful widow consented to become Mrs. Jefferson, and on the first day of January, 1772, there was a great festival at "The Forest." Friends and kindred assembled from far and near; there was frolicking and dancing after the abundant old fashion; and we find from the bridegroom's note-book that the servants and fiddlers received fees from his especial pocket. It snowed without, but within all was mirth and enjoyment, in the light and warmth of the great log fires roaring in honor of the occasion. Soon after the performance of the ceremony, the bridegroom and his bride set out in their carriage for "Monticello," where Jefferson had commenced building in 1769, just before the destruction by fire of his patrimonial house of "Shadwell." The journey was not to end without adventures. As they advanced toward the mountains the snow increased in depth, and finally they were compelled to leave the carriage and proceed upon their way on horseback. Stopping to rest at "Blenheim," the seat of Colonel Carter, where they found, however, no one but an overseer, they left it at sunset, resolving bent upon reaching Monticello that night. It was eight miles distant, and the road, which was rather a mountain bridle-path than an honest highway, was encumbered with snow three feet deep.

We may fancy the sensations of the newly wedded bride at the chill appearance of the desolate landscape as she passed along through the snow; but she was a woman of courage and good sense, and did not care for inconvenience. It was late when they arrived, and a cheerless reception awaited them—or rather there was no reception at all. The fires were all out, the servants had gone to bed, and the place was as dark and silent as a grave. Conducting his wife to the little pavilion which was the only part of the house habitable at the time, Jefferson proceeded to kindle a fire and do the honors. On a shelf behind some books part of a bottle of wine was discovered; and this formed the supper of the bridegroom and the bride. Far from being annoyed or discomforted by their reception, however, it only served for a topic of jest and laughter. The young lady was as light-hearted as a bird, and sent her clear voice ringing through the dreary little pavilion as gayly as she had ever done in the cheerful drawing-room of "The Forest;" and thus the long hours of the winter night fled away like minutes, winged with laughter, merriment, and song.—*Harper's Magazine for July.*

Franklin in Philadelphia.

The advent of Franklin into the city on the day when, a shabby lad of 17, he walked up High street munching his roll, really marks the date of the birth of the intellectual life of Philadelphia. There is not an effort for her improvement, mental or practical, which cannot be traced to its origin in the teeming brain of the energetic printer. Schools, universities, free churches, public libraries, drainage, fire and military companies, street lamps and street sweepings—every reform, from the broad policy of the statesman to the smallest detail—bears somewhere the bold scrawl, Franklin *fecit*. The wisdom and scholarship of that day were wholly drawn from books. Franklin dealt directly with the great natural forces, physical and human; out of the unlikely material of his fellow-apprentices he made the philosophic junto; with the petty politics of the drowsy town, he studied statecraft; a kite and key under his keen eyes told the secret of the lightnings, which secret had been kept for ages. Nothing was too insignificant for the life-giving glances of those keen eyes. He sees a seed adhering to the straws on his wife's besom, plants, tends it, and gives to the country the before unknown broom corn and a new source of industry. He observes a green twig on a basket lying on the wharf, thrown from an Amsterdam brig, plants and tends that, and presently Pollard willows grow wild by every stream. He is the foremost typical American in our history; moral rather than religious; a domestic man; faithful to his wife, yet cultivating platonic friendship with other women; never losing his self control, yet with a keen, fine sense of fun; testing, one minute, a high metaphysical problem, and, the next, a counterfeit dollar; always master of the present moment whether it demanded the making of cases, roller and ink, which he had no money to buy, or the construction of a new government from the ruins of the old.—*June Scribner's.*

JUST A POSSIBLE EFFECT OF THE CINCINNATI CONVENTION.

The Constitution confers upon Congress the sovereign power over the Territories of the United States for their Government, and the exercise of this power. It is the right and duty of Congress to prohibit and extirpate in the Territories that relic of barbarism, polygamy, and we demand such legislation as shall secure this end and the supremacy of American institutions in all the Territories.—*Cincinnati Platform, June 15th, 1876.*

THE NEW BELL FOR INDEPENDENCE HALL.—The new bell for the Pennsylvania State House weighs 13,700 pounds, and is seven feet high and 23⅛ feet in circumference around the lip; the clapper weighs 300 pounds and the hammer more than 200 pounds. Its material is a mixture of 80 per cent. copper and 20 per cent. tin; cannon captured from the British at Saratoga, in the Revolutionary war, and bronze guns disabled at Gettysburg are represented in this monster bell. The old bell weighed only 6,400 pounds. For weeks workmen have been strengthening the belfry with stout timbers, and experts say that it will safely stand the new weight. The bell was presented to the city by Henry Seyhert, who also put in a new clock, with dials nine feet in diameter, at a total cost of $20,000. The bell bears the modest inscription: "Presented to the city of Philadelphia, July 4th, 1876, for the belfry of Independence hall, by a citizen." Around the lip is the motto, "Proclaim liberty throughout all the land unto all the inhabitants thereof," and at the top, "Glory to God in the highest, and on earth peace, good will toward men." The bell will not be rung until noon on the Fourth of July, when there will be 13 strokes, one for each of the original States. The largest bell ever cast in America was the alarm bell in the city hall in New York, weighing 23,000 pounds.

AVERILL CHEMICAL PAINT.—One of the proprietors of this journal rejoices in having used this paint over the entire outside of his humble mansion. He has also applied it inside of the same with equal satisfaction. We have no hesitation in saying we believe it to be not only a most exceedingly convenient, but excellent article as manufactured by the California Chemical Paint Co., No. 117 Pine street, S. F.

The Judges at the Centennial.

We print below a list of the judges who will award the premiums in the several departments of the exhibition. The method of awards adopted by the American Centennial Commission differs from the systems in use at other exhibitions. It dispenses with the international jury, and substitutes a body of judges, one-half foreign, chosen individually for their high qualifications. It dispenses also with the system of awards by graduated medals, and requires of the judges written reports on the inherent and comparative merits of each product thought worthy of an award, setting forth the properties and qualities, presenting the considerations forming the grounds of the award, and avouching each report by the signature of its author. The professional judgment and moral responsibility of the judges being thus involved, assures the integrity of their reports. To exhibitors such reports will be more valuable than medals. The list of the American judges is as follows:

GROUP I. Minerals, Mining and Metallurgy. A. L. Holley of New York, T. S. Hunt of Massachusetts, E. Harrison of St. Louis, S. J. Reeves of Pennsylvania, S. B. Axtell of New Mexico, J. W. Mackey of Nevada, Matthew Addy of Ohio, J. D. Hagne of California, W. S. Keyes of Nevada, Fred Prime, Jr.

GROUP II. Pottery, Glass, Artificial Stone, etc.—Gen. Q. A. Gilmore, U. S. A., Arthur Beckwith of New York, E. T. Cox of Indiana, Hector Tyndale of Pennsylvania, O. M. Chaffiet of South Caroliua.

GROUP III. Chemistry and Pharmacy, including the Apparatus.—C. A. Joy of New York, F. A. Genth of Pennsylvania, J. Lawrence Smith of Kentucky, C. F. Chandler of Pennaylvania.

GROUP IV. Animal and Vegetable Products, and the Machinery for their Preparation.—E. N. Horsford of Massachusetts, L. B. Arnold of New York, Col J. F. Tobias of Pennsylvania, Col. John Bradford of Florida, Geu H. M. Naglee of California, Geirdo Marks of Ohio, Ryland T. Brown of Indiana, Walter J. Green of Wisconsin, Deoatur H. Miller, of Maryland, James M. Shaffer of Iowa.

GROUP V. Fish and Fish Products, Apparatus of Fishing, etc.—Seth Green of New York, S. F. Baird of Washington.

GROUP VI. Timber, Worked Lumber, Parts of Buildings, Forestry —Wm. H. Brewer of Connecticut, J. M. Bennet of West Virginia, Prof. J. S. Newberry of New York.

GROUP VII. Furniture, Upholstery, Woodenware, Baskets, etc.—Addison Boyden of Massachusetts, Chauncey Wiltse of Nebraska, Gen. Gibbon of Montana.

GROUP VIII. Cotton, Linen and other Fabrics, including the Materials and Machinery.—Ed. Atkinson of Boston, Hugh Wardell of Savannah, Ga.; Col. Ed. Richardson of Jackson, Miss.; Samuel Wahler of New Hampshire, A. D. Lockwood of Rhode Island, Charles H. Wolfe of Ohio, George O. Baker of Alabama.

GROUP IX. Wool and Silk Fabrics, including Materials and Machinery.—John L. Hayes of Massachnsetts, E. C. Cowdin of New York, ——Bontillier and C. J. Ellis of Pennsylvania, J. Lang of Maine, Barton H Jenks of Pennsylvania, H. C. Goodspeed of Utah, Judge Williams of Iowa.

GROUP X. Clothing, Furs, India Rubber Goods, Ornaments and Fancy Articles.—W. H. Chandler of Pennsylvania, Benjamin Britton of New York, W. A. Linthicum of New York, Prof. W. C. Kerr of North Carolina, Dr. George W. Houston of Colorado.

GROUP XI. Jewelry, Watches, Silverware, Bronzes, etc. M. L Kennard, Peter Gottlesben of California.

GROUP XII. Leather and Manufactnres of Leather.—Ex-Gov. F. H. Pierpont of West Virginia, John Cummins of Massachusetts, Thomas Miles of Pennsylvania, W. B. Haselton of St. Louis.

GROUP XIII. Paper Industry, Stationery, Printing and Book Binding.—James M. Wilcox of Pennsylvania, Charles O. Chapin of Massachnsetts, William Faxon of Connecticnt, W. W. Oouly of Ohio, H. F. Brion of Maryland.

GROUP XIV. Apparatus of Heating, Lighting, Ventilation, Water Supplies and Drainage.—O. O. Cox of Washington, Dr. Azel Ames of Massachusetts.

GROUP XV. Builders' Hardware, Edge Tools, Cutlery, etc.—Daniel Steinmetz of Pennsylvania, Charles Staples of Maine, George L. Bead of Pennsylvania, Gen. Imboden of Virginia.

GROUP XVI. Military and Sporting Arms, Weapons, Apparatus of Hunting, Explosives, etc.—S. O. Lyfort, U. S. A.; H. Abbott, U. S. A.; George A. Hamilton of Minnesota.

GROUP XVII. Carriages, Vehicles, and Accessories.—Thomas Goddard of Boston, B. F. More of Maine, B. C. Shaw of Indiana.

GROUP XVIII. Railway Plans, Rolling Stock and Apparatns, Road Engines, etc.—R. E. Ricker of New Jersey, Gen. Morris of Indiana, Pelican Statalafer of Pennsylvania.

GROUP XIX. Vessels and apparatns of transportation.—Isaac Newton of New York, J. W. Griffiths of New Hampshire.

GROUP XX. Motors, Hydraulic and Pnenmatic Apparatus, etc.—Charles F. Porter of New Jersey, Joseph Belknap of New York, J. F. Holloway of Ohio, James Moore of Pennsylvania, Horatio Allen of New Jersey.

GROUP XXI. Machine Tools, Wood, Metal and Stone.—Irving M. Scott of California, G. H. Blelock of Massachusetts, W. F. Durfee of Wisconsin, J. A. Anderson of Kentucky.

GROUP XXII. Machines, Apparatus and Implements Used in Sewing and Making Clothing, Lace, Ornamental Objects, Pins, etc. —George W. Gregory of Massachusetts, E. H. Knight of Washington, L. D. T. Poor of Dakota.

GROUP XXIII. Agricultural Implements, and Implements of Horticnlture and Gardening.—John P. Reynolds of Illinois S. L. Grinnell of Washington. George E. Waring of Rhode Island, James Bince of Oregon.

GROUP XXIV. Instruments and Apparatus of Hygiene, Medicine, Surgery, Prosthesis, etc.—Dr. C. B. White of New Orleans, J. Henry Thompson of Washington.

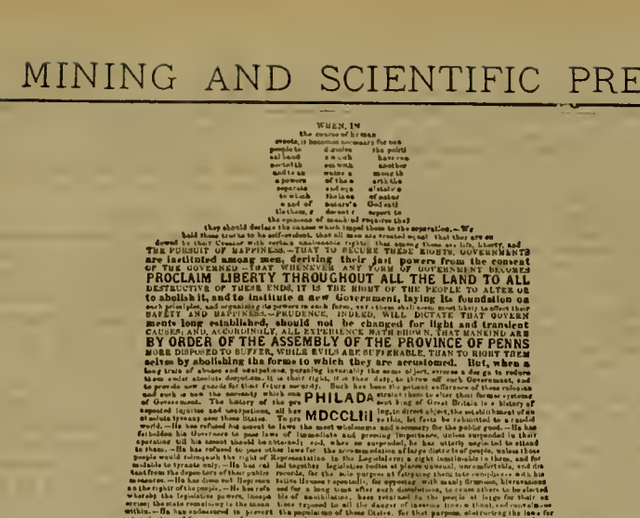
GROUP XXV. Instruments of Precision, Research, Experiment and Illustration, including Telegraphy and Music.—Prof. F. A. P. Barnard of New York, J. E. Hilgard of U. S. Coast Survey, H. K. Oliver of Massachusetts, George F. Bristow of New York, Prof. Watson of Michigan.

GROUP XXVI. Architecture and Engineering.—James B. Eads of St. Louis, Gen. W. B. Franklin of Connecticnt, Richard M. Hunt of Rhode Island.

GROUP XXVII. Plastic and Graphic Art, Sculptnre.—C. C. Perkins of Boston, J. Taylor Johnston of New York, James L. Cleghorn of Philadelphia, Brantz Mayer of Maryland, D. G Mitchel of Connecticut, G. W. Nichols of Ohio, J. W. Draper, Jr., of New York.

GROUP XXVIII. Education and Science.—Andrew D. White of New York, Daniel C. Gilman of Maryland, J. M. Gregory of Illinois, J. W. Hoyt of Wisconsin.

Among the English judges are Sir John Hawkshaw, John Coleman, Prof. Olling, Dr. Forbes Watson and Sir Charles Reed, M. P.; and among the French judges is the Marquis de Rochambeau, grandson of the count of Revolutionary fame. The judges from other foreign countries are not yet elected, or at least the lists have not yet been sent in. There are to be 125 American judges in all, and 100 foreign judges. Foreigners will be paid $1,000 for their services, and the Americans $600.


WHEN, IN
the course of human
events, it becomes necessary for one
people to
dissolve
the political
bands
which have con
nected them
with
another
and to as
sume among
the powers
of the
earth, the
separate
and equal
station
to which
the laws
of nature
and nature's
God entitle
them,
a decent
respect to
the opinions of mankind requires that
they should declare the causes which impel them to the separation.—We
hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain inalienable rights, that among these are life, liberty, and
THE PURSUIT OF HAPPINESS.—THAT TO SECURE THESE RIGHTS, GOVERNMENTS
are instituted among men, deriving their just powers from the consent
OF THE GOVERNED.—THAT WHENEVER ANY FORM OF GOVERNMENT BECOMES
PROCLAIM LIBERTY THROUGHOUT ALL THE LAND TO ALL
DESTRUCTIVE OF THESE ENDS, IT IS THE RIGHT OF THE PEOPLE TO ALTER OR
to abolish it, and to institute a new Government, laying its foundation on
such principles, and organizing its powers in such form, as to them shall seem most likely to effect their
SAFETY AND HAPPINESS.—PRUDENCE, INDEED, WILL DICTATE THAT GOVERN
ments long established, should not be changed for light and transient
CAUSES; AND, ACCORDINGLY, ALL EXPERIENCE HATH SHOWN, THAT MANKIND ARE
BY ORDER OF THE ASSEMBLY OF THE PROVINCE OF PENNS
MORE DISPOSED TO SUFFER, WHILE EVILS ARE SUFFERABLE, THAN TO RIGHT THEM
selves by abolishing the forms to which they are accustomed. But, when a
long train of abuses and usurpations, pursuing invariably the same object, evinces a design to reduce
them under absolute despotism, it is their right, it is their duty, to throw off such Government, and
to provide new guards for their future security. Such have been the patient sufferance of these colonies
and such is now the necessity which con
PHILADA
strains them to alter their former systems
of Government. The history of the pre
MDCCLIII
sent King of Great Britain is a history of
repeated injuries and usurpations, all having
in direct object the establishment of an
absolute tyranny over these States. To prove this, let facts be submitted to a candid
world.—He has refused his assent to laws the most wholesome and necessary for the public good.—He has
forbidden his Governors to pass laws of immediate and pressing importance, unless suspended in their
operation till his assent should be obtained; and, when so suspended, he has utterly neglected to attend
to them.—He has refused to pass other laws for the accommodation of large districts of people, unless those
people would relinquish the right of Representation in the Legislature, a right inestimable to them, and for
midable to tyrants only.—He has called together legislative bodies at places unusual, uncomfortable, and dis
tant from the depository of their public records, for the sole purpose of fatiguing them into compliance with his
measures.—He has dissolved Representative Houses repeatedly, for opposing with manly firmness his invasions
on the rights of the people.—He has refused for a long time after such dissolutions, to cause others to be elected,
whereby the legislative powers, incapable of annihilation, have returned to the people at large for their ex
ercise; the state remaining in the mean time exposed to all the danger of invasion from without, and convulsions
within.—He has endeavored to prevent the population of these States; for that purpose obstructing the laws for
naturalization of foreigners, refusing to pass others to encourage their migrations hither, and raising the conditions
of new appropriations of lands.—He has obstructed the administration of justice, by refusing his assent to laws for estab
lishing judiciary powers.—He has made judges dependent on his will alone, for the tenure of their offices, and the
amount and payment of their salaries.—He has erected a multitude of new offices, and sent hither swarms of officers
to harass our people, and eat out their substance.—He has kept among us, in times of peace, standing armies, without
the consent of our Legislatures.—He has affected to render the military independent of, and superior to, the civil power.
He has combined, with others, to subject us to a jurisdiction foreign to our Constitution, and unacknowledged by our laws;
giving his assent to their Acts of pretended Legislation.—For quartering large bodies of armed troops among us.—For protect
ing them, by a mock trial, from punishment for any murders which they should commit on the inhabitants of these States.
For cutting off our trade with all parts of the world.—For imposing taxes on us without our consent.—For depriving us, in many
cases, of the benefits of trial by jury.—For transporting us beyond seas to be tried for pretended offenses.—For abolishing the free
system of English Laws in a neighboring Province, establishing therein an arbitrary Government, and enlarging its boundaries, so
as to render it at once an example and fit instrument for introducing the same absolute rule into these Colonies.—For taking away
our charters, abolishing our most valuable laws, and
altering, fundamentally, the powers of our Governments.—For suspending our
own Legislatures, and declaring themselves invested with power to legislate for us in all cases whatsoever.—He has abdicated Govern
ment here, by declaring us out of his protection, and waging war against us.—He has plundered our seas, ravaged our coasts, burnt our
towns, and destroyed the lives of our people.—He is at this
time, transporting large armies of foreign mercenaries to complete the works of
death, desolation and tyranny, already begun with circumstances of cruelty and perfidy scarcely paralleled in the most barbarous ages, and
totally unworthy the head of a civilized nation.—He has excited
treasonable insurrections of our fellow-citizens, with the aim of bringing on the inhabitants of our frontiers the merciless Indian savages, whose known rule of warfare is an undis
tinguished destruction of all ages, sexes and conditions.—In every
stage of these oppressions, we have petitioned for redress in the most humble terms; our
repeated petitions have been answered only by repeated injury.—A
prince whose character is thus marked by every act which may define a tyrant, is unfit
to be the ruler of a free people.—Nor have we been wanting in atten
tion to our British brethren.—We have warned them, from time to time, of attempts made
by their legislature to extend an unwarrantable jurisdiction over us.
We have reminded them of the circumstances of our emigration and settlement here.
We have appealed to their native justice and magna
nimity, and we have conjured them, by the ties of our common kin
dred, to disavow these usurpations, which would inevitably interrupt our
connections and correspondence.—They, too, have been deaf to the voice of justice and con
sanguinity.—We must, therefore, acquiesce in the necessity which denounces
our separation, and hold them, as we hold the rest of mankind, enemies in war, in peace
friends.—We, therefore, the Representatives of the United States of Ameri
ca, in General Congress assembled, appealing to the Supreme Judge of the World for the recti
TUDE OF OUR INTENTIONS, DO, IN THE NAME, AND BY THE A
UTHORITY OF THE GOOD PEOPLE OF THESE COLONIES, SOLEMNLY PUBLISH
and declare, that these United Colonies are, and of right
ought to be, Free and Independent States; that they are absolved from
all allegiance to the British Crown, and that all political connection between us
and the State of Great Britain, is, and ought to be, totally dissolved; and that, as Free and
Independent States, they have full power to levy war, conclude peace, contract
alliances, establish commerce, and to do all other Acts and things which Independent States
may of right
do. And
for the sup
port of this De
claration, with
a firm reliance
on the protection
of Divine Providence
e, we mutually ple
dge to each other
our lives, our
fortunes, a
nd our sa
cred honor

A RINGING DECLARATION.

Off for Philadelphia.—The Centennial base ball club of this city left here on Saturday for the East on a three months' tour. The players chosen to represent California are Messrs. Taylor, Gill, Keating, Curran, Williams, Parent, Thompson, Piercy and O'Brien, with Messrs. Cullen, Ashley and Walker as substitutes. The club has been presented with a magnificent gold badge, to be given to the player making the best record. On July 4th they will play at Omaha. The first game with professionals will be at Chicago with the noted White Stockings.

THE AMERICAN EAGLE.

Whan freedom, from her mountain hight,
Unfurled her banner to the air,
She tore the azure robe of night,
And set the stars of glory there!
She mingled with its gorgeous dyes
The milky baldric of the skies,
And striped its pure, celestial white
With streakings from the morning light.
Then, from his mansion in the sun,
She called her eagle bearer down,
And gave into his mighty hand
The symbol of her chosen land!

Majestic monarch of the cloud,
Who rear'st aloft thy regal form,
To hear the tempest-trumpings loud,
And see the lightning lances driven,
When strive the warriors of the storm,
And rolls the thunder drum of heaven,—
Child of the sun! to thee 'tis given
To guard the banner of the free,
To hover in the sulphur smoke,
To ward away the battle stroke,
And bid its blendings shine afar,
Like rainbows on the cloud of war,
The harbinger of victory.—*Jos. Rodman Drake.*

The following truly national poem should be revived with the Centennial Fourth:

"Keep your eye fixed on the American eagle,
Whom we as the proud bird of destiny hail;
For that wise fowl you never can inveigle
By depositing salt on his venerable tail."

A Good way to fasten screws that have become loose, is to fill up the holes tightly with cork. Screws and irons so secured will remain perfectly tight, as when put into new wood.

Who'll Till Our Fields a Hundred Years From Now?

BY HON. EBENEZER AYERS.

Who'll till our fields a hundred years from now?
Fields dear to us by many a lasting tie,
Fields our own hands redeemed from natnre's sway,
For which we fought to conquer or to die.

On the drear wild, by copse, by hill, by stream,
Our humble cabins hopefully we reared,
And with the partners of our earlier years,
Our trials, hopes and fears and joys were shared.

We drove the plowshare o'er wild nature's glebe,
And changed the wilderness of the native plain,
And in its stead there rose a boundless sea
Of growing, ripening, emerald waving grain.

Then here and there the village—city rose,
And deft mechanics came with ready skill;
The schoolhouse rises—then the church's spire,
And hy each gurgling brook, the busy mill:

And here and there, on some uncultivated knoll,
The marble tombstone rises o'er the head
Of many a pioneer—the loved and lost—
The founders of new cities of the dead.

Who'll be the joyous tillers of these fields,
And with true yeoman zeal will hold the plow,
And with the faith, and with the ardent hope,
That fills the bosoms of the owners now?

No, not such faith, and not such sanny hope,
As filled the bosoms of the pioneers—
For hazard, douht, and perseverance joined,
The noble prize achieved much more endears.

Who'll fill the churches on that Sabbath morn,
And join their voices in the hymn of praise?
Who'll fill the halls of legislation then?
Who win the civic or the material bays?

Who'll be the jolly Grangers of that day,
And spread the banquet in the festive halls;
Fill every station in the walks of life,
To which their pleasure or their duty calls?

Perhaps some antiquated man may say,
To the forthcoming centenary race,
He knew a few gray headed, tottering men,
That were the pioneers of such a place.

That long, long since those early pioneers
Had sunk beneath the sod their plowshares turned,
And naught remains except the lands they tilled,
And some posthumous lame for good deeds earned.

Impatient nature heads no laggard wish,
But ever crowds succeeding seasons on,
And, will we, nill we, hurls events along,
Till days and years and centuries are gone.

Childhood will patter, joyous youth will laugh,
Fashion still rule with undisputed sway,
Ambition fire the aspiring statesman's heart,
And equal vanity affect the gay.

The limpid lakes that gem this prairie land
Will gleam as brightly in that future hour
As when the pioneers first stood, amazed,
Then reared their cabins by their pebbly shore.

The genial sunshine and refreshing shower,
Still bless the honest hand that holds the plow;
But all unknown to us the coming men,
Who'll till our fields a hundred years from now.

The Root-Cap of a Plant.—A recent writer remarks: "The idea held by the earlier botanists, that the tips of all roots consisted of spongy masses of tissue, by means of which plants were enabled to soak up their food from the soil, has, with the aid of the microscope, been entirely discarded. The term spongiole, which was given to these theoretical bodies, is a landmark of departed ignorance, and furnishes a striking contrast with the known structure (the root cap), with which the tip of every growing root is covered. With the leading botanists of to-day a root is considered to be an outgrowth protected by a cap. This definition seems very short, but if anything further is added, there comes with it a number of exceptions. The name which this covering to the root-tip has received is in itself very descriptive, as it is truly a cap, consisting of a number of layers of quite dense cells surrounding the extremity. These root-caps vary in size in different species of plants; sometimes they are so small that only with the high powers of the microscope can they be seen, while on the other hand they may be readily observed with the naked eye."

Adulteration of Sugar.—A case of adulteration of sugar, recently tried at Marseilles, has excited a good deal of attention there. Fraud of the kind had long been suspected by the customs officials, and the cargo of sugar in the present case was from Reunion. The Reunion sugars of brown hue are very rich in saccharine matter, and well suited for mixture. It was first thought that the sugar had been mixed with pounded bricks and sand, but on analysis the added matter was found to be slag (a sort of opaque glass formed in the working of various metals, or vitreous lava from volcanoes) along with sand, and an economy of 12 fr. per 100 kilgos. was anticipated. The slag has a bright granular fracture, so that it makes a very good imitation of sugar. The sand was added to make up the weight.

Fine Proof Suit.—An extraordinary fireproof suit, invented by a Swede named Oestberg, was recently exhibited in Vienna, in the presence of the Emperor William and several other distingnished personages. One Captain Ahlstrum, clothed in the suit, walked into an immense fire, prepared for the occasion, of wood saturated with petroleum. The account says: "The heat of the fire was so intense that no one else could approach within eighty paces without being burnt or scorched, but the Captain walked around in the glowing pile perfectly undisturbed, leaning on the burning wood, and finally seated himself on the coals." After remaining in the fire a quarter of an hour, the salamander came out perfectly unharmed, and without "the smell of fire upon his garments."

The Fourth of July in San Francisco.

Arraugsments are complsted to make the observation of ths Fourth of July in this city one of the most notable and interssting ever planned. Land aud water, sea and shore will furnish the double field for the exercisss of cslebration. On Monday, July 3d, npon land, thsre will he the sham battle and the brilliant display of msn at arms, and on the watera of the hsrbor there will be hombardment hy forts and ships of war. Solid shot and murderons shsll will hslch forth from forts and port-holes. In all fsaturss, savs that the marks to bs firsd at ars a harren rock and a craft without a crew, the engagement will hs as real as heavy shot and dry powder can make it.

Our illustration shows the field of conflict. In the foregrennd is the Presidio Reservation, where the sham battle of ths morning of July 3d will take place. On the water the scene, which those acqnainted with the bay will recognize aa lying at the entrance to our harbor, embfaces a stretch four milea in diameter, and across this the ahot and shell will he hurled. The general outline of arrangementa is as follows:

The Attack on Sea and Land

Will ue made in three positious. The dotted lines in the engraving represent the shot fired from the forts and fleet at the first position.

The linea formed hy a dot and dash represent the second position.

The solid unbroken lines represent the third position.

A Represents Fort Point.
B. Lime point.
C. Fleet of war vessels in first position.
D. Angel island.
E. Alcatraz island.
F. Visiting frigatea.
G. Black point (Point San Jose).
H. Fleet of war vessels in second positiun.
I. Harbor View.
J. California Guard Battery of Second Brigade.
K. First, Second and Third Regiments Infantry, with nnattached companies, forming the infantry portion of the Second Brigade.
L. Major Hashrouck's Battery, Fonrth Artillsry, U. S. A.
M. Major O'Brien's Cavalry of Second Brigade.
N. Presidio garrison.
O. Fire ship, to he destroyed by batteries.

The firing in the first position (dotted lines) will he directed to Lime point, and will be sustained from the fleet, from Fort Point, from Major Haatronck's battery, and the California Guard Battery, from Alcatraz, and from Black point. While sufficient racket will he created in thia movement to typify a hombardment, the resnlt attained will he little more than target practice from differeut angles aud distancea with flying shots from the fleet.

In the aecond position (dots and dashes) the fire ship will he brought into prominence and will he treated as a hostile iron-clad, or, in accordance with the imagination of the on-lookers, aa a whole fleet of monitors helonging to an imaginary euemy. The lines in the diagram represented hy a dot and dash indicate the direction of the firing at the ship. The fleet will circle round while firing, as in the Port Royal tactics.

In the third poaition (straight lines) an exhibition will he given of long-distance firing with shell from Fort Alcatraz.

The Military Display

Will precede the naval maneuvres and the cannonading, and will hegin about 10: 30 A. M.

In an order issued from the Headquarters of the Second Brigade, the commanders of the infantry regiments and captains of unattached companies will report to the Assistant Adjutant-General, on the Presidio Reservation, on the 3d instant, at 9 A M., promptly, taking the cars of the Central railroad company to Post street and Cemetery avenue, thence along Cemetery avenue to the Presidio Reserve by the new road prepared for the troops.

Major H. R. O'Brien, commnnding the Cavalry Battalion, will report with two companies of his command to Adjutant General Walsh, at the Cosmopolitan hotel, at nine o'clock, for eacort duty.

The Commander of the Light Battery, Company A, California Guard, nnattached, will report his command to the Assiatant Adjutant-General at nine A. M., Presidio Rsserve.

The whole of the Presidio Reserve east of the garrison is deaignated as the review ground, which the Field Officer of the Day will protect. Major Jamea A. Lavan, Second Regiment, N. G. C., ia detailed as Field Officer of the Day.

At ths Presidio.

A salute of seventeen guns will be fired on the arrival of the Governor and etaff at the Presidio. The formal review ceremouiea will then he proceeded with and after an interval for lunch the taotial evolutions will be executed. Twenty rounds of hlank ammunition will be issued to each man on the field. The column of hattalions will be deployed into line. The liue will wheel by fours to the left, and next form a new liue of battle by moving forward to the left of the firat four hy a left obliqne movement. As qnick aa the variona subdiviaions arrive in the line they will wheel about by fours, thns bringing the new line of battle faced to the rear—that is, faced iu the opposite direction to which the column of fours were approaching at the moment the movement was ordered. A vsry picturesque evolution will follow. The battalions will form double columns of fonrs and move to the new front in this formation. After gaining the necessary ground to ths front, ths hattalions will again dsploy forward into line of hattle and facs ahout. An advance by echelon from the right will bs nsxt presented for the admiring gaze of the mnltitnde. Looking down upon the troops they will appsar to ths eye like the hlack squares on a checkerhoard seen diagonally. After the necessary interval of rsst, the battalions will describe a half wheel to the lsft into line of hattle, thus giving an obliqne change of front. The imsginary enemy is presnmed to be in this front, and skirmishers will he sent forward to ascsrtain his intention. They discover him in force and the ssngninary work commences. General McComh, to prsvent his army from bsing utterly annihilated hy the stubhorn rssistance of the foe, will attack it in two lines, the linss advancing, altsrnately passing through each other, and pouring hy turns a shower of paper wads on the enemy, who is now offering auch obstinate resistance that the skirmishers are called off and a mnrderoua fire hy hattalions is directed upon his lines. Under this fisrce onslaught he wavers and reels hack, leaving his wonnded on the field. Like all great captains, the commanding general takes advantage of the enemy's display of weakness, and orders a magnificent advance in line, which culminatea in a heroic hayonet charge. The remnanta of the enemy haviug heen diapersed or captnred, a halt is called, the deadly fire is stopped and the broken lines readjusted. Theu the victoriova army will be dismissed with a benediction, and the soldiers will retire to their homes and once more don the nnpretending garh of the civilian. Spectators who desire to witnesa the glittering pageant will find favorable pointa of observa tion on the surrounding hills. The position from which the plan of operationa is supposed to he taken will he the most desirahle vantage ground. The beat ronte for visitors will he along Cemetery avenue, taking the California or Bush street cars. This will hring them straight to the R aervation, when they can readily take to the hills and select the point of view that suits them best.

The naval display is not likely to last over an hour, and it is expected that all the manenvers will be completed by 3 P M.

On the Fourth

There will he arranged one of the grandest parades and atreet displays ever witnessed on the coast. Already flaga are festooning Kearny street from end to end. In the paraed on the Fourth, civic and military organizationa will join. The line of march will he aa follows: From Second to Montgomery, to Montgomery avenue, to Kearny, to Market, to Ninth, to New Montgomery, to Mission, to the pavilion. At the pavilion there will be stirring and patriotic apeeces. Rev. Dr. Stebbins is the orator of the oay. Addreases are expected from the Governor and distinguished citizens. In the evening the city will be a hlaze of light aud life and resonant with music. Those of our country friends who choose to pass the holidays in the city may be aure of a varied and enlivening entertainment.

An Early Celebration.

A portion of the aigners of the Declaration met two years after, for a cheery commemoration of their great achievement, in the Philadelphia City tavern. The enjoyment of the occasion was enhauced by the recent deliverance of the city from the presence of General Howe, and hy the contrast hetween this featival and that lately given hy the British officers to him. A brief glimpae at the patriotic occasion, from the hitherto nnpuhlished diaries of William Ellery, may well close this narrative.

"On the glorious Fourth of July [1778], I celebrated in the City tavern, with my brother delegates of Congresa and a number of other gentlemen, amonnting, in the whole, to about eighty, the anuiversary of Indepeudency. The entertainment was elegant and well conducted. There were four tables spread; two of them extended the whole length of the room, the other two crossed them at right angles. At the end of the room, opposite the npper table, waa erected au orchestra. At the head of the upper table, and at the President's right hand, stood a large haked pndding, in the center of which was planted a staff, on which was displayed a crimson flag, in the midst of which was this emblematic device: An eye, denoting Providence; a label, on which was inscrihed, 'An appeal to Heaven;' a man with a drawn aword in his hand, and in the other the Declaration of Indepeudency, and at his feet a scroll inscrihed, 'The declaratory acts.' As aoon as the dinner hegan, the music, consisting of clarionets, hantboys, French horns, violins and bass viols, opened and continued, making proper pauses, until it was finished. Then the toasts, followed by a discharge of field-pieces, were drank, and so the afternoon ended. In the evening there was a cold collation and a brilliant exhibition of fireworks. The street was crowded with people during the exhibition." —*Scribner's.*

A Letter from Spring creek, in the Black hills country, gives the following as the price of provisions there: Flour brings $16 per 100 pounds; bacon 35 cents psr pound; beans, 16 cents; corn meal, 14 cents; beefsteak, 20 cents; and everything else high in proportion.

At the Centennial.

Notes of Travel. Sight Seeing and Relic Hunting.

[For the Press.]

It is easy to imagine your sanctum overrun with Centennial notes, and were it not like rosemary, "just for remembrance," this would not he written at the risk of adding to the contents of your waste baskst. An imperativs telegram, snmmoning me to the opening of the Centennial exposition, gavs one day for preparation sud seven for the trip from Sacramento to Washington. Selecting the shortest gsographical route, *via* the "Omaha and St. Louis cnt off"—a new road inaugurated last Fsbruary, I missed the opening by 48 hours, on acconnt of wash-outs on said road in Nebraska, and have the consolation of helieviug that Providence thns interposed to spare me the crush and fatigne and mud of that notable day.

At the Exposition.

A week of sight seeing in and aronnd Washington was all the rest allowed me, preparatory to the first instsllment of thia greateat and grandest expoaition that the world ever saw.

The second week after the openiug found ns on the Centennial grouuds, housed in a "temperance hotel" five minntes' walk from the entrance on Elm avenue, near the main building. To encourage those who may he deterred from coming to Philadelphia through fear of high pricea of living, I will say that comfortahle rooms, accommodating two persons, may be had for $1 00 and $1.50 per day, and meals at 50 cents each aud upwards, either at hotels or restaurants, hoth outside and within the grounds. If one ia there merely to see the exposition, it is hy all means better to locate as near the center of attraction aa possible, and thus avoid the long and tedious trips to and from the city in crowded cars, at the expense of two or three hours daily. I would say to all those who intend coming, plan to stay as long as possihle, hut in any event come, if for ever so short a time. It may not happen again on our continent for many years, nor on any other, perhaps, that 40 different natione will he represented in a characteristic manner in one building, or that the finest collection of art ever exhibited in one place is grouped together ao that in less than a day's time it may at least he all glanced at, while the varions huildings that furnish headquarters for the commissioners of different nations are all highly characteristic and afford an opportunity of atudy and observation that only months of foreign travel can give.

The grounds are themselves delightful, and in Lansdowne valley one may enjoy a seat in the shade, hathe their hands in the romantic little stream that wanders through it, and at the same time listen to the wonderful strains from Gilmore's hand, that every forsnoon vies with the birds and hum of human voicss in that lovely rstreat.

If one can afford to take the Centennial lsisurely, it is a grsat rslief to vary ths inspection of exhibits in the the intsrior of the building hy strolling out among the fountains and lakes, among the quaint strnctnrss erected for many purposes, whsrs ons may almoat always find a seat and, if desirsd, a communicative companion, in the person of guard or exhibitor.

Our time hsing limited, we made the entire round of the exposition in three days, and, aftsr a rest, hegan the business of looking after specialtiss and nsw exhibits, which, I am vexed to say, will be opensd daily long after we reach ths Pacific coast, as now appears from the piles of nnpacked hoxes in the Turkish, Russian and Chinese departmsnts especially, and notably also in the department of art.

Securing Mementos.

There is still euough to see, and happy the mau or woman who does sse and appreciate it all. And I venture to say that no womau of culture will examine the rare laces and china, the exqnisite carvings in silver, wood and ivory, the hronzes, jewelry and embroideries, the pictures, statuary, tapestry and mosaica, without breaking the tenth commandment, or aomething near it, hy desperately wiahing for often impossible duplicates.

But one is met at every turn by the exasperating aasurance that nothiug can he removed from the Exposition until next November, and one day'a experience fully convinced us that the commiasioners are in earuest about this very proper restriction. Searching one morning for mementoa, we visited an npholstery section in the British department of the main huilding, where the week before the gentleman in charge had offered to sell a fine piece of satin damask, naed as a sample in taking orders for covering furniture. But meanwhile the Custom Houae officers had measured his goods, and threatened to shut up hia place and confiscate all it contained if at any time they were found not to exactly correspond with their inventory.

"But," said the exhibitor, "at Vienna we were allowed to hny and sell as much aa we chose, and turned the exposition into a regular hazaar." He ia allowed to take orders and deliver them as soon aa they can arrive from England, and New York people have already ordered aome of the choicest goods, that would grace a Sultan's palace.

But that was too far fetched for us, so we went over to a stout old Englishman in charge of a case of common English pottery in odd shapes and colors, the like of which he assured us in a tantalizing way were not to he fonnd in America. Would he sell that lovely green and brown teapot and creamer in rustic pattern? Yes, and it was very cheap, too, hnt we could not take it away. "You call this a free country," but he had never been so hampered and restricted in all his life. Some of the casea had been locked up and were under the seal of the Custom House inspectors, for selling and delivering a few trifles. So we parted with mutual regret, hut after all the grumhling of exhibitors and visitors, none of us would l ke to see this

Sham Battle and Grand Naval Bom

superb exposition spoiled by the confusion and continual change that must arise if what is on exhibition to-day were sold and removed to-morrow. However, there have been and are to be bazaars opened upon the grounds in connection with the Turkish, Italian and other department, where goods are to be sold and immediately delivered.

For ourselves, we were obliged to content us with the "flags of all nations," bookmarks and badges woven in machinery hall and the woman's building, Centennial fans, photographic views of the buildings, etc. But many homes will be enriched by these works of industry and art, as many are already marked "sold," and usually the name of the purchaser attached. We notice that newspaper writers complain that the

Prices of Goods

Are so constantly flaunted before the public, but I am sure the eager public are more than ready to forgive a weakness that furnishes knowledge they are so anxious to possess. This is not true of the marbles, however, as we saw no price affixed in any case, although many were labeled "for sale," or "sold." Indeed, many of them are so recently unpacked that they are not even catalogued, and no clue is furnished us to the origin or destiny of these exquisite gems of art. One little fellow in marble attracts great notice by the forlorn curl of his lip and two big tears rolling down either cheek because forced to say his prayers, the cross hung from his neck, and the label hinting that they are not of the sort that his tired little heart can appreciate. Another very beautiful and lifelike statue is a girl holding a plump, lusty looking baby, and at the same time a cup containing his food. She has taken a spoonful, and is cooling it by blowing, with the under lip curved with the exact touch of nature, while baby gives a lusty kick to show his impatience. This reminds me that I learned last night of several acts of vandalism in chipping bits from these marbles and even pictures as relics. We cannot see how sufficient protection is to be furnished in the way of barriers and official guards to keep such wickedly selfish beings from ruining some of the choicest works of art in existence, unless a public example can be made that will once for all intimidate every one subject to this temptation.

While in the art gallery I may as well speak of a

Mosaic Picture of Washington

Which hangs in memorial hall, on the left as you pass out to the annex, which has been "presented to the city of Philadelphia as a souvenir of independence declared in that city July 4th, 1776. Presented by L. A. Gallandt, mosaic manufacturer, Rome." The work is finely executed and of life size, but the color is just the tinge of yellow that one sees in subjects of fever and ague along the Missouri river; and of course it is unmistakably Washington, but one grows so tired of his tame physiognomy as seen on paper weights, glass statuettes, book marks, etc, that one needs to be exempt from the sight of all of them for a while before judging without prejudice any likeness of the Father of our Country.

Mosaics.

In the first room of the annex are displayed the wonderful Florentine and Roman mosaics, hung in pictures on the walls and disposed about the room as slabs for the tops of tables or already mounted.

One of the finest, inlaid in ebony, represents a harp and statuary, vase and flowers and artists' tools; price $5,000. Next to this is one still more elaborate, also in ebony, a scroll of music (Norma), masque, guitar, book in pearl, Comedy of Dante, vase of flowers, painter's palette and globe in a frame; $10,000. Another, but not so beautiful, is a Florentine mosaic inlaid in real porphyry; $5 000.

One of the most beautiful was an ebony slab, inlaid with grass, flowers, shells, and a full length figure of Flora, a locket, with ribbon of malachite, exquisitely inlaid with lilies of the valley and forget-me-nots; $5,000, gold. And so on down to $3,000, even which seems rather a high figure for republican America in these hard times. I didn't mean to take you to the art gallery, it is such a bewildering, hopeless sort of a place, and withal so fascinating that once inside only the order of the guards to close would release you from the spell.

The State Buildings.

The hour for closing all the buildings is six o'clock, but one evening a lady companion and myself presumed upon the courtesy of the officials and made a tour of the, State buildings, which are situated in the most delightful part of the grounds, nearly all in a line and facing the beautiful lake and main buildings, bridges and lawns. Sitting on the porches in the rear and looking down the beautiful lawns, shaded by trees of natural growth, one could easily imagine himself at home, whether in New Hampshire, New Jersey or wherever that favored spot might chance to be.

The gentlemen in charge were in several cases sitting upon the front porch with a look of supreme affability and content, and to our remark that "it was rather late to call," gracionsly responded that "the latch string was always out and they were very glad to see us." A book for registering names of visitors is kept in each of these buildings, although some are exclusively for residents of the State owning the building, and one cannot help remarking that the line of free hearted cordiality decidedly tends towards the West, in this as in most other matters.

All styles of architecture are represented, from the little log cabin of Mississippi on the hill, hung with gray moss, to the stately stone building of Ohio and the foreign looking house of many rambling roofs, covered with red tiles, claimed by New Jersey, and, I had nearly forgotten to say, the California building with its swell back and dome-like appendage on top, which gave rise to all sorts of speculations as to whether it was a huge water tank or Mohammedan mosque. However, we are assured that it will be a very fine hall when finished, and it is rapidly approaching completion.

Searching for specialties one day, we visited the

Colorado and Kansas

Building, which was not yet open to visitors, but we quietly ignored the sign "no admittance" and went around to a side door, where the Kansas commissioner kindly received us, introduced us to the exhibits, which are among the finest of the kind on the grounds and the most tastefully arranged, unlocked the ladies' parlor, gave us seats and went to find Mrs. Maxwell, the Colorado huntress who has killed over four hundred wild beasts and stuffed them, together with a large collection of birds, which are to be exhibited in the Colorado section of this joint building.

Many of the animals were already mounted upon the artificial rocks and mountains which she was helping to construct in one corner of the main hall. Her manner was cordial and womanly to the last degree, and she chatted modestly of her exploits in killing buffalo, elk, foxes, wolves, bears, eagles, etc., saying that her husband was not always at hand when she needed to use a rifle, so she had learned to use one herself.

Another notable we were anxious to interview was the lady engineer who runs the Baxter engine that operates the looms in the woman's building. We found her in the little brick annex in the rear, dressed in an embroidered linen suit, looking as clean and cool as if in a parlor. She had always been familiar with engines in her father's mills in Canada, had studied the subject with her brother, who is a civil engineer, and perfected her knowledge by a thorough course elsewhere. She pretorred the business to teaching school, and there were several young ladies expecting to take lessons of her this summer.

Specialties.

Supposing that everybody knows what is in the woman's building, I will only say that I noticed a large display of Mrs. Flynt's reform garments, and heartily regretted that Mrs. Curtis, of San Francisco, Cal., could not have matched her own inimitable inventions beside these and thus given the world another valuable hint towards reform in the right direction.

Another special exhibit was 90 varieties of apples, received from Melbourne, Australia, last week, *via* San Francisco, all in fine condition, displayed in Victorian court, main building. Each variety was carefully labeled, and some of them looked very fine. All were ripened in March, the exhibitor said, but he looked so unmistakably "hands off," that we didn't ask to be allowed the privilege of eating a foreign apple, as we were tempted to do.

The exhibit of fruits from Jamaica in agricultural hall, to be followed by others during the season, attracted much attention. Shaddock, mangoes, yams, mammee apples, jack-fruit, convey but little meaning to the untraveled native American mind, but it was some satisfaction to us to put our index finger into some of it, through the coarse netting thrown over it, to ascertain its degree of softness and to express our dissatisfaction that it was all to rot and be thrown away in a few days, when we wanted to put a tooth into some of it so very much. The sapodillos are about twice the length of an apricot, with about the same width, thickness, color and texture of skin.

The exhibitor indulged my vindictive punch into one of them, and seemed to make due allowance for my feminine curiosity to taste the forbidden fruit.

The mammee apples are an extremely rough looking, russet fruit, about the size and shape of an ordinary apple.

The exhibits on this table are to rotate during the season, it being filled the week previous with tempting Michigan apples, which were distributed about somewhat promiscuously.

Near this section is "Old Abe," the veteran Wisconsin war eagle, the hero of 25 battles, who exhibits his soldierly bearing daily for the benefit of the ornithological society in the State that is so justly proud of his career and history. His life and photograph are for sale by the soldier who carried him as the battle flag of the Eighth Wisconsin during the late war.

One afternoon we reveled among sewing machines, and discovered two which make a lock stitch without a shuttle, the Wardwell and Monitor, a consummation for which so many have been anxiously waiting these long years. They are just being introduced into market and seem to possess all the excellencies of other first-class machines.

Darning Machine.

Being mindful of the injunction of the stocking-darner of our family, to purchase a machine for performing that labor, I was glad to stumble accidentally upon one in machinery hall, and enjoyed seeing a gentleman darn a hole, made for the purpose of showing off this "cast iron grandmother," in the most improved manner, which he graciously bestowed upon your correspondent, while a lady remarked it would be handy to have one's husband do up the family darning in the evening, while the wife read the papers.

C. A. Colby.

Washington, D. C., June 8th, 1876.

The Celebration in New York.—A telegram from New York says: Preparations for the celebration of the third and fourth are almost completed. The parade will be one of the most imposing demonstrations ever witnessed in this city. The entire first division of the National Guard will turn out and a number of civic societies are to participate. It is calculated the procession will be five miles long. The processionists will carry torches. The houses on the route are to be brilliantly illuminated.

A Centennial Tribute.

[Composed by Sarah Morton, of Merced, graduate of the College of Notre Dame, of the class of 1876.]

Tho' many a poet's hands have swept
With wondrous touch the mystic lyre,
And strains of patient sweetness stirred
Our hearts with their impassioned fire,—

Tho' thousands still in silvery tones
Will consecrate this hallowed theme,
Yet would a daughter of the West
Fain cast one leaflet in the stream.

One leaflet from Pacific's shore,
From California's lovely State,
Upon the mighty onward tide
That flows through Freedom's golden gate.

One leaflet 'mid the wealth of flowers
Strewn round our fair land's deathless fame
By pens inspired with magic power
Her peerless prowess to proclaim.

One bud among the votive wreaths
That grace Centennial gold-draped halls,
A tribute of the glorious past
Ere down the silvery curtain falls.

And softly borne on pinions glad,
Like crystal spray beneath the sun,
Are echoed far from shore to shore
The deeds our noble sires have done.

Theirs is the glory, ours the weal,
And as our suns in splendor glow,
We reap the golden seed they sowed
Just one bright hundred years ago.

Oh, ever bright be their pure bays,
And green the mounds of fallen brave;
In blood they wrote their glowing tale,
They fell our own dear land to save,

Then when liberty's sun was set
And freedom crushed and panting fell,
Till Britain's swords ceased clashing, and
Her guns grew cold in Yorktown's dell—

A hundred years ago! What thoughts
Rise up like stars in night's dark dome,
Of those who nobly lived and died
To win us freedom's happy home.

Atlantic's stormy billows heaved
A hundred years ago as now,
But what a change those years have wrought
Upon our country's noble brow.

The East, then but in part unveiled,
Has since the curtain folds unrolled,
And where the wild untrodden glade
Once stretched, now dome and spire behold.

And in the far-off, boundless West,
'Mid unmarred splendor rich and rare,
Vast rolling plains and forest bowers
Unknown were spread in grandeur there.

Her giant pines with æolian strains,
Till o'er the grand old forest dells
And streamlets spanned by Iris dyes
All softly sweet the cadence swells.

Broad fields of waving grain now bend
Where once were barren, wildwood plains,
And mighty falls and rivers swell
Successful labor's choral strains.

And o'er the land from East to West,
The iron charger's tramp is heard,
And with a warm electric pulse
Columbia's heart of hearts is stirred.

And railroad, telegraph and press,
And commerce with her white-winged fleet
All add new luster to the land
Where wealth and power and glory meet.

And our fair land, our beauteous State,
Is smiling 'neath our Western skies;
Nor Italy, nor Syrian clime,
Can rival her in our fond eyes.

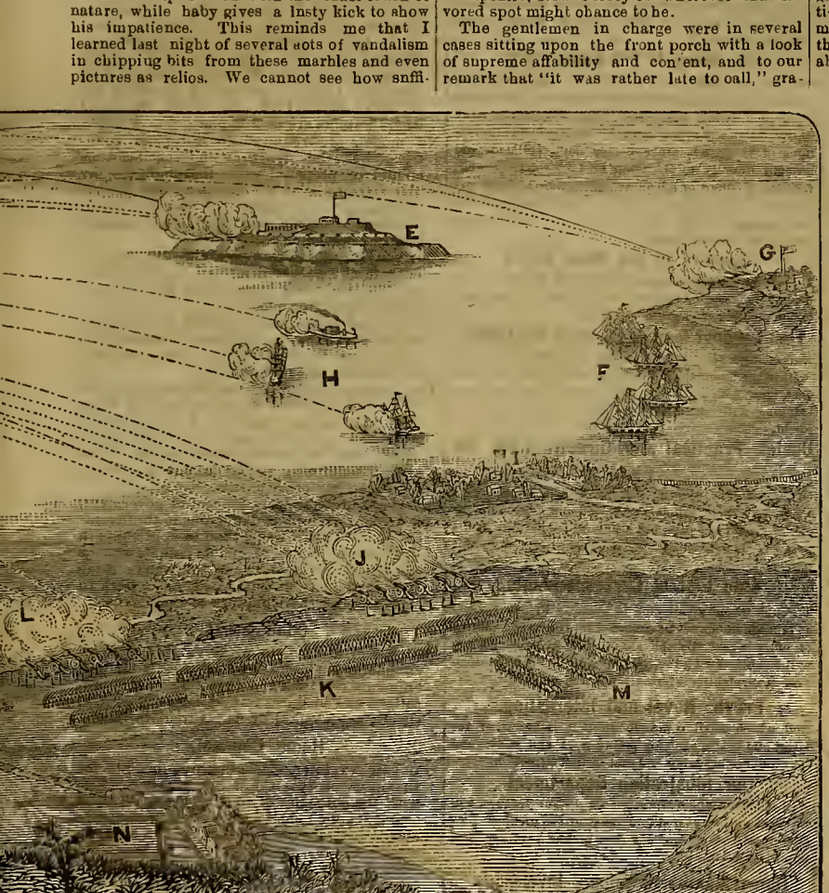
Yosemite's grand wond'rous vale
Will charm as long as earth shall be,
And Shasta's clouded dome shall rise
Till time shall be eternity.

But dearer far than nature's charms
We hold our legacy of fame,
Our heroes of a hundred years,
Our Washington's immortal name.

And thanks to God our country stands
To-day, her starry flag unfurled,
And waves its wond'rous radiance now
Far o'er our grand republic world.

Float on, thou loved and honored flag,
North, South, East, West, from shore to shore,
And our brave eagle, proudly spread
Thy broad, free wings forever more.

A Little Centennial Expedition.—At noon on Tuesday Mr. J C. Temple, of Carthage, Jasper county, Missouri, arrived in this city pushing a wheelbarrow loaded with 50 pounds of lead ore from the mines in his region. Mr. Temple is past the middle age, but is strong and vigorous, and shows few signs of fatigue after his arduous journey of over fifteen hundred miles. In October last he sent out circulars to the Joplin, Oronago and other mines asking that specimens of their ores he sent to the mayor of Joplin, and offering to wheel 50 pounds weight from that city to the Centennial. He started February 28th, accompanied by his son Otto, aged 13, and Thomas Wilson, an Englishman, who wheeled the baggage barrow. The route chosen was by way of St. Louis, thence to Vincennes and Madison, Indiana; Cincinnati, Zanesville, Xania, Columbus, Ohio; Wheeling, West Virginia; Uniontown and Lancaster, Pennsylvania; and thence along the old Lancaster pike to this city. Everywhere the little Centennial expedition was kindly greeted, and in some villages many of the inhabitants turned out and escorted it a short distance on its way. The best distance made on any one day was 27 miles and the journey took 105 days. This was due to bad weather and bad roads. Mr. Temple's ores, which he hopes to find a nook for in the Centennial buildings, comprise splendid specimens of lead, iron, zinc, spar, garnet and black jack. The latter holds 20 per cent. of lead, but some of the specimens are nearly pure.—*Philadelphia Times, June 15th.*



nt in S. F. Harbor, July 3d, 1876.

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GENTLEMEN—I write to acknowledge the receipt hy express of the U. S. lettera patent on my invention for breech-loading ordnance, and to tender you again my very sincere thanks for the careful attention you have hestowed upon my application since I first placed it in your hands for the evident great interest you have manifested in it, and for the uniform patient and cheerful courteey which has constantly marked your correspondence in reference to it. I have had some dealings witn other agencies in the same line in times past, and I can assure you that my correspondence with yours hae been more pleasant and satisfactory than with any others, and I shall always take great pleasure in recommending your agency to any and all my acquaintances without hesitation or reservation, aa I should certainly prefer to entruet my own hueineaa in your hands should I have any to traneact in the same line hereafter. Yours, etc., J. R. N. OWEN.

APPRECIATION ABROAD.—We copy the following from the *Mining and Monetary Gazette*, of London, Eng.: "We deemed it advisable, as affording valuable information to our readers, to publish in recent issues of *The Gazette*, the full text of the "United Statee Mining Laws and Instructions, by the Commissioner of General Land Office," taken from our talented contemporary, THE MINING AND SCIENTIFIC PRESS, of San Francisco. The documents have now been issued in a handsomely-bound volume by Messrs. Dewey & Co., the publishers of our transatlantic contemporary, and it will be found very useful to those already interested in American minee, and to others who may be tempted to embark in that enterprise in the States."

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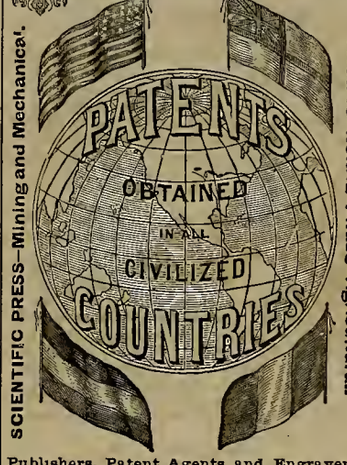

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Youre respectfully, JOHN W. PLATT.

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We also want the addrese of Wm. Buck.

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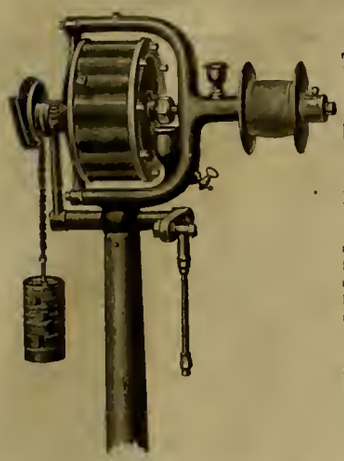

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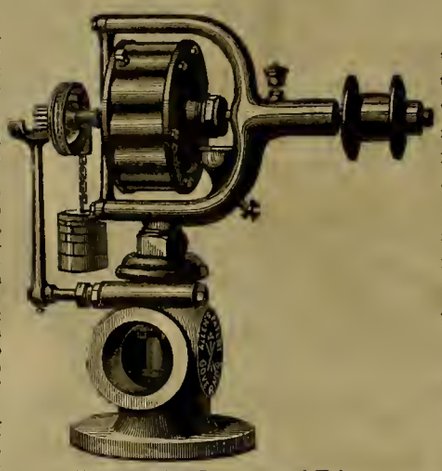

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Hercules, the son of Jupiter and Alcmena, was descended directly from the Gods. He performed more wonderful deeds of strength than any of the heroes of old. On one occasion he was sent by Eurystheus to execute a very great task, when he found himself opposed by several Giants, among whom were the powerful Giant Geryon, Eurytion, a Monster with three heads and six arms, and the two-headed dog, Orthus. All these he slew with his club. He then came to a high mountain, which, with one blow of his club, he broke from summit to base, and thereby made an entrance into the Mediterranean Sea, through the Rock of Gibraltar, the Straits of which are known to this day as the Pillars of Hercules.]

We wish to call the attention of Miners and others to a few points of the superiority of **Hercules Powder** over all other strong Explosives:

1. Its strength is greater than that of any other in use. The materials of which it consists are compounded upon strictly scientific principles, and are not a simple neutral absorbent employed that will hold a quantity of Nitro-glycerine. It is the opinion of the best chemists to whom the matter has been submitted that no mixture has been employed that so thoroughly promotes the whole tremendous force of the explosives employed, and at the same time neutralizes the offensive gases caused by the explosion. With this powder one-half the time is saved that is lost by using any other strong Powder, before you can resume work after a blast.

2. UNIFORMITY.—The materials of the mixture are chemically prepared, and therefore, great uniformity can always be depended upon and the best results obtained. This is a great advantage over any that varies in its strength as those must which are mixed with any natural earth.

3. SAFETY—So perfect is this mixture that no accident can happen with it from premature or accidental explosion, if persons will half follow the rules laid down for its use. No Powder has ever been invented where so few accidents have happened with it in proportion to the quantities which have been used.

4. CARTRIDGES.—It is well known that nitro-glycerine has a tendency to decompose by volitilization. These are the "fumes" that are smelled on going into a close warm drift, or room where nitro-glycerine powders are stored. To prevent the escape of these "fumes" an almost hermetically sealed cartridge is employed, and so effectually is it, that some cartridges filled with Hercules were exposed to a blazing California sun for six months in summer, with no perceptible loss of strength. This is a great advantage over the open porous paper generally used for cartridges.

5. ECONOMY.—We believe that any miner who will take the trouble to investigate the matter will satisfy himself that full 15 per cent. is saved by using the HERCULES over any other strong Powder manufactured.

Query. Is this worth saving? We should think so. Try it. { Hercules X X No. 1, for extreme hard rock. / Hercules X X No. 2, for medium hard rock.

The GREAT SUCCESS of the HERCULES POWDER naturally aroused a strong opposition to its use, and litigation in defense of its rights become necessary. We would therefore call the attention of the public to the FINAL DECISION in the U. S. Circuit Court of the whole matter in favor of the California Powder Works, *which explains itself:*

DECISION OF THE COURT.

At a stated Term of the Circuit Court of the United States of America of the Ninth Judicial Circuit, within and for the District of California, held at the Court Room thereof, in the City and County of San Francisco, on Wednesday, the sixth day of October, A. D. 1875.

Present:—Honorable Stephen J. Field, Associate Justice of the U. S. Supreme Court; Honorable Lorenzo Sawyer, Circuit Judge.

THE GIANT POWDER COMPANY vs. THE CALIFORNIA POWDER WORKS, ET AL., *In Equity, No.* 1,233.—The Court having, on the 22d day of September, A. D., 1875, being a day in the July Term, A. D., 1875, of said Court, sustained the demurrer of the defendants to the complainant's amended Bill of Complaint herein, will leave to complainant to amend its said bill on or before the next succeeding rule day, and the said time granted complainant within which to amend its said bill having expired, and the default of said complainant to amend its said bill having been duly entered, and the Court having on the sixth day of October of the said term and year, on motion of C. R. Greathouse, Esq., Solicitor for defendants, M. A. Wheaton, Esq., Solicitor for complainant, being present, in open Court, and declining to amend his said bill of complaint, he having elected to abide by his said bill of complaint as filed in this cause, ordered that a decree be entered herein dismissing said bill.

Thereupon, upon consideration thereof, it is ordered, adjudged and decreed, that the complainant's said bill be, and the same hereby is dismissed, and that the said complainant pay the said defendants their costs in this behalf expended,

October 18th, 1875.

(Signed) LORENZO SAWYER,
U. S. Circuit, Judge Ninth Circuit.

ENDORSED:—Filed and entered, October 18th, 1875.

L. S. B. SAWYER, Clerk.
By J. F. O'BEIRNE, Dep. Clerk.

Sold by THE CALIFORNIA POWDER WORKS, 314 California Street, San Francisco, Cal.

Also, all grades of Black Powder, Fuse, Shot, Caps, Etc.

Continued from Page 8.

later, as a general in the field, bombarded his own house at Yorktown, and Harrison, afterward the father of a President. Massachusetts sent Hancock, the President of the Congress; Samuel Adams, who shared with Hancock the honor of being excepted from a royal pardon; John Adams, "our Colossus on the floor;" Elbridge Gerry, afterward Commissioner to France and Vice-President of the United States, and Robert Treat Paine, who had acted as public prosecutor after the Boston massacre. Pennsylvania contributed Dr. Franklin, "the genius of the day and the patron of American liberty;" Robert Morris, "the financier of the Revolution," by whose sole credit the Continental army was sustained in its closing campaign, and who was afterward a prisoner for debt; Morton, who had been a member of the "Stamp Act Congress;" Ross, the mediator between the Colonists and the Indians; Dr. Rush, renowned for science and for humanity; Clymer, soldier, student, writer, and prison reformer; the Irishborn Taylor and Smith, and the Scotch Wilson.

Yet the other colonies were represented by delegations hardly less eminent. New York sent Livingston, of "Livingston's manor," the correspondent of Edmund Burke, and one of the framers of the "Address to the people of Great Britain" in the first Continental Congress; Lewis, the Welsh merchant, to whom the British government had given 5,000 acres of land for his services in the French and Indian war; Floyd, who, during the greater part of the Revolution, was an exile from his home, leaving it in the hands of the British: and Morris, afterward succeeded in Congress by his more famous brother, Gouverneur. New Jersey sent Hopkinson, lawyer, wit, and poet—the author of "The Battle of the Kegs;" Dr. Witherspoon, the Scotch clergyman, President of Princeton college; Stockton, a patriot, and the ancestor of patriots; Clarke, known as "the poor man's counselor," though not a lawyer, and "honest John Hart." New Hampshire had chosen Dr. Bartlett, the first to sign the parchment roll; Dr. Thornton, who succeeded Governor Wentworth, and became noting Governor of New Hampshire; and Whipple, who rose from a cabin-boy to be a general, commanding with Stark at Bennington, and under Gates at Saratoga. Connecticut sent Roger Sherman, shoemaker, lawyer, and judge, who had studied while working at his bench, and had become a profound lawyer on borrowed law books; Huntington, afterward President of Congress, and Wolcott, who defended the Connecticut coast against Tryon, and, later, made peace with the Six Nations. Rhode Island sent Hopkins, who had introduced a bill into the Rhode Island Assembly to abolish slave importation, and had at the same time emancipated his own slaves; and Ellery, whose house was burned by the British army as soon as it took possession of the island.

Delaware had elected Rodney, who rode 80 miles, as already stated, to be present at the vote for independence; Reed, who had roused his colony to contribute for the sufferers by the Boston port bill, and McKean, the only man who served in Congress through the whole Revolutionary war. The South Carolina delegates, forming at first the only delegation which had united in opposing independence, were equally united in finally approving and practically sustaining it, Middleton losing his fortune in the cause, Hayward being scarred for life by a gunshot wound, and both, with Rutledge, being imprisoned for a year at St. Augustine by the British; while young Thomas Lynch, who had come from the London Temple to espouse his country's cause, escaped the dangers of war only to be lost at sea at 30. These were all natives of the colony from which they came; but North Carolina and Georgia were honorably represented by what we should now call "carpet-baggers." North Carolina sent Hooper, a Massachusetts man, who had studied law under James Otis; Hewes, the New Jersey Quaker, and Penn, the Virginian, who afterward rallied the mountaineers of his adopted State against Cornwallis. Georgia, again, sent the Virginian, Walton, who had learned to read by the light of pine knots when a carpenter's apprentice; the English Gwinnett, and Hall, of Connecticut, who at first came alone to the congress, and was admitted to represent his district before the young colony had made up its mind. Finally, Maryland was represented by Chase, who, as judge upon the bench, afterward said to a timid sheriff, doubtful about getting some rioters to jail, "Summon me, Mr. Sheriff, and I'll take 'em;" by Paca, who said, after his first session, that the Virginia gentlemen alone seemed able to carry on the Government, so that no one else was needed; Stone, one of the committee that afterward framed the Articles of Confederation, and Charles Carroll, who, lest some namesake should share his risks, added "of Carrollton" to his name.

This is the story of the signing. Of the members who took part in that silent drama of 1776, some came to greatness in consequence, becoming presidents, vice-presidents, governors, chief justices, or judges; others came, in equally direct consequence, to poverty, flight, or imprisonment. "Hunted like a fox by the enemy," "a prisoner 24 hours without food," "not daring to remain two successive nights beneath one shelter,"—these are the records we may find in the annals of the revolution with respect to many a man who stood by John Hancock on that summer day to sign his name. It is a pleasure to think that not one of them ever disgraced, publicly or conspicuously, the name he had written. Rejoicings everywhere throughout the colonies followed the signing.

Then and Now.

Comparisons are not always odious, the old saying "to the contrary notwithstanding." When anybody compares something of his own with something else of his own it is all right; it is only when comparisons are made between things belonging to different parties that they become "odious." Surely in this Centennial year no one can find fault with Uncle Sam if he compares his possessions when he was young and poor with what he has now when he is of age and has become rich. His farm is now a pretty big one and his tenants numerous; but it is not yet all fenced or cultivated, and he has room for many more under his protecting eye.

Just think of how the country has grown since the "original thirteen" started out on their own hook and left their maternal parent fluttering and scolding like an old hen whose brood of ducks first takes to the water. It was a bold venture and fraught with many dangers, but patience, perseverance and energy will always accomplish wonders, as they did in this case.

In 1783 the territory ceded by Great Britain was composed of the country east of the Mississippi river and north of Florida, having an area of 815,615 square miles. This whole territory was not much larger than Alaska, which we bought a few years ago without thinking it much of an accession. Within these 815,615 square miles were the original thirteen States of the American Union, laid out as they are shown on the accompanying map. They were as follows: New York, Massachusetts, New Hampshire, Rhode Island, Connecticut, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina and Georgia.

"ONE HUNDRED YEARS AGO"

Compare this small though noble list of States with the country as it stands to-day. The greatest length of the United States, from the Atlantic to the Pacific on the forty-second parallel, is 2,768 miles, and the greatest breadth, from Point Isabel in Texas to the north boundary near Pembina, is 1,601 miles. The northern frontier is upward of 3,350 miles long; the Mexican 1,500 miles. The ocean coast, including the larger indentations, is estimated at 22,609 miles, of which 6,861 are on the Atlantic, 3,461 on the Gulf of Mexico, 2,281 on the Pacific, 8,000 miles including the bays and islands on the border of Alaska, and 2,000 miles on the Arctic sea. The total area of the United States was reported at the census of 1870 to embrace 3,603,844 square miles, inclusive of the territory of Russian America, purchased from the Russian government by treaty of June 20th, 1867, and annexed to the Republic October 28th, 1867, under the name of Alaska. The area of the United States excluding Alaska is equal to 1,942 millions of acres, about one-half of which are public lands. At the census of 1870 the arable land under cultivation was found to be 189,000,000 of acres, or less than one-tenth of the total area. The two black squares shown on the map give the relative area of the United States at the time of the Declaration of Independence and at the time of the celebration of the Nation's Centennial. A glance at them will show more clearly how much the country has grown than any array of figures we could set before our readers.

At the census of 1790 the total population of the United States, white and colored, was 3,929,321. At the census of 1870 it was 38,558,371. At the first census in 1790 there were seventeen States, the largest of which was Virginia, with a population of 747,610, and the smallest Tennessee, with a population of 35,691. In 1870 there were 37 States and 10 Territories. It is stated, on a calculation based on the census from 1800 to 1870, that on June 1st, 1874, the population of the United States was 43,167,000—being an increase of 5,500,000 over the census of 1870. The estimate for June 1st, 1875, on the same authority, is 44,384,000. For June 1st, 1876, it is 45,627,000, while in 1880, the year of the next decennial census, it is calculated that the United States will have 50,850,000 inhabitants.

If the population of the country should continue to double itself as many times in the next century as in the last we should have a census covering 500,000,000 souls—or about a number equal to one-half of the present population of the globe. There is little danger of Uncle Sam extending his farm as rapidly in the future as in the last century, for to do it he would require all the land on this hemisphere, from Greenland to Patagonia, and a million square miles more.

The Celebration in this City.

We print on another page an illustrated account of the main features of the celebration of the Fourth in this city. The chief credit for planning and carrying forward the plan to execution is due to General James Coey, President of the Day. He has labored zealously in the cause, and his efforts will be long remembered as closely allied with the success of the occasion. The other officers of the day are Hon. D. A. MacDonald, Grand Marshal; Col. J. D. Stevenson and Col. Peter Donahue, Vice-Presidents, and Frank J. Murphy, Secretary. The several committees are entrusted with important trusts.

The names of those participating in the pavilion exercises are: Chaplain, Rev. W. H. Platt; Reader, J. E. McElrath; Orator, Rev. Horatio Stebbins; Poet, James F. Bowman. The exercises will be interspersed with music and singing.

The Invitation Committee, presided over by Pay Director Cunningham, U. S. N., met on Monday at the Palace hotel. Invitations were sent as follows: Governor, Cabinet and staff, Mayor, Supervisors and School Directors, ex-Governors, ex-Grand Marshals, Foreign Consuls, Army and Navy officers, Federal and State Judiciary, Federal officers, Mechanics' Institute, United States Senators and Representatives from this State, hold over State Senators from this city, President Grant and Cabinet, General Sherman, General McDowell.

"Overland Chat".—We give in another column a breezy, cheerful letter from "Mary Mountain," who is now at the Centennial exposition. Her letters to the Rural Press, from which we take this one, are principally on domestic and agricultural topics, but that which we copy this week is more general in its character and gives a woman's views of the overland trip.

Preparations for the better ventilation of the deep levels of the Consolidated Virginia mine are being made by enlarging and thoroughly timbering the air winzes in every portion of the mine below the 1500-foot level.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s Scientific Press American and Foreign Patent Agency the following are worthy of mention:

Manufacture of Rawhide. — August C. Kruger, S. F. This is an improved process by which the inventor is enabled to produce a rawhide leather which is thoroughly waterproof. After being put through the process described in the patent the hide is properly stretched, after which it is ready to be worked up for belting, lace leather or for general use. A superior article of rawhide is produced.

Packing Threshing Machines. — Michael Laufenberg, S. F. Manufacturers of threshing machines always set up each machine ready to go into the field before shipping it, and these machines have always been shipped in this condition, because of the great amount of labor required to set them up and the danger of losing some of the numerous parts of which they are composed in case they were shipped in pieces, and also because the manufacturers had no adequate way of boxing them for transportation. The extreme bulk of these machines shipped in this manner renders the cost of transportation quite excessive, especially where they are shipped over long distances by rail, the cost of transporting them to the Pacific coast often exceeding the original cost of the machine. The object of this invention is to pack this class of machinery in a smaller compass, without taking down the sides, which are the most bulky and troublesome to set up. To do this the inventor employs the sides of the machine as a packing case for the interior works of the machine, by setting them close up together so as to leave a space between them and connecting them by short rods or girts. The remaining parts of the machine are then placed between these sides, thus greatly reducing the size of the machine and lessening its cost of transportation, while it can at the same time be readily set up, as the sides remain intact.

Horse Boot.—Hiram Cook, S. F. The object of this invention is to provide an improved horse boot, such as is used for protecting the hind feet of trotting horses from the effects of over-reaching or forging. As heretofore constructed the boot was fastened to the foot by means of two straps, one of which passed around the heel of the foot, while the other passed under the foot between the hoof and shoe. In the improved boot the inventor uses only the heel strap, and instead of the other he secures to each side of the boot a bent metal clip. One and of this piece of metal is riveted to the boot, and the other end projects inward and passes into the usual notch between the hoof and the shoe, thus keeping the boot from moving or shifting its position. This device is a great improvement on the old method of passing a strap under the foot, because a strap applied in that way will always stretch more or less when it becomes wet, and thus allow the boot to play up and down; besides, it was very troublesome to apply in putting the boot on. But with these metallic clips the boot will always be held firmly in place and no trouble will be experienced in putting the boot on the horse's foot, as the clips will readily enter the openings which receive them. Other means are taken to make the boot exactly fit the curve of the foot.

Cut-off Blast Tuyere Iron.—Isaac S. Van Winkle, S. F. The object of this invention is to provide certain improvements in that class of tuyeres which are employed for blast furnaces and forges, and it consists in so constructing the tuyere that it will have a tendency to convey away from the grates all flux and other substances which will clog them. The grates themselves are so flanged as to present an additional protection and also to prevent leakage of air around them. Combined with them is a valve, which is capable of being adjusted so as to regulate the blast or cut it off altogether. By means of this valve the full opening of one, two or three grates can be permitted, or by turning it one or all of them may be shut off, and the fire can be thus regulated for large or small work, greatly economizing fuel.

Adjustable Mold Board Scraper.—Frank C. Milliken, Santa Cruz. This is a novel construction for scrapers, which is principally useful as a scraper for leveling off ground which is composed of alternate knolls and hollows, where one part will be too dry and the other too wet to make a crop. It consists in the use of a frame having a scraping mold board, which is provided with a mechanism by which it is rendered easily adjustable so as to stand at any angle and scrape deep or shallow, or discharge its load at will.

Improved Surcingle.—P. B. Horton, S. F. This invention consists in applying an elastic or yielding pad to that side of a surcingle which comes next to the animal's body, so that it will conform closely to the shape of the body, and while it serves as a pad or cushion to prevent chafing, it will also give a firmer adhesion which will prevent the surcingle from turning or slipping from its proper place.

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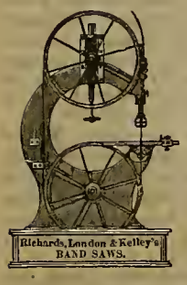

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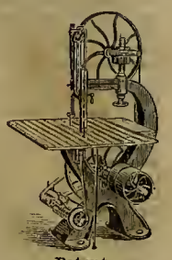
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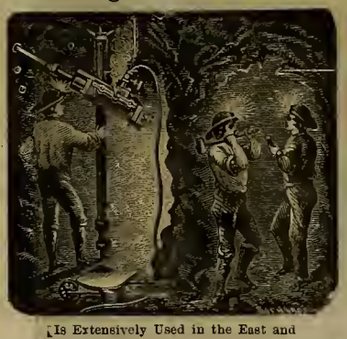

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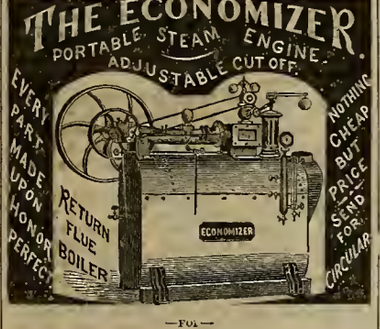

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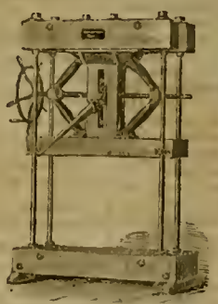

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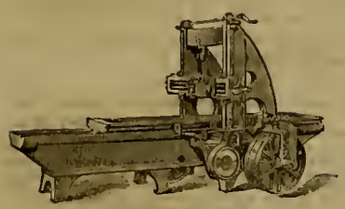
1,000 Feet Single Lift Guaranteed.

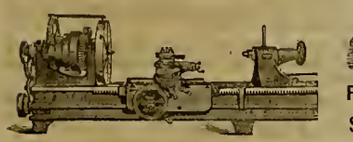
THESE ARE THE ONLY PUMPS ARRANGED TO WORK NOISELESSLY AND WITHOUT ANY SHOCK OR JAR ON PUMP OR PIPES
THESE FEATURES GUARANTEED

Waters' Patent Governor.

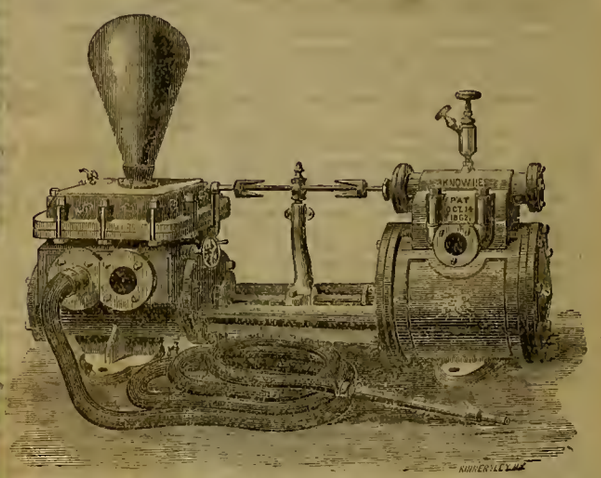
Clapp & Jones' Steam Fire Engine.



FERRIS & MILES'
Lathes, Planes, and Machinists' Tools.

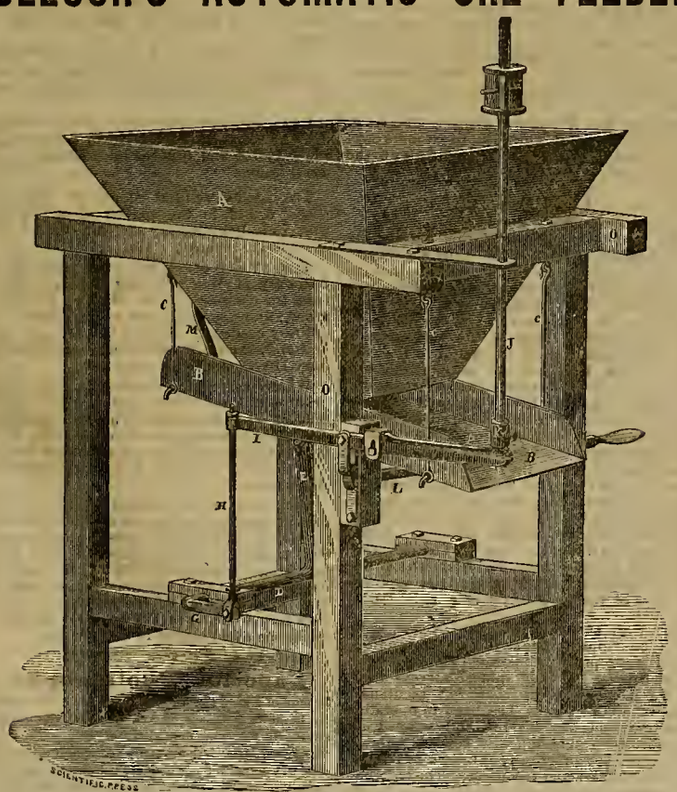


FERRIS & MILES'
Steam Hammers.



Knowles' Steam Pump; for all purposes where Pumping is required.

TULLOCH'S AUTOMATIC ORE FEEDER.



The **TULLOCH AUTOMATIC ORE FEEDERS** have been practically tested during the last year and a half in twenty-seven mills, of from five to eighty stamps each, and have, in every case, given perfect satisfaction. Refer to the following Mills: California, Con. Virginia, Northern Belle, Leopard, Trench, Humboldt, Douglas, Phœnix, Hite, Crescent, and others. Prices Reduced. Send for Circulars.

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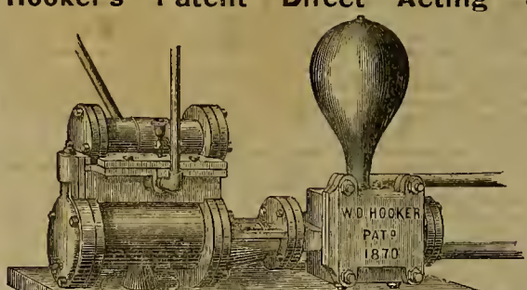
417 Market Street, San Francisco.

Hooker's Patent Direct Acting Steam Pump.



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Cor. Fremont & Natoma streets, S. F.,
Sole Proprietor & Manufacturer for the Pacific Coast.

SIMPLE, CHEAP AND DURABLE.

Adapted for all purposes for which Steam Pumps are used.
The Best Pump in Use.

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N. B.—Also manufacturer of Hooker's Deep Well and Double-Acting Force Pump. Received the Silver Medal awarded at the last Mechanics' Fair in San Francisco. 18v27-2am3m

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Reducing and Concentration Machinery.

FRASER, CHALMERS & CO.
SUCCESSORS TO EAGLE WORKS M'F'G. CO.
MANUFACTURERS OF
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Address, FRASER, CHALMERS & CO., Chicago, Ill.

SODIUM AMALGAM.

I am prepared to furnish Sodium Amalgam for $1.50 per pound. Although the price is low, my reputation is a guarantee of its purity. Sodium being now much cheaper than formerly, the miner and millman should have the advantage of it. The temptation to adulterate the article being so great, consumers are advised to call for my manufacture when ordering from wholesale dealers, with an assurance on my part that the quality will be the best. Zinc is sometimes substituted for sodium, to the great disadvantage of the consumer. The following are the tests for pure Sodium Amalgam: Shaken up with water it must be wholly decomposed, the mercury remaining perfectly fluid and the water becoming strongly alkaline.

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619 Montgomery Street, San Francisco.

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The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

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California.

While the nation ia celebrating its one hundredth anniversary and rejoicing at the wonderful progress it has made during these years the different States which compose the American Union can each congratulate themselves that they have contributed their share to the general prosperity. Those which are situated west of the Rocky mountains, while they cannot, of course, claim to have assisted in gaining the independence of the nation, are none the less deserving of praise since they have contributed in a marked degree to maintain the prosperity of the people of the United States for nearly a quarter of a century. The boundless agricultural and mineral resources of the Pacific States and Territories, the products of which increase from year to year, are objects of wealth, not only to individuals and the States themselves, but to the nation at large. As real producers, the Pacific States are ahead of all, as their wealth is the product of the ground itself.

California—the word is a synonyme for boundless riches. The "Golden State" is the term by which she is known the length and breadth of the land. The fabulous sums taken from her mines, the marvelous yields of her boundless farms, the variety and abundance of her mineral and agricultural products, have made her famous throughout the world. In beauty and grandeur of scenery she is not excelled, and in variety of soil and climate none surpass her.

The people of the State, whose energy and activity have been the means of so soon placing California in the proud position she occupies, have causes of congratulation to-day aside from those they feel in the prosperity of the nation. Coming to this coast a band of hardy pioneers beyond the confines of civilization and refinement, they battled successfully with the difficulties before them, and have succeeded in building up a State in which not only they but the people of the United States feel a just pride. With all its natural advantages of soil and climate, these effects would not have been produced without the energy, perseverance and intelligence which are the characteristics of the American citizen.

Area of the State.

Rapid as has been the growth of the State in material prosperity, her boundless wealth of resources has been hardly touched. California contains millions of acres as yet undeveloped, and millions of treasure yet to be dug up. The domain comprises 188,000 square miles of territory, and, estimating the population at only 600,000, it contains less than four souls to the square mile, while it is capable of sustaining a hundred. It was estimated that the increase of population last year was about 100,000, and the immigrants continue to pour in at the rate of about 6,000 monthly. But there is plenty of room. When we remember that California contains an area nearly three times as great as the six New England States—greater than all the Middle States with Maryland and West Virginia added—and greater than England, Scotland and Wales combined by 70,000 square miles, we begin to have some conception of the grandeur of our domain; within it about 140 States the size of Rhode Island could be placed.

What California is Doing.

The capacity of this vast area for sustaining population is undoubted. Within the boundaries of the State there are, according to statistics, 3,366,716 acres of cultivated land as well as over 6,000,000 acres enclosed. From an area of over 2,000,000 acres we have an annual product of 29,000,000 bushels of wheat, and beside this we have a yield of about 11,000,000 bushels of barley on an average, per annum. The official records for 1874 showed that with a population of about 726,000 we exhibited a productive capacity of nearly $1,000 per capita. The condition of the savings banks is a good indication of the prosperity of the people. The average balance to the credit of each depositor in the 27 savings banks in this State, on the 31st of December last, was nearly $800, which is largely in excess of that of any other State in the Union or country on the globe. In about eight years our savings banks have paid their depositors in dividends over $34,000,000. These figures show a material prosperity which admits of no denial.

Agricultural Products.

A brief glance at what California has done and is doing for her own welfare and that of the Nation will be interesting at this time. Although she is only in her 25th year, a showing of products and improvements is made almost equaling the hundred years' advancement of other States. We exported last year 4,199,652 centals of wheat and 233,629 barrels of flour. Reducing wheat to flour our exports of that great food staple alone amounted to 1,633,513 barrels. The total products of the State for 1875 were valued at $124,000,000.

The wheat yield since 1856 is estimated at 200,000,000 centals. The wool clip of 1875 was 44,000,000 pounds, and that for 23 years, 300,000,000 pounds. The quicksilver production last year was very large, and was valued at about $2,000,000. It is estimated that the total product of this article in California has been 64,748,893 pounds. The wine product of the State last year was 10,000,000 gallons; the receipts of lumber, 305,000,000 feet; the value of manufactures, $63,000,000; the foreign imports of merchandise, $29,434,000; exports, foreign and domestic, $45,000,000; imports, foreign and domestic, $81,721,245. Our exports of treasure—gold and silver—in 1875, amounted to $73,465,000, or nearly $15,000,000 more than in the previous year.

The Mining Interests.

Of bullion the coast produced, in 1875, $80,889,037—the largest yield yet. Of this, California produced $17,753,151, being ahead of all others, except Nevada, in this class of products. This State held the lead in bullion production until lately, and now Nevada is ahead. It must be remembered, however, that the mines of the latter State were developed to a great extent by California capital, and, in reality, are now owned principally in this State. From 1865 to 1875 the combined product of the two States has been $478,181,520, of which California produced $237,253,151. Nevada is, however, exclusively a mining State, while the majority of the population in California are now engaged in agricultural pursuits. California mining is, however, by no means on the wane, although the surface deposits have been worked out but quite extensive operations are being carried on all over the State. The gravel mines are operated on a scale of magnitude before unheard of, and their yield is in proportion. It takes capital to work these mines, as well as skill and intelligence. In this particular class of mining we have but just begun work and it will be continued on a still more extensive scale for years and years to come. The quartz mines, too, of which there are thousands within our boundaries yet undeveloped, only need more capital to make them yield up their hidden treasures. The assessed value in the 10 hydraulic mining counties of California in 1874-75 was $32,307,523.

Manufacturing Interests.

To San Francisco, the metropolis of this coast, and the seat of the main manufacturing industries, we must look for the progress in manufacture before. A few items from the assessor's report of last year will give an idea of the improvements of this character which have been built up in the city.

There are in the city three artificial stone manufactories, turning out yearly products valued at $137,000; three axle grease factories, producing $91,000; five barrel factories, employing 215 men; five bed-spring factories, annually producing $141,000; five bedstead factories, employing 725 men, aggregate value of products $925,000; two bellows factories, aggregate value of products $27,000; six bedding factories, producing $92,500; five billiard table factories, turning out goods valued at $156,000; twenty boot and shoe factories, employing 2,000 persons, aggregate value of products $2,793,000; two borax works, aggregate value of manufactories $620,000; ten box factories, employing 372 men and producing $980,000 annually; eleven brass foundries, employing 273 men, value of manufactories $1,055,000; breweries, 40, value of manufactures $2,000,000; broom factories, 10, value $200,000; brush factories, 3, value $50,000; candle factories, 2, product $425,000; clothing factories, 8, value $730,000; cigar factories, 120, men employed 9,000, cigars made annually, 95,000,000; chemical works, 5, product $425,000; carriage factories employ 400 men, and products are worth $837,000; coffee mills, 10, value $1,102,000; rope-walks, 3, value $975,000; distilleries, 6, product $1,647,000; flour mills, 8, producing 446,000 barrels annually; foundries, 16, employing 123 men; fur factories, 5, product $245,000; furniture factories, 20, product $1,636,000; glass works, 2, product $270,000; glove factories, 3, product $130,000; glue factory, one, product $325,000; hat factories, 15, product $328,000; hose and belting factories, three, product $114,000; jewelry manufactories, 30, product $827,000: lead and shot factory, one, product $1,000,000; macaroni factories, three, product $120,000; marble works, 21, product $860,000; match factories, six, product $260,000; malt houses, five, product $300,000; oakum factory, one, product $25,000; fruit preserving works, four, product $850,000; powder works, two, product $560,000; rolling mill, one, employs 300 men, product $750,000; silk factories, two, product, $300,000; saw factory, one, product $900,000; sash, door and blind factories, 10, product $2,500,000; silverware factories, four, product $252,000; shirt factories, eight, product $793,000; slipper factories, 18, product $200,000; soap factories, 17, product $513,000; tanneries, 33, product, $985,000; telegraph instrument factory, one, product $75,000; tool factories, six, product $210,500; trunk factories, six, product $240,000; type foundries, two, product $55,000; vinegar factories, eight, product $122,000; windmill factories, four, product $57,000; woodenware factories, four, product $220,000; woolen mills, two, men and women employed, 900, wool used, 3,150,000 pounds, product $2,200,000; watch factory, one, number of watches made 15,000; yeast powder works, three, product $110,000. Assessed value of property in the city in 1875, $126,350,255; improvements, $45,558,161; personal property, $148,659,785; total assessed value in the city, $316,566,205. Population, 250,000.

These factories are only those of the metropolis of the State. Enough have been referred to, however, to give those outside our boundaries an idea of the manufacturing progress of California.

The interior of the State as well as the city is in a prosperous condition, and Californians may well congratulate themselves on living in the most progressive State in the Union. With these feelings, while they rejoice as all good citizens should during the coming holidays at the achievements of the nation in its hundred years, they also feel a just pride in the advancement of their own State in its twenty-five years.

The President's Centennial Proclamation.

The following proclamation has been issued June 26th, by the President of the United States:

This is the Centennial anniversary of the day on which the people of the United States declared their right to separate and assume equal stations among the powers of the earth. It seems to demand exceptional observances. The founders of the Government at its birth and in its feebleness, invoked the blessings of Divine Providence, and the 13 colonies' 3,000,000 people have expanded into a nation in strength and numbers, commanding a position which then was asserted and for which fervent prayers were then offered. It seems fitting that on the occurrence of the hundredth anniversary of our existence as a nation, a grateful acknowledgement should be made to Almighty God for the protection vouchsafed our beloved country. I therefore invite the good people of the United States, on the approaching fourth day of July, in addition to the usual observances with which they are accustomed to greet the return of the day, further, in such a manner and at such times as in their respective localities and religious belief may be most convenient, to make it manifest by some public, religious and devout thanksgiving to Almighty God for the blessings which have been bestowed upon us as a nation during the centennary of our existence, and humbly to invoke the continuance of His favor and protection.

In witness whereof I have hereunto set my hand and caused the seal of the United States to be affixed. Done at the city of Washington this 26th day of June, A. D., 1876, the one hundredth year of the independence of the United States of America.

U. S. GRANT, President.

HAMILTON FISH, Secretary of State.

Our Antipodes.

A wrong idea prevails (if we judge by newspaper gossip) regarding the nationality of our antipodes. China is usually the accused party. But in this case she is innocent.

To us mortals upon the earth's surface, down means in a vertical direction to the earth's center, and real antipodal points are therefore where a straight line passing through the center of the earth cuts the surface. Then it is evident that the antipode of any place in the northern hemisphere must lie in the southern hemisphere. The *latitude* of antipodal points will be the same, but one will be north and the other south. The *longitude* will differ by 180 degrees.

Thus we find our (San Francisco) antipodal point to be in the southern Indian ocean, about 1,000 miles southeast of the island of Madagascar. The point opposite New York is also in the southern Indian ocean, about 500 miles southwest of Australia. The point opposite Peking, China, is in northern Patagonia. A shaft from San Francisco which would reach Peking if continued must (as the miners say) pitch to the west and make an angle with the vertical of about 39¾ degrees. H.

Legal Holidays.

The Governor has, says the Sacramento *Record-Union*, appointed the third and fifth of July as legal holidays, for the reason that the programmes of celebration in many places embraces those days, and calls on all persons to desist from their ordinary vocations on those days and to devote them to the celebration of the Centennial year of the nation. The law under which the Governor acts in declaring Monday and Wednesday legal holidays is found in Section 7 of the Civil Code, and reads as follows: "Holidays within the meaning of this Code are: Every Sunday, the first day of January, the twenty-second day of February, the fourth day of July, the twenty-fifth day of December, every day on which an election is held throughout the State, and every day appointed by the President of the United States or by the Governor of this State for a public fast, thanksgiving or holiday." The Governor calls upon all citizens to devote the three days to the celebration of the origin, progress and greatness of the American people.

THE WHEELER SURVEY.—The House Committee on Appropriations has struck from one of their appropriation bills the item of $50,000 for continuing the geographical surveys under the War Department, in charge of Lieutenant Wheeler. This survey has been in operation since 1871, and has covered and mapped out about 295,000 square miles of country hitherto unsurveyed and practically unknown as regards physical features and resources. The information gathered is of the highest value to the Government and all the interests located in the region traversed, and to all such enterprises as are seeking profitable investment. Besides, a great deal of valuable information has been gathered, and a portion published, embracing paleontology, natural history, agriculture and mineral resources, etc., all of which is of immediate interest.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., June 27th, 1876.

FOR WEEK ENDING JUNE 20TH, 1876.

CARBURETERS.—James T. Stewart, Los Angeles, Cal.

HOLLOW PARTITION BRICK.—Jules Borie, Oakland, Cal.

PROCESS AND APPARATUS FOR DRYING FRUIT.—William Brown, S. F.

ENDLESS TRACTION RAILWAYS.—Andrew S. Hallidie, S. F.

MACHINES FOR SAWING SHINGLES.—Frank A. Huntington, S. F.

CONSTRUCTION OF WOODEN TANKS.—Edward M. Morgan, S. F.

BEER FAUCETS.—Thomas C. Perkins, Brighton, Cal.

MECHANICAL MOVEMENTS.—Robert Swarbrick Oakland, Cal.

UNDERGROUND TUBES FOR PROPULSION OF CARS. Andrew S. Hallidie, S. F.

TRADEMARK.

LINIMENT.—John Halloway, Wadsworth, Nev.

The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

General News Items.

THE "Mint" shaft is down 1,125 feet.

THE shaft of the Sierra Nevada mine on the Comstock is now down 1725 feet.

THE pumping engine at the C & C. shaft is being changed from a high to a low pressure, in order to save fuel.

SAMUEL J. TILDEN has been nominated for the Presidency by the Democratic convention at St. Louis.

THE managers of the St. Gothard tunnel works have notified their workmen that they will soon be discharged.

A BOY named Edward Hartshorn was drowned in a pond this week, while trying to save a companion who was sinking.

THE water has been drained from the 500-foot level of the Kossuth mine and work resumed at all points the same as before the flood.

GENERAL CROOK has had the first brush of the season with the Sioux Indians, and came off victorious. He had a horse killed under him.

REAR-ADMIRAL JOHN J. ALMY is detached from the command of the North Pacific squadron July 1st, and ordered to return home and await orders.

THE annual rainfall along the borders of Puget sound, to the southward of Seattle, is from 70 to 100 inches. At Neah bay it often exceeds 120 inches.

THE official order has been issued by the Secretary of War relieving General Schofield from the command of the Military Division of Pacific and assigning him to the West Point military academy, relieving Col. Rueger. General McDowell will take command of the Military Division of the Pacific.

WHILE considering the Sundry Civil Appropriation bill, on motion of Banning, an item of $50,000 was inserted for Wheeler's geographical survey of territory west of the 100th meridian. On motion of Caldwell, an item of $14,000, was inserted for Prof. Jenney's survey of the Black hills.

IN the North Consolidated Virginia mine the flow of water at the bottom of the shaft is still strong, the water tanks hoisting at the rate of 80,000 gallons every 24 hours. A drain tunnel has been started which will tap the shaft at a depth of 172 feet below the surface and thus save the pumping of the water that much. This tunnel is now in 130 feet, and is advancing at the rapid rate of 10 feet per day.

Superior Photographs.—To be sure of a good picture, you have only to patronize G. D. Morse's Palace of Art, at No. 417 Montgomery street, S. F. The publishers of this journal have patronized Mr. Morse for many years, and do not hesitate to say that his pictures are not excelled by any we have seen produced in this or any other country. No one can ask for a better man to patronize than Mr. Morse. He is affable and respectful to all.

Employment Wanted.

Wanted, some kind of employment in the country. Can run a small engine or do many kinds of light work in farming. Reference furnished. Address B., this office.

WASHING freely, with Glenn's Sulphur Soap, parts affected with the obnoxious skin diseases, which have usually been dressed with offensive sulphur ointments, will effect a certain cure without leaving behind any disgusting odor. Sold everywhere.

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PARKE & LACY, 417 Market Street, S. F.

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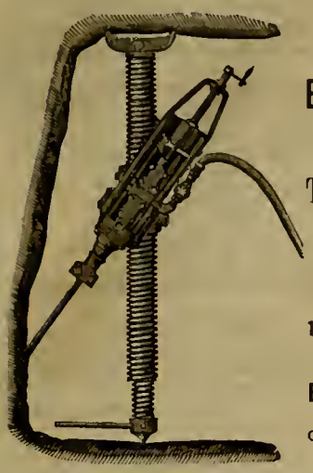

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HASKINS' PORTABLE HOISTING ENGINES, constructed especially for economical use in mining districts, with Compressed Air or Steam, adapted to all classes of underground work and made throughout on the interchangeable plan, so that all parts can be duplicated when desired. Catalogues and Estimates given on application.

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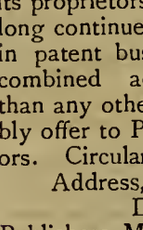

Excelsior Scroll Saw.

Double Treadle, including one dozen Saws, 20 inimitable Fret Sawing Patterns and Prepared Wood to the value of $1. A new device for tightening Saw, Power Drilling attachment, Wrench, Oil Cup and Driver. Speed, 800 strokes per minute. Saws 1½ in. thick. Price, complete, cased and delivered on board cars or at Express office, $12.

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With copper Boiler, to drive light Lathes, Scroll Saws, etc. 100 Scroll Work Designs, free on receipt of Stamp.

Saw only, without attachments, $9.

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London Society	5 00
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London Ill. News	15 00

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Gold Bars on all amounts below $1,600	$2 00
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Assay for Gold and Silver	$3 00
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" " Iron	3 00
" " Tin	6 00
" " Quicksilver	6 00
" " Manganese	5 00
" " Chromium	6 00
Test for any single metal	2 00

Analyses.

Qualitative Analysis of Ores	$10 00 to $25 00
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Quantitative " of "	50 00

Complete Analyses, qualitative and quantitative, of complex substances at special rates.

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ROASTING FURNACE,

For Gold, Silver and Copper Ores.

The roasting capacity of the Furnace, per 24 hours, is from 6 to 50 tons, according to percentage and nature of the sulphureted ore, with an expenditure of one and a half to two cords of wood, and two to three shifts of unskilled labor, according to amount of ore handled. The Furnace is adapted for chloridizing, as well as oxidizing, roasting, and for the manufacture of sulphuric acid. In point of cheapness of construction and efficiency in working, the Furnace is far the best in use. Millmen in need of a cheap and efficient Roasting Apparatus will apply to

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Consulting Metallurgist, Grass Valley, Cal,

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Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Amador Canal and Mining Company—

Location of works, Jackson, Amador county, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 1), levied on the eighth (8th) day of May, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
T J Gallagher, Trustee	16	250	760 00
James Rolph, Trustee	22	2500	7500 00

And in accordance with law, and an order of the Board of Directors, made on the eighth day of May, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, on Wednesday, the fifth (6th) day of July, 1876, at the hour of two o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Secretary.

Office, Rooms Nos. 1 and 2, 418 California street, San Francisco, Cal.

POSTPONEMENT.—The above sale is postponed by order of the Board of Directors of the Amador Canal and Mining Company to the eleventh (11th) day of July, A.D., 1876, and will be held at the same hour and place.

J. W. CLARK, Secretary.

Cherokee Flat Blue Gravel Company.—

Location of principal place of business, San Francisco, California. Location of works, Cherokee Flat, Butte county, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 8th day of June, 1875, an assessment, No. 36, of five cents per share, was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, Room 13, No. 328 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 18th day of July, 1876, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Saturday, the 5th day of August, 1876, to pay the delinquent assessment, togeth r with the costs of advertising and expenses of sale. By order of the Board of Directors.

C. B. BOGART, Secretary.

Office, Room 13, No. 328 Montgomery street, Safe Deposit Building, San Francisco, California.

Hope Quicksilver Mining Company—Lo-

cation of principal place of business, city and county of San Francisco. Location of works, Cinnabar Mining District, Sonoma County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No 1), levied on the 12th day of May, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Alvord, Frank & Mary Jane	64	1000	$ 30 00
Bccraft, Mrs. Henry L	25	10	30
Bell, William S	44	750	22 50
Bell, William S	46	750	22 50
Bell, William S	47	250	7 50
Bell, William S	49	250	7 50
Bell, William S	53	100	3 00
Bell, William S	55	100	3 00
Bell, William S	56	100	3 00
Bell, William S	57	100	3 00
Bell, William S	58	100	3 00
Bell, William S	59	100	3 00
Bell, William S	60	100	3 00
Bell, William S	51	100	3 00
Blake, P H	96	150	4 50
Blake, P H	97	100	3 00
Blake, P H	122	100	3 00
Blake, P H	123	50	1 50
Blake, P H	124	100	3 00
Drake, Henry A	135	25	75
Drake, Henry A	136	25	75
Drake, Henry A	137	25	75
Drake, Henry A	138	25	75
Eberhardt, A (not issued)	133	12,500	Bal. 288 34
Forbes, C Ford	52	100	3 00
Gilcrest, S F (not issued)	132	9500	Bal. 260 55
Hardy, Thomas	29	1000	30 00
Hardy, Thomas	30	1000	30 00
Hardy, Thomas	39	100	3 00
Hardy, Thomas	40	100	3 00
Howland, S W	6	100	3 00
Howland, S W	7	100	3 00
Howland, S W	8	100	3 00
Howland, S W	9	50	1 50
Howland, S W	65	500	15 00
Howland, S W	66	500	15 00
Howland, S W	68	500	15 00
Howland, S W	69	500	15 00
Howlaud, S W	70	500	15 00
Howland, S W	72	250	7 50
Howland, S W	75	250	7 50
Howland, S W	76	250	7 50
Howland, S W	77	100	3 00
Howland, S W	114	100	3 00
Howland, S W	115	100	3 00
Howland, S W	116	100	3 00
Howland, S W	117	50	1 50
Howland, S W	118	50	1 50
Howland, S W	119	50	1 50
Howland, S W	120	50	1 50
Howland, S W (not issued)	134	50	1 50
Lowell, Charles P	24	90	2 70
Meyer, John H	63	100	3 00
Morey, W R	6	100	3 00
Morey, W R	21	100	3 00
Morey, W R	24	100	3 00
Morey, W R	41	500	15 00
Morey, W R	50	200	6 00
Morey, W R	51	300	9 00
Morey, W R	98	50	1 50
Morey, W R	99	50	1 50
Morey, W R	100	25	75
Morey, W R	101	25	75
Morey, W R	102	22	75
Morey, W R	103	25	75
Morey, W R	104	25	75
Morey, W R	105	25	75
McLean, Edward	127	10 0	30 00
McLean, Edward	128	500	15 00
McLean, Edward	129	500	15 00
McLean, Edward	130	1000	30 00
McLean, Edward	131	1000	30 00
Parsons, William	106	50	1 50
Parsons, William	107	50	1 50
Parsons, William	108	25	75
Parsons, William	109	25	75
Parsons, William	110	25	75
Parsons, William	111	25	75
Parsons, William	112	25	76
Parsons, William	113	25	75

And in accordance with law, and an order of the Board of Directors, made on the 12th day of May, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public anction, at the office of the Secretary, 419 California street, room 23, San Francisco, on Saturday, the 10th day of July, 1876, at the hour of 12 o'clock, M., of such day, to pay delinquent assessments thereon, together with costs of advertising and expenses of the sale.

JACOB HARDY, Secretary.

Office, 419 California street, Room 23, San Francisco, Cal.

Manhattan Marble Company of Californ-

ia. Location of principal place of business, San Francisco, Cal. Location of works, Oakland, Alameda Co., State of California.

Notice is hereby given, that at a meeting of the Directors, held on the 23d day of May, 1875, an assessment (No. 9) of three dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary of the company at his office, Noe, 13 and 15 Fremont street San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the first day of July, 1876, shall be deemed delinquent, and advertised for sale at public anction, and unless payment is made before, it will be sold on Monday, the 17th day of July, 1876, at 12 o'clock M., to pay the delinquent assessment, together with costs of advertising and expenses of sale.

L. L. ALEXANDER, Secretary.

Office, Nos. 13 and 15 Fremont street, San Francisco, Cal

Taylor Mill and Mining Company.—Prin-

cipal place of business, City and County of San Francisco, Cal. Location of works, Garden Valley Mining District.

Notice is hereby given that at a meeting of the Board of Directors, held on the fifteenth day of May, 1875, an assessment of twenty (20) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary at his office, 607 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the twenty-first day of June, 1876, will be delinquent, and advertised for sale at public anction, and unless payment is made before, will be sold on Thur day, the sixth day of July, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

SAMUEL S. MURFEY, Secretary.

Office, 607 Montgomery street, San Francisco, Cal.

Union Consolidated Silver Mining Co.,

San Francisco, June 15th, 1876.

The annual meeting of the stockholders of the Union Consolidated Silver Mining Company, for the election of trustees for the ensuing year, and for the transaction of such other business as may properly come before it, will be held at their office, 311 California street, rooms 3 and 4, second floor, over Ætna Insurance Office (entrance 309 California street), on Monday, July 17th, 1875, at 2 o'clock P. M. Transfer books will be closed July 12th, at 3 o'clock P. M.

J. M. BUFFINGTON, Sec'y.

Umpire Tunnel and Mining Company

Of Utah. Principal place of business, San Francisco, Cal. Location of works, Big Cottonwood District, Utah.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 23d day of June, 1876, an assessment (No. 5) of five (5) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, 605 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 24th day of July, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 14th day of August, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. W. DAVIS, Secretary.

Office, 605 Montgomery street, San Francisco, Cal.

Iron and Machine Works.

WM. HAWKINS. T. G. CANTRELL

HAWKINS & CANTRELL,

MACHINE WORKS,

210 & 212 Beale St.,

Near Howard, - - - SAN FRANCISCO.

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Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

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From Ten (10) to Forty (40) Horse Power.

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Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

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24v22-3m JOSEPH MOORE, Superintendent.

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The Only Illuminating Tile Manufactured for Lighting Cellars, Basements and Dark Rooms which provides proper ventilation for such places.

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HENDY & COCHRANE'S ORE FEEDER

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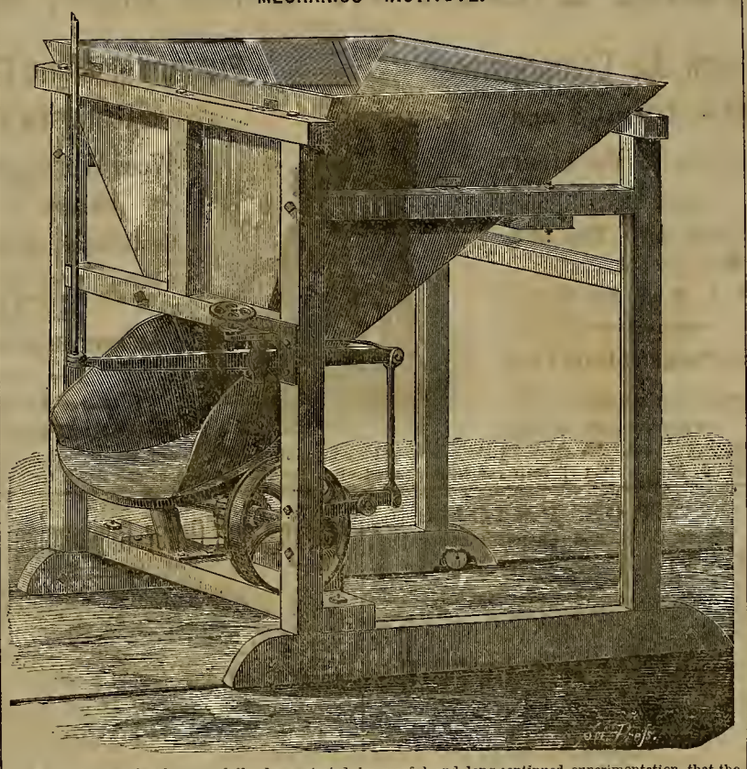
AWARDED FIRST PREMIUM AT THE TENTH INDUSTRIAL FAIR OF THE MECHANICS' INSTITUTE.



It may be considered as now fully demonstrated, by careful and long-continued experimentation, that the plan upon which a perfect ore feeder must be constructed is that of the *carrier*, and not that of the shaking table. Uniform and accurate feeding is not possible upon the latter plan. The ore must be evenly carried, upon a steadily advancing plane, or table, to the line of discharge, and there simply *dropped*. Spasmodic or jerky contrivances will not answer the purpose.

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A letter received from the Juliau Mill, Newcastle, says, of the Table Feeder: "It is the most perfect Feeder we have ever seen; don't see how any mill can do without them."——A letter from Mr. O. C. Belding, of Amador County, speaks in the highest terms of them.——Two of the machines were shipped to the Bunker Hill Mill, Amador County.—— Mr. Stevenson, of Boston Mill, Gold Hill, Nevada, says they are the best Feeder he has ever seen.——Mr. Lachman, of the Soulsby Mill, Tuolumne County, says they work splendid; could not do better.——Two of the machines were shipped to the California Company, Nevada City. ——C. J. Garland, of Mosquito Gulch, Calaveras County, says: "I find them an excellent machine."——S. D. B. Stewart, Supt. Lincoln Gold Mining Company, says they are a perfect success.——O. C. Hewitt, Supt. Keystone Mining Company, says: "I can safely recommend them to all millmen."

We warrant the machines to give perfect satisfaction, and to be a better and more durable Feeder than any other in the market, and will sell them as cheap as any other machine of its class.

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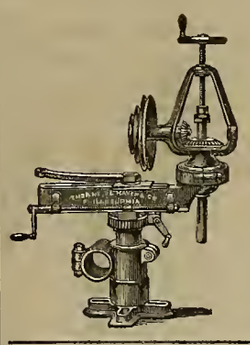

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DRILLING MACHINES.

PORTABLE DRILLS. Driven by power in any direction, self-feed and convenient adjustment.

RADIAL DRILLS. Self-feed—large adjustable box table—separate base plate, every convenience.

VERTICAL DRILLS. Self-feeding—of new and improved designs.

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SPECIAL DRILLS. For special work. Gun Blank Drills, Coal Drills, &c., built to order.

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Machinery and Castings of all kinds.

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Of every description and size.

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All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells, and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pines and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch.

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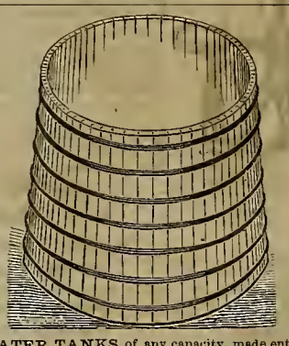

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Use no more Metallic Trusses. No more suffering from Iron Hoops or Steel Springs. Dr. Rowe's Patent Elastic Truss is worn with ease and comfort night and day, and will and has performed radical cures when all others have failed. Reader, if you are ruptured, try one of Dr. Rowe's comfortable elastic appliances; you will never regret it. ROWE ELASTIC TRUSS CO., 609 Sacramento St., S. F. Send for Circular.

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AFTER ONE OF THE

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In which, at great expense, the different Steam Pumps were tried under every test known to experts, the Examining Committee of the Tenth Industrial Fair of the Mechanics' Institute have awarded to us their

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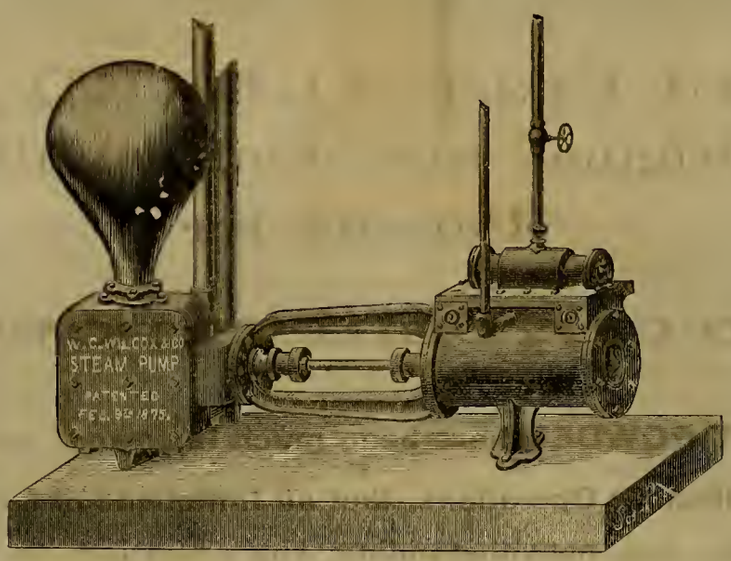

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We claim that our Pumps are the **best** ever made in **simplicity** of construction, economical use of power, **durability** and perfect adaptability for general uses, and we ask all persons interested to investigate **our title to this claim.** Salesrooms at our Machine Shop, 114 and 116 BEALE STREET, SAN FRANCISCO.

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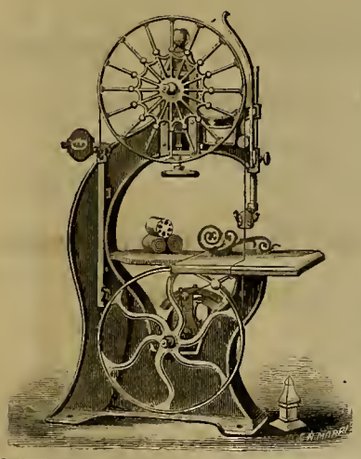

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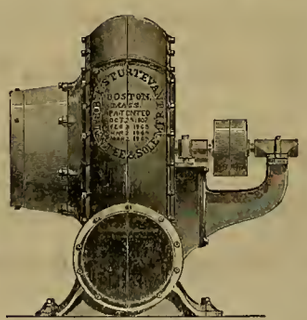

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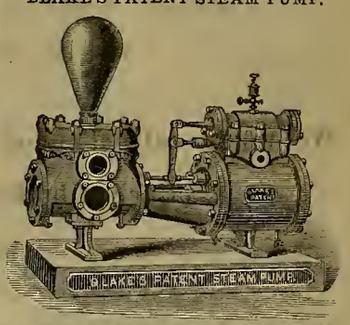

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With Solid Heads. These Screws have excellent thread and highly polished solid heads. They are economical and durable. They can be used repeatedly, as the heads are not injured by the slipping of the screw driver. For all purposes they are far superior to capped screws. Manufactured by Adams Nickel Plating & Mf'g Co., South Windham, Conn. E. T. Allen, agent for manufacturers, 330 Sansome Street, San Francisco.

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GIANT POWDER,

Or DYNAMITE,

Manufactured Under ALFRED NOBEL'S Original and Only Valid Patents for

NITRO-GLYCERINE POWDERS.

Both Grades of GIANT POWDER have been much Improved, and we assure those who are engaged in Blasting Operations, that all Imitations of our Powder, such as Hercules, etc., are, notwithstanding any assertions to the contrary, Inferior to the GIANT POWDER or DYNAMITE, which neither in Europe nor the United States has been superseded by any better or stronger Blasting Agent.

Infringers of our Patents are trying to Deceive the Public by ludicrous and bombastic advertisements; but when such tricks are considered necessary, it is invariably done to recommend an inferior article, and no sensible man will be deceived by such advertisements as are issued from time to time in this paper.

We would call attention to the fact that the GIANT POWDER COMPANY employ an able Chemist, whose principal business is to experiment on Nitro-Glycerine Powders, with a view of improving these compounds so as to satisfy the consumer in every respect.

For the liberal support we have received from the public we are very grateful, and respectfully ask a continuance of the same for the legitimate company which obtained its patents at a very large price paid the inventor, and to rely upon our statement that the GIANT POWDER or DYNAMITE has not been equaled by any other Powder, nor is it likely that it will be.

Both grades of Powder are now almost entirely free from fumes, and those which are yet evolved by a blast are not at all injurious to the health.

☞ We beg leave to assure the public that our suits against the Hercules Powder Manufacturers are vigorously prosecuted in the higher United States Courts. ☜

We respectfully solicit orders for our Powder, which is the only safe and reliable Nitro-Glycerine compound made.

SINGLE, DOUBLE and TRIPLE FORCE CAPS,

And the very best Electric Exploders always on hand; also, all grades of Fuse at Manufacturers' Prices.

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, JULY 8, 1876.

VOLUME XXXIII Number 2.

SCENES IN THE GREAT NATIONAL PARK OF THE YELLOWSTONE, WYOMING TERRITORY. (See Page 32.)

CORRESPONDENCE.

[Editorial Correspondence.]

The Centennial at Philadelphia.—No. 7.

The recent reduction in railroad fares, and the information which has gone out that hotel charges are not exorbitant here, added to the knowledge that the exhibition is now essentially complete in all its particulars, has had the effect to materially increase the number of visitors to the Centennial within the past few days, and the grounds are now daily thronged in their every part with great multitudes of people, who come hither from all parts of the country to witness the wonders of mechanism and other handicraft which go to make up the great panorama of the world's progress for the last hundred years which is here presented. The picture shown could never have entered into even the wildest dreams of the sages and seers who planted the seed, the ripe fruit from which we are now enjoying. Besides our own, sixteen foreign nations are here represented and their industries illustrated, to all but one of which I have made more or less allusion, and to that I will now call attention as the last but most important.

The British Exhibition.

Great Britain and her colonies occupy about one-third of the entire foreign space in machinery and agricultural halls, and about one-quarter of the same in the main building, where the miscellaneous exhibits of all nations are shown. Her contributions of machinery are not as numerous or varied as the American visitor had expected or might wish to behold. She is noticeably deficient in machine tools, in which particular the United States exhibit is remarkably full. A comparative exhibit of machine tools by England and the United States would have offered a most interesting and instructive study. But England, as a general thing, has brought only those articles with which she can best compete with our people. Her exhibits are largely of a heavy character. She shows but little that is small—much that is wonderful and useful. Among the wonderful we may especially notice her exhibit of

Heavy Armor Plates and Tested Samples.

In the manufacture of heavy masses of metal England excels the world. Her well known steam hammer plant for forging 81-ton guns affords an illustration in this direction. Her immense plants for forging heavy armor plates furnish another. These huge masses of rolled iron are among the most wonderful exhibits at the Centennial, while the tested samples, exhibiting the effect produced upon them by the impact of steel and chilled iron balls from her improved Armstrong guns, show what progress the so-called science of war is working among our cousins over the water.

In this exhibit we have, first, a fine specimen of armor plate, eight inches thick, and cut from an original plate 25 feet long by seven and one-half wide. The welding is so perfect that it is difficult to detect from its polished edge that it was not rolled out from one massive bloom. Near this is a smaller section cut from a plate 16 feet long by five and one-half wide and 21¼ inches thick. One side of this plate has not been trimmed, but has been left to show of how many layers of plate upon plate or different blooms it has been built up. The ragged, unfinished end shows them distinctly, while a finished edge shows the perfection with which the work has been done. Near by we have another plate 11 inches thick, which has been tested with a seven-inch rifled gun, loaded with an elongated chilled shot, discharged with a distance of only 30 feet between the muzzle and plate. Five shots appear to have been fired, four entering so as to make only one large cavity; a fifth was delivered a short distance apart, showing what a single ball can do when fired from a modern rifled gun against a mass of solid iron. It had bored its way fully six inches into the solid wrought iron, forcing back the iron so as to form a jagged projecting fringe all around it. A further interesting exhibit would have been the shot itself or its fragments after it had performed its mission. None of the shots had passed through the iron; but where the four shots had been so fired as to make a single cavity the concussion had produced a slight bulge in the back of the plate. These plates are exhibited by Messrs. Cammel & Co., of Sheffield, England. Messrs. John Brown & Co., of Sheffield, also exhibit several plates which have been tested with results similar to the above. Another firm exhibits a splendid 14-inch plate which nobody has attempted to punch. These wonderful exhibits, in connection with the mammoth Krupp guns in the German exhibit, near by, are constantly being stared at by gaping crowds of all classes of our people, with the awe and amazement usually attributed to the provincial alone. But one must be to the manor born, so to speak, to be able to look upon such wonderful triumphs of human skill without a shudder at their sight and an inevitable reflection upon the terrible game of strength and skill which now constitutes the artillery practice of war.

It is with real pleasure that we turn from this exhibition of the skill of man directed in the way of producing agencies destructive of life and property to the more congenial and useful

Display of the Arts of Peace.

That which comprises most of the wonderful with the useful in this direction is the "Walter web printing machine," so called. This printing press is really one of the wonders of the exhibition, and attracts most marked attention. It stands on the fractional portion of the section in the English exhibit, marked 8 in the diagram which appeared in the PRESS two weeks since, so as to bring it as close as possible to the American presses shown in the sections marked A. Its only competitor is the Bullock press, on which the *Tribune* is printed, and which is similar to the one on which the *Evening Post* is printed in San Francisco. As much as the Bullock press is in advance of the other American presses, it is far from being abreast of the Walter press. The Walter press has its forms stereotyped and fitted to a small cylinder the same as with the Bullock press, and prints both sides, rolling off the paper continuously from a cylinder, printing it on both sides and cutting and delivering it in two piles, at the rate, as the gentleman in charge assured me, of *fifteen miles of paper per hour*—almost up to the average speed of a railroad train! Even at that great speed it is wonderful with what precision and neatness it does its work; it cannot be excelled in that particular by any cylinder press of any make. The English must certainly lend us in this direction.

The next most wonderful as well as useful exhibit in the English department is a Jacquard silk loom from Coventry. This loom is set to weave portraits of Washington, Victoria, Shakspeare, Grant and others. It weaves 20 portraits of the same individual at one time, which are turned off in a continuous ribbon and cut apart and sold at a dollar each, almost as fast as they are woven. It is really wonderful to observe how perfectly it does its work—almost equal to the best work of the engraver. Eight different colors are used in Washington's portrait. The loom scarcely requires any attention at all. There is an American Jacquard loom in the United States department, also set to weave portraits.

A Coal Cutting Machine.

An exhibit of much interest to the coal mining fraternity hereabouts is the coal cutting machine of William Baird & Co. This machine ought also to attract the attention of the coal mine managers of the Pacific coast, for it or something similar must soon be introduced to save the present waste of coal and reduce the cost of getting it out with the comparatively high cost of labor there. I cannot learn that any such device is used in any American coal mine, although there are a large number used in Great Britain with great success. It would be difficult to describe the machine without diagrams. It may be sufficient to say, in this connection, that the machine is very simple and easily handled. It works by compressed air, and cuts its way through a seam of coal to a depth of from three to five feet. It first makes a cut under the seam to any desired length along the vein, then cross-cuts until the projecting section of coal, having no support, falls of its own weight, or if necessary is thrown down in a large mass by driving wedges over the top of the seam. The machine will cut through from 300 to 350 feet of a three-foot vein in from eight to ten hours, thus throwing down in that time, in the very best possible condition, 75 to 90 tons of coal, requiring the attention of only two men and a boy. The gentleman in attendance is a son of the inventor, and explains its working so as to be readily understood by any intelligent miner. It is somewhat singular that these machines have never been introduced into this country. But we presume this exhibit will be the means of effecting so desirable an end. Haines & Payton also exhibit a coal cutter.

The Aveling and Porter Road Locomotives, Etc.

The Messrs. Aveling & Porter exhibit several of their celebrated road locomotives—one of which, some of our readers will recollect, was imported into California a few years since, but was never considered a success there. It is now, I believe, laid up in a storehouse near the Pacific Mail company's wharf. It is said that one reason why these machines have never succeeded in the Atlantic States is on account of the inferiority and uneven character of our roads. Such an objection, at least so far as the unevenness is concerned, cannot account for the impracticability of such machines on the valley roads of California. Notwithstanding all that has been said in regard to their use in Scotland and the north of England, we are inclined to think they are not very common there. They present every evidence of strength, durability and handiness for use; but were it not that this is an age of progress in almost everything, we should be inclined to think the road locomotive was an impractical idea.

In connection with this exhibit, several steam cranes are shown, which are worthy of special consideration by all parties having heavy bodies to move short distances. These cranes are capable of lifting from three to five tons, while the work of steering, driving and working the crane is performed by one man, stationed on the foot-board. They have a working circumference of about 150 feet. These cranes have been of very great service in lifting goods and machinery into place in machinery hall, and are pronounced most superior and efficient machines. They have proven the most useful of all the visiting machines on the ground, having promptly made themselves at home there and gone to work.

Other English Exhibits.

One of the most notable exhibits in this direction which England has brought us is a fine plant of sugar machinery from Glasgow, designed for the production of raw sugar on the plantation. Then we have improved machines for working wool and cotton in operation, performing the actual work of carding, spinning and weaving; also machines for making and shaping confectionery. What appears to be a very superior mode of securing picks upon their handles is shown, which I presume will be placed on exhibition at the Mechanics' fair, in August next. Mining men will do well to examine these picks. A metallic shield is first slipped on to the handle, and the pick is then dropped on over this shield and secured in place by a simple and apparently effective device. We have also calico printing machines, hydraulic presses and a few machine tools for heavy iron work. Several pumps are also shown in the hydraulic annex.

In machine tools the English exhibit, as already stated, is rather deficient. We have a few for metal and heavy iron work; but nothing at all, comparatively, to what is shown by the United States. Perhaps such an exhibit could hardly have been expected from a country where such tools are so little used to what they are here.

Several useful inventions are shown in models, among which we may mention prominently a railroad junction, fitted with a patent system of interlocking switches and signals for working on the block system. A model is also shown of a device for rendering this system automatic, by means of an electro-mechanical machine, which operates the levers without the interference of any other agency than that of the approaching train itself. With the increasing demand for faster passenger trains, and the rapidly accumulating business on some of our more important roads, improvements in this direction, calculated to afford better protection for human life, will be gladly received and their merits carefully considered.

There are many other minor matters connected with the English exhibit which we should notice, did space permit; but with what has already been written we must close our notice of foreign displays in machinery hall, until we come to a general comparative summing up. My next letter will be devoted to the United States exhibit of machinery.

W. B. E.

Centennial Grounds, June 11th, 1876.

No. 8.—American Department.

My last letter brought the notices of foreign exhibits in machinery hall to a close, and I now propose to pass in brief review our own exhibitors, previous to instituting any inquiry in relation to the comparative merits of the two. By reference to the diagram it will be seen that fully three-quarters of the entire space in mechanics' hall is occupied by the United States; this space, however, is largely filled up by the frequent repetition of the same classes of machinery by different exhibitors, the tools and implements varying only in the modifications of construction adopted by different builders. Previous, however, to reaching the tools, I would ask the reader's attention for a moment to a very interesting exhibit from the

Midvale Steel Works.

These works, located about five miles from Philadelphia, may very properly be regarded as the model works of the kind in the United States, and are under the management of Mr. William Sellers, one of the most thorough and progressive mechanical engineers in the country. This exhibit, moreover, forms the basis of that which follows; as all the iron and steel which enters into the construction of the tools which Mr. Sellers' exhibits, as well as those of several other exhibitors, is made at these works. The display is located in the second tier of fall sections from the south wall of the build ng, and adjoining the English exhibit. We have here a most interesting and instructive show of heavy cast steel forgings, tool steel, ingots for rails, car wheels, axles, etc. They show one steel ingot which weighs 7,000 pounds. They also make a very interesting exhibit of the process of manufacturing car and locomotive wheels; the work is shown in every state of its progress, from the original bloom to the complete wheel, some eight or ten stages. The mode of casting is very peculiar and careful, necessarily so from the importance of the manufacture, as one on which, more than any other one thing, depends the safety of railroad traveling. The same is shown in regard to the manufacture of car axles. So successful has this company been in establishing, from tests and practical wear, the reputation of its wheels and axles, that the Pennsylvania Central, the most extensive railroad connection in the world, refuses to use either wheels or axles for its passenger cars from any other firm. The Siemens-Martin steel is used for tires and other heavy purposes, but for tools, crucible steel is employed. At some future time I hope to find leisure to visit these works and describe them at length, with illustrations.

An Improved Rotary Puddler.

At the time of my visit to this exhibit, workmen were engaged in putting into place a mammoth iron cylinder and furnace, which I was informed was an improved rotary puddler, upon which Mr. Sellers has recently been at work. This furnace is to be exhibited in motion, although not charged with the molten metal as when in actual work. It seems to be characteristic of Mr. Sellers that he must always be inventing—improving everything that comes into his hands. Thus, he is not satisfied with the Danks or any other machine puddler, but must have a Sellers puddler; and if we are to judge in this instance from his past record, he will give us something really valuable in this direction. A perfectly practical machine puddler would be one of the greatest boons which could be conferred upon the producer of iron. The Danks puddler appears to be a success; but if Mr. Sellers can furnish us anything still better, we should like to see it. The employment of the cheapest and best methods of producing iron is the only means by which this country can hope to successfully compete with foreigners in the industrial arts generally.

Machine Tools.

The general exhibit of machine tools in this building is the most remarkable of the kind ever brought together. There are a large number of exhibitors—some twelve or fifteen in number. The first and most extensive collection on the floor as we pass down the building is that made by Sellers & Co. Mr. S. was one of the few Americans who had the enterprise and courage to make anything like an extensive exhibit in this line at Paris and Vienna, and as a reward for his skill and enterprise and the superiority of his exhibits, he was honored at both of those places with the highest awards made—at Paris with the grand gold medal and at Vienna with the diploma of honor. The latter was more than a mere acknowledgement of superiority in skill, for it was also designed to convey the idea that its recipient had achieved eminent merit in the domain of science and the application thereof to the advancement of the intellectual, social and material welfare of mankind. That award may be considered the highest honor ever conferred upon any industrial pursuit.

As a result of that exhibit, many of the machine tools constructed by this house have been adopted as patterns by machine tool makers in Europe; and thus American ideas and practice, the germs of which were drawn from the old world, are gradually finding their way back again, enlarged and improved by their manipulation here.

The tools exhibited by this firm here are substantially the same as those shown in Europe; but with the never ending desire of their manufacturer to improve and keep ahead of all competitors, he has since, from time to time, introduced such improvements as he has thought would give them additional value. Tools, like everything else capable of modification, are constantly undergoing changes; but unlike many other things brought under the universal influence of change, these useful devices for aiding man in his labors are usually bettered by the process, for the reason that any alteration in a tool that does not improve it is promptly discarded and can never win its way to popular favor. The smallest changes often work wonders in a tool before thought perfect; hence the ingenuity of man is never at rest. A little here and a little there—a thought here and an inspiration there—adding and taking away, is the history of every invention which comes from the brain of man.

We have no space to describe or even make the briefest mention of all the exhibits, and can only refer in a very few words to the most notable ones: One of the first that attracts the attention of the visitor is a gigantic planing machine, capable of finishing with the utmost precision a mass of iron ten feet high, ten feet wide and thirty feet long! The machine is also so constructed as to be capable of finishing an object on three sides at the same time. This invention is flanked on either side with smaller tools of the same description. Near by is a large plate shearing machine, a tool which cuts through inch iron as readily as ordinary hand shears cut paper. This machine will cut inch plates five feet in width at a single clip. It is used for cutting and trimming long sheets of iron and for bridge purposes, or for columns and girders. Near this exhibit is a steam hammer the pattern of which was originally borrowed from Morrison, of England, but which has been greatly modified and improved by translation to our American shops. Three sizes are shown, of 300, 1,500 and 5,000 pound hammers. Even the largest of these machines may be used to forge the heaviest masses of iron or crack an almond, when held between a lady's thumb and finger, without danger to her hand.

Immense hydraulic presses for forcing locomotive wheels upon their axles and large lathes for turning them are also shown, as well as numerous smaller ones. Another very interesting machine, and quite a novelty in its way, is an automatic gear cutting machine for cutting bevel and spur wheels. This is a great labor saving machine, and, we believe, is one of Mr. Sellers' own inventions. There is also a new and peculiar machine for shaping hexagonal nuts, the work which is of accomplished by six cutters, which finish the nut with a single cut upon all its sides at once. Mr. S. exhibits a cylinder boring machine, which it is claimed will finish complete a locomotive

(Continued on Page 30.)

MECHANICAL PROGRESS.

New Rules of the English Patent Office.

The Lord Chancellor, the Master of the Rolls, the Attorney General and the Solicitor General, being four of the Commissioners of Patents for inventions under the patent law amendment act, 1852, have just issued the following, for which we are indebted to *Iron:*

I. The rule of the Commissioners, dated the 17th December, 1866, requiring every applicant for letters patent to deliver with his provisional or complete specification an abridgment of such provisional or complete specification, shall not remain in force after the 30th day of June, 1876.

II. The latter part of Rule III. of the third set of rules and regulations of the Commissioners, dated the 12th of December, 1853, (viz., "The extra copy of drawings, if any, left with the same, must be made as heretofore and according to the directions contained in Rule III. of the Lord Chancellor, dated the 1st of October, 1852,") shall not remain in force after the 30th day of June, 1876. From that date the following shall be substituted therefor: The extra copy of drawings left with the same must be made on good white smooth-surfaced drawing paper of the same dimensions as the parchment drawing. All the lines of the drawing must be absolutely black, India ink of the best quality to be used, and the same strength or color of the ink maintained throughout the drawing. Any shading must be in lines, clearly and distinctly drawn, and as open as is consistent with the required effect. Section lines should not be too closely drawn. No color must be used for any purpose upon this drawing. All letters and figures of reference must be bold and distinct. The border line of the drawing to be one fine line only. This drawing must not be folded, but must be delivered at the office of the Commissioners either in a perfectly flat state or rolled upon a roller, so as to be free from creases or breaks. In all cases where the original drawing on parchment is colored, there must be left, in addition to the above copy, another copy colored.

III. The latter part of Rule IV. of the third set of rules and regulations of the Commissioners, dated the 12th of December, 1853, (viz., "The extra copy of drawings, if any, left with the same, must be made as heretofore, and according to the directions contained in Rule II. of the Commissioners, dated the 1st of October, 1852,") shall not remain in force after the 30th day of June, 1876. From that date the following shall be substituted therefor: The extra copy of drawings, etc., [worded as in paragraph II. above].

The notice to the public is worded thus: The Commissioners of Patents having decided that the drawings accompanying the provisional, complete and final specifications of 1876 and subsequent years, shall be copied by the process of photo-lithography, the regulations prescribing the mode in which the extra copy of such drawings shall be prepared must be strictly observed, in order that correct copies may be made. All specifications and drawings filed in pursuance of letters patent should be left at the office of the Commissioners at least six days before the expiration of the time for filing the same, in order that the officers may examine the extra copy of the drawing, and ascertain that it has been prepared in conformity with the rules.

How the Bryant Vase Was Manufactured.

The first, solid piece of silver was all that the workmen had to begin with; and this plate, first with wooden mallets and then upon the arm of an anvil with hammers, was beaten into the form of a bowl, not without great care and long labor. Then began the nicest and most difficult part of the task—working out from the surface by the repousse process the flowers and projecting portions of the design according to the model in wax which had already been made of the whole. What are called the formative processes in all metal working may be classed under five heads—casting, bearing hot, beating cold, electrotyping and cutting away by erasive tools. All these methods to a certain extent have been employed in this vase; but the chief method has been that of beating cold, or the repousse system, of which Cellini was such a master, and which the greatest metal sculptor of the present day, Morel Ladeuil, has reproduced with such effect as to make it the part alike of wisdom and of modesty for other artists to follow it, as the makers of this vase have done. The repousse style begins its task by working the surface from within outward by means of snarling-irons, which have two horns very much like those of the anvil, and, like an anvil, they rest upon a block. One of these horns is made to touch the proper point on the inner surface of the vase, and the blow is given not directly upon this horn, but upon that opposite, which, when struck with skill, sends its vibrations to the other horn, which is in contact with the metal. By these vibrations the metal is raised to the due elevation so gradually, and yet so vigorously, as to secure the result without breaking or weakening the metal. When the bowl is thus shaped from within to the requisite form for the intended projections, it is filled with a composition of pitch and other ingredients; and then the workman changes his course, and begins his more difficult task of working the projecting surface into due form from the outside. In this way all this exquisite flower work was produced, and every blossom and leaf, every ear of corn, lily and primrose, was wrought by the eye and hand of the artist, and each thing bears the mark of his mind and his touch. The work requires generally several repetitions of the process, and the bowl is emptied and filled again. The medallions were made in the same way, instead of being cast from the wax, which is much the easiest, but does not leave the same fine lines and vital expression. In some parts of the work, as in the handles, whose form and figures did not allow repousse work, casting was resorted to, the designs being modelled in wax from studies of natural objects.—*Dr. Samuel Osgood, in Harper's for July.*

Curious Bursting of an Iron Tank.

One of our English exchanges describes an accident of an extraordinary nature, which occurred one Saturday, at St. George's hospital, by which several of the patients met with severe injuries, and from the effects of which some of the students at the institution are suffering. At the top of the northern extremity of the building, fronting Grosvenor place, there was a cast iron water tank. The water was supplied from an artesian well in front of the building, and the tank, when filled, was capable of holding nearly 20 tons, which served for the ordinary requirements of the hospital, and was further intended to be applied in case of fire. Immediately under the tank were wards for the reception of women and children. About a quarter past eleven in the morning a nurse in one of the wards perceived water penetrating the ceiling, and before there was time to give an alarm, a loud crash was heard above, and in another minute there was a deluge of water, and one side of the tank came with tremendous force through the roof into the ward, thence into another underneath finally depositing itself on the ground floor. Three of the iron bedsteads, with their occupants, were precipitated to the bottom, and in two or three instances the suffering inmates were washed from their beds. From the students' room many escaped in terror by the windows. The patients screamed with alarm, and were with difficulty appeased. After the alarm consequent on the falling of the tank had partially subsided an additional fright was experienced. There was a large "lift" in connection with the building, worked by hydraulic power, and as soon as the water had spent itself the ponderous machine fell from the top of the building to the bottom with great violence. The tank was built six years ago by Easton & Co., of Erith. It was of iron plate, five-eighths of an inch thick. The surveyer to the hospital, Mr. Salter, made his annual report on the buildings a fortnight ago, after inspecting them, and found no fault in the tank. An inspection of the broken tank shows that it is, roughly, 12 feet deep and 10 feet square. It is calculated to have contained at the time of the accident 25 tons of water, or 5 000 gallons. Its total capacity was 8,000 gallons. The east side of the tank is that which has given way. The iron has not parted from the rivets, but there is a large, jagged hole broken in it, approximately a circle with a diameter of six feet. It is not one plate that is broken, but several. All are on the east side. The tank was placed on iron girders, and these rested on brick supports.

AIR CASING FOR STEAM BOILERS.—Mr. Stone, says the London *Mining World*, has discovered an ingenious contrivance for the air casing of steam boilers. This invention has already received considerable attention at the hands of various manufacturers, and is destined, when it is better known, to receive still more. Everyone acquainted with the manipulation of steam boilers knows how important it is to prevent as little heat as possible escaping by radiation into the surrounding atmosphere. It is the waste of heat by radiation that chiefly makes boiler rooms and stokeholes hotter than it is desirable they should be. To prevent this, as well as to secure some other important advantages, to which we shall presently advert, Mr. Stone comes to the front with his patent for air casing steam boilers, the nature of which it is very easy to understand. He places the casing over the boiler, but leaving a space of from two to three inches between. All the air supplied to the stokehole passes over the boiler, but under the casing, and so arrests radiation. The air, in fact, becomes heated as it passes in, and effects a considerable economy in regard to the fuel. The casing is made as air-tight as possible, and covers the whole of the boiler, with the exception of the part not enclosed by the brickwork setting. At the end of the furnace there is a similar opening, provided with a faotail regulator, or damper, which can be used as desired. The steam box is also enclosed, but airways are provided in the casing opening to the furnace. The introduction of hot air instead of cold has important results with regard to the consumption of fuel.

A LONG GAS PIPE.—There was, says the *American Manufacturer*, a very interesting and conclusive experiment made with the use of the three-inch pipes of the Columbia conduit company, before they were in use for the transportation of oil, by connecting them with the small gas well at Millerstown. From the time the gas was turned in to the time it ignited at Hamerville, Alleghany county, 32 miles from the well, was 22 minutes; of course it was impeded by the air, which had to be forced out of the whole 32 miles of pipe in that time. The amount discharged was at the rate of 161,000 feet per 24 hours, the noise or roar of the discharge alarming the people living in the vicinity, with no perceptible difference in the flame between the discharge end of the pipe and at the well. The pressure at the discharge was 49 pounds, and at the well 55 pounds, a difference of only six pounds per inch after the connection with the well. This, of course, is not in conformity with the theories and demonstrations of scientists, but the experiment was conducted under the care of two experienced engineers, namely, J. H. McElroy, of Pittsburgh gas company, and R. Young, of Allegheny gas company, and the facts can be relied upon. It looks as though some facts would have to be changed, or some tables and books on pneumatics and hydraulics will have to be revised.

BOILER EXPLOSIONS.—The number of boiler explosions in France from 1868 to 1872, with cause of same and number of killed and wounded, is given as follows by the *Deutsche Ind Zeitung:*

	1868.	1869.	1870.	1871.	1872.	Total
No. of explosions	24	18	13	22	21	98
No. of killed	31	22	10	20	13	96
No. of wounded	33	20	16	25	32	126
CAUSE.						
Neglect of attendant	19	12	7	8	13	62
Faulty construction	0	3	3	0	6	20
Faulty setting up	2	2	2	2	0	8
Unknown	3	1	1	8	0	8

DANGER OF PASSING RAILROAD CURVES.—A new engine has been invented by Mr R. H Gilbert, the projector of the Gilbert elevated railroad, intended to carry passengers at the rate of 40 miles an hour. The driving wheels are only three feet in diameter, while the load required to secure sufficient adhesion to the rails when drawing heavy trains consists of water carried in a tank low down between the wheels, which water can be easily discharged at the stations when the train is not so heavy as to require this extra load, and it is claimed that this engine can turn the most abrupt curves without danger to train or railroad track.

SCIENTIFIC PROGRESS.

Perfumed Newspapers.

Alex. S. Macrae, of Toronto, Canada, has discovered a process by which perfumes can be permanently and economically adapted to the manufacture of paper, so as to give it style, freshness, attractiveness and finish, without in any way increasing the cost of its production.

John Riorden, of the Merriton paper mills, Canada, which produce ten tons a day, chiefly printing paper, challenged Mr. Macrae to so perfume his paper during manufacture that it should go through the printing press, and yet be circulated in the usual newspaper way—scented however, to the satisfaction and delectation of the public. The challenge was accepted and the trial came off on May 11th. The process was conducted by Mr. Riorden and his brother, assisted by their men, under the direction of the inventor. The newspaper selected was the St. Catherines *Journal*, the proprietors of which were served with the usual wrapped sheets, without intimation as to their having been perfumed. When the *Journal* appeared on the 17th—six days after the process—considerable interest was manifested by their readers as to the aromatic atmosphere their presence engendered. Every newspaper resembled a bunch of flowers; every hand that touched them was more or less scented; every room in which they were read became fragrant.

After the paper was scented it went through the drying, calendering, reeling, and cutting machines; and was sorted and wrapped ere it left the mill for the publishers. It then had to pass through some miles of fresh air and damp; to be opened at the printing offices on the day of issue, exposed to the drafts and smells inseparable from the operations of work people; to be damped, inked, pressed, and printed; and lastly, to be delivered in the open air, in single sheets, at numerous places and at various distances.

It is claimed that the scents are so powerful and so condensed that enough "invisible perfume" can be held in one hand to keep a mill, however productive, going for a whole day. The perfumes are said to be perfectly odorless and harmless, and their cost not more than one per cent. on the cost of production! The perfuming process does not interrupt the paper process for a single moment, and the longer and more compact the paper is kept afterwards the more fragrant it becomes; which is of great importance in bound books.—*Paper Trade Journal.*

Formation of Anthracite Coal.

The Shenandosh (Pa.) *Herald* has discovered a phenomena which it calls a "wonderful discovery and revelation of the process of the formation of anthracite coal." The affair is very interesting, be it what it may be, and we quote as follows:

We have before us now on our table a specimen which is one-half anthracite coal and the other half a solidified sediment that four years ago was all soft sediment. For over four years there has been in use in the Indian Ridge shaft of the Philadelphia coal and iron company, this district, a wooden pipe, about six inches in diameter, made of inch boards nailed together, which served to carry water from one of the rings in the shaft to the lower level. The rings are boxes around the sides of the shaft which catch the water coming out of the rock, slate or coal, and are put in to prevent the water from falling down and making a regular shower bath of the shaft. At the ring in question a large spring in the slate, about 30 feet below the primrose vein, had been struck, the water from which is apparently as pure as crystal.

Some four months since it was found that this wooden pipe had become so clogged with the reddish brown sediment that is deposited by all mine water, that the open space in it was not more than two inches in diameter, and not large enough to carry off the water from the ring. Consequently a new pipe was put in, and the old one, nearly closed with the sediment adhering to its sides, was left standing. The water was then turned into the new pipe, and cut off from the old one, which is some 50 feet or over in length. On Friday last, after remaining in the shaft without any water passing through it for over four months, the greater part of this old pipe was taken out, and when broken open the wonderful phenomenon presented itself that this sediment was gradually changing into what appeared to be anthracite coal. About half an inch of the inside of the sediment lining the pipe had changed into coal, and the remainder was also gradually changing, the only portions of the sediment remaining quite soft, being that part deposited first and next the sides of the pipe. A cross section of the pipe now shows, commencing at the center, first a circle of about half an inch in diameter surrounding the two-inch opening remaining in the pipe, then a circle of sediment partly turned into coal, and then the sediment in its natural state and the sides of the pipe. The surface of sediment which was exposed to the action of the atmosphere has changed first, and the influence or chemical combinations which had changed its nature were gradually operating on the rest of the sediment. The process of formation is plainly seen in the sediment next that already turned into coal.

Samples of coal taken from the pipe have been tried on the blacksmith fire at the colliery, and it makes an exceedingly hot fire, but being of a softer nature than the natural anthracite, it clinkers badly. Fortunately there are any quantity of samples of this wonderful formation, and those who are unwilling to believe without themselves seeing and touching, can be accommodated.

Glacial Action.

At the last meeting of the English geological society, Prof. A. Favre read a paper on the old glaciers of the northern slope of the Swiss Alps, illustrating his remarks by a map on a scale of 1-250,000, showing the space occupied by the old Swiss glaciers at the time of their greatest extension, and founded in part upon evidence obtained since 1867, when he, in conjunction with Prof. Studer and M. L Siret, issued an "appel aux Suisses" for the preservation of erratic blocks. He said that in existing glaciers two parts may be recognized—an upper one, the reservoir or feeding glacier, and a lower one, the flowing glacier. Applying this division to the old glaciers of the Rhone and Rhine, the flowing glacier which occupied the plain had a surface nearly equal to that of the feeding glacier which was situated in the mountains. By means of several tables, M. Favre showed the hight attained by these glaciers, their thickness, the slope of their upper surface, etc., at various points in the Alps, the Jura and Swabia, and deduced as the result of the comparison of these numbers: first, that the Rhone glacier passed over several of the chains of the Jura, and that the ice covering these, far from being an obstacle to the extension of the glaciers of the Alps, actually reinforced them and served them as relays, the glaciers of the Jura having carried far on the Alpine erratic blocks; second, that the slopes of the upper surface were variable, and were null, or nearly so, over considerable spaces.

DO AMERICAN WORKMEN NEED FOREIGN TEACHERS.—We are so frequently reminded, says the Delaware *Tribune*, by transatlantic authorities, of our American deficiencies in thorough and systematic training, especially in the scientific and mechanical pursuits, that this item, recently brought to our notice, seems *apropos:* One of our Wilmington firms sent to Edinburgh a very finely constructed machine for grinding the calendar rolls used in paper mills. It was accompanied by explicit directions how it should be set up, one of which was that it must be set level. Word came back that it didn't work well, and an experienced man was sent over to see about the matter. He found that it had not been set level, and in consequence had already suffered injury and that, moreover, there was not a spirit level in Edinburgh equal to the American one which, fortunately, he had taken over, or suitable to set up a delicate piece of machinery. The imperfections in the level which had been used were the main reason why the machine had not been properly set. The American spirit level was a subject of great interest to the Scottish mechanics during its stay in their city, and so great was the fear of the establishment where it was being used, lest a rival concern might get hold of it, that they had it carefully locked up every night in their fire proof-safe.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to June 15.		1 W'k to June 22.		1 W'k to June 29.		1 W'k to July 6.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill..	....	....	....	....	....	....	....	....
Advance..	....	....	....	....	....	....	....	....
Alpha..	50½	50	52	44	47½	46	45½	47½
Alta..	....	....	3	....	....	....	....	....
Amer'n Flag..	....	....	....	....	....	....	....	....
Amer'n Flat	75c	....	....	....	....	....	....	....
Andes..	2%	2¾	2¾	....	2¾	2¾	2½	2¾
Alpa..	1¾	1½	1¾	1¼	1¾	1½	1½	1¾
Amazon..	50c	....	55c	50c	....	....	....	....
Balt'm'e Con	2	1½	1¼	1	1¾	....	....	....
Belcher..	18¾	17	17	16	17½	16¼	18	17½
Belmont..	3	2¾	3	2¾	3	2½	3	2½
Best & Bel..	54¼	46	49	46	48¾	45¾	47½	43¾
Buckeye..	....	....	....	....	....	....	....	....
Bullion..	43	41	42	37½	46	43	44	....
Caledonia..	....	....	8½	7½	8½	....	....	....
California..	84	74	76	70	75¾	72¾	74	68¾
Challenge..	4½	....	4¾	....	....	....	....	....
Chollar-P'ts	85½	83	....	....	81	74	80	72
Confidence..	20½	18¾	18	17	18¾	17	18½	....
Con Imperial	7	6¾	7¼	6¾	8¾	6	8¾	6¾
Con Virginia	73½	61	64¾	56½	63	57	69¾	50¾
Crown Point.	13½	10¾	10¾	9¾	10¾	9¾	10¾	9¾
Coso Con..	....	....	20c	15c	25c	25c	....	....
Daney..	50c	....	....	....	....	....	....	....
Dayton..	5¾	5	5	....	5	....	....	....
Eclipse..	....	....	....	....	....	....	....	....
Empire (Id)..	....	....	....	....	....	....	....	....
Eureka(G V)	....	....	....	....	....	....	....	....
Eureka Con..	11½	10¾	11¾	11	16¾	10¾	13¾	....
Exchequer..	18¾	10¾	17	15	16¾	16	18½	16½
Europa..	....	....	....	....	....	....	....	....
Gila..	87½c	75c	75c	....	1	75c	....	....
Globe Con..	25c	20c	....	....	....	....	....	....
Golden Char.	2¾	2¼	2¾	2¼	2¾	2¼	1¾	1
Gould & Cur.	15¾	14¼	16¾	14	16¾	15	15½	15¼
Hale & Nor..	66	57	10¾	8¾	10¾	9	9¾	9
Ida Ellmoro..	....	....	....	....	....	....	....	....
Jefferson..	....	25c	....	15c	15½	....	....	....
Julia..	10	8¾	9	7¾	8¾	7¾	8¾	7¾
Justice..	24¾	20	23	21	23¾	22	23	22¼
Jackson..	3¾	3½	4	3½	5	4	3½	....
K K Con..	....	....	....	....	....	....	....	....
Kentuck..	13¾	12½	13½	12¾	12¾	12¼	13	....
Knickerb'k'r	50c	25c	....	....	....	....	....	....
Kossuth..	1	87½c	90c	75c	87½c	80c	1¼	....
Lady Eryan..	90c	80c	40c	20c	80c	10c	.5c	62½c
Lady Wash..	2¾	2½	3	2½	2¾	2½	....	....
Leo..	....	....	....	....	....	....	....	....
Leopard..	7½	6¾	7¼	6¾	7¼	6¾	7¼	....
Leviathan..	30c	25c	60c	15c	....	....	75c	....
Mahogany..	....	....	....	....	....	....	....	....
Mansfield..	....	....	31½c	25c	30c	....	....	....
Meadow V'y.	1½	1½	1¾	1¼	....	....	1½	....
Mexican..	32½	27½	70¼	24	29¾	27¾	30¼	28¼
Midas..	....	....	....	....	....	....	....	....
Mint..	....	....	....	....	....	20c	....	....
Monitor-Bel.	....	....	....	....	....	....	....	....
Newark..	....	....	....	....	....	....	....	....
New York..	1	87½c	75c	50c	87½c	75c	87½c	75c
Niagara..	....	....	....	....	....	....	....	....
Northn Belle	43	36	45	41	42	37	37	36
New Coso..	1¾	1½	1¾	1½	2	1¾	2¼	2
Occidental..	4¾	4½	4¾	2½	3¾	....	....	....
Ophir..	58¾	51½	52½	46	51¾	48	52	47¾
Or Gold Hill..	....	....	....	....	....	....	....	....
Overman..	63	54	65¾	53½	64	57	66	63½
Pacific..	....	....	....	....	....	....	....	....
Phil Sheridn	25c	....	1¼	1	1¼	1	....	....
Pioche..	....	....	....	....	....	....	....	....
Poorman..	25c	17c	60c	10c	65c	60c	60c	....
Prospect..	8¼	6½	7¼	7	7	6¼	6	....
Prussian..	1½	1	....	....	....	....	....	....
Ray & Ely..	10½	9	9¾	8	9	8	9	....
Rock Island	2	1¾	1½	....	2	1½	....	....
Ryre Patch..	....	....	....	....	....	....	....	....
Savage..	18¾	17¾	19¾	16¾	23	16¾	21	19
Seg Belcher..	....	....	71	70	75	74	72½	....
Sierra Nev'da	13¼	12	13½	9¾	14¼	13	14¾	14
Silver Hill..	7½	3	3	6¾	....	....	....	....
Sth Chariot..	25c	12½c	25c	....	40c	....	31½c	....
Sucoor..	62½c	50c	50c	45c	62½c	40c	50c	....
Union Con..	12	10	11¾	9¾	11½	10¾	11¾	10¾
Utah..	20¾	20	19	19	19	17	20	....
Wells-Fargo.	25c	12½c	20c	15c	20c	19c	20c	....
Woodville..	1¾	1	1¼	1	1¼	1	....	....
Yel'w Jacket	35½	28¾	31¾	29	32¾	29½	31½	29¾

Sales at S. F. Stock Exchange.

FRIDAY, A. M., JUNE 30.

35 Andes.. 2½
340 Alpha.. 47½@48¾
50 Bullion.. 42½
370 Best & Belcher.. 47½@47
20 Belcher.. 17¾
100 Coso Con.. 37½c
1680 Con Imperial.. 6¾@6¾
1240 Con Virginia.. 69¼@69½
205 California.. 74
85 C Point.. 10¾@10¾
2 5 Chollar.. 80
150 Confidence.. 18¾
10 Eureka Con.. 13¼
30 Exchequer.. 16½
35 Gould & Curry.. 15¾
1120 Hale & Nor.. 9¾@9¾
50 Hussey.. 15c
730 Jnet ce.. 22¾@23
100 Jacksou.. 3¾
280 Julia.. 7¾@8

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., JUNE 29.

425 Alpha.. 47@47½
100 Amazon.. 80
70 Andes.. 2¾
10 Baltimore Con.. 1¾
40 Best & Bel.. 46½@46¾
55 Belcher.. 17@17¼
60 Chollar.. 78½@78
50 California.. 73¾
240 Crown Point.. 10¼@10
910 Con Virginia.. 68¾@69¾
360 Con Imperial.. 6¾@6¾
50 Confidence.. 18
110 Caledonia.. 7¾@7¾
50 Dayton.. 5¾
80 Eureka Con.. 16½@16¾
110 Gould & Curry.. 15¾
1955 Globe.. 35@30c
135 Julia.. 7¾@8
270 Justice.. 21¾@22½
100 Kossuth.. 1¾
40 Lady Wash.. 2¾
675 Mexican.. 28½@28¾
100 Morning Star.. 4
200 Ophir.. 87½
50 N Con Vir.. 75c
200 North Carson.. 25c
195 Ophir.. 49¾@49¾
20 Overman.. 69½
100 Prospect.. 7¾
50 Sheridan.. 1¾
25 Seg Belcher.. 75
1050 Savage.. 18½@19¼
475 Sierra Nevada.. 14¼@14
500 Succor.. 60@62½c
85 Utah.. 1¾
395 Virginia.. 27c
100 Wells-Fargo.. 19c
120 Ward.. 1¾@2
385 Y Jacket.. 31¼@31½

AFTERNOON SESSION.

70 Alphe.. 47@47½
90 Belmont.. 2¾
30 Belcher.. 17¾
500 Coso Con.. 35c
1025 California.. 73½@74½
85 Con Virginia.. 68¾
226 Eureka.. 13¼@13¾
650 Gila.. 87½c
130 Gen Thomas.. 3
275 Golden Chariot.. 2½
70 Gould & Curry.. 15½
590 Hale & Norcross 9¾@9¾
85 Imperial Con.. 6¾
1240 Jefferson.. 61½
390 Justice.. 22½@22¾
205 Jackson.. 4¼
695 Leopard.. 7¼@7½
1100 Mexico.. 43¾@44
670 Mexican.. 28¼@28¾
200 New Coso.. 2¼
50 Northern Belle.. 36@37
315 Ophir.. 48¼@47¾
410 Overmen.. 66@65
100 Penther.. 1¾
50 Poorman.. 60c
200 Prospect.. 6
50 South Chariot.. 37½c
215 Savage.. 20½@20
9-h Uoion Con.. 11@11¼
190 Yellow Jacket.. 29½@29¾
170 Leopard.. 7¾@7¾
100 Metallic.. 1¾
160 Modoc.. 4½
200 New Coso.. 2@1¾
185 Ophir.. 10¾@50
100 Panther.. 1¾
50 Poorman.. 60c
50 Ray & Ely.. 8½
70 Savage.. 19¾
145 Sierra Nevada.. 14¾
330 Yellow Jacket..31¼@31½

The Mining Share Market.

As the Stock Boards have been closed during the holidays, of course there is little to report concerning mining stocks. The sssions held to-day, (Thursday), were void of animation, sales being few and prices low. Every one seemed to be "feeling" the market and a small businsse may be expected for the rest of the week. Our list of sales in another column will give the prices of last Friday and to-day. Mining and prospecting operations are being prosecuted with unabated vigor all along the whole length of the Comatock and throughout what is recognized as the silver belt. While all stocks are inactive, all is activity in the mines themselves. Although what is now being done, underground and on the surface, may produce no present effect, it will eventually tell in the stock market. We note that very few assessments were levied since our last issue, the mining companies having evidently even neglected this important feature while the office were celebrating the Centeunial.

The Color of Minerals.

The light of the sun possesses many remarkable peculiarities. It falls on the clouds, and being reflected from them they become visible. In falling upon terrestrial objects it undergoes many peculiar changes, and when reflected from certain polished surfaces it displays various brilliant colors. The action of light upon minerals is a very interesting study and greatly aids the mineralogist in determining the nature of the substance in hand.

Some minerals reflect the light thrown on them while others absorb it. The colors of minerals originate, as in other bodies, by a portion of the rays being absorbed while those that denote the color of the mineral are reflected. Some minerals are colorless; that is, the rays pass directly through them without refraction. This is the case only when such minerals are perfectly pure, according to the essential character of their chemical combinations. When they contain impurities they assume different colors, according as these colors are more or less absorbed or as they reflect the rays of light. Rock crystal, which, when pure, consists of silica alone, is colorless, but it becomes yellow, red, brown or black by a very small admixture of iron or magnesium.

Some minerals exhibit one color only; others a great variety of color. Fluor spar excels all others in this respect, being found red, enameled green, blue, brown, yellow and white. There are also minerals which display a variety of colors in the same specimen, of which metaciunaharite may be cited as a marked instance. The luster of minerals is a consequence of the various reflection of the rays of light which fall upon their surfaces. This luster, for convenience of observation and description, is graded into virteous metallic pearl wax and oily luster.

General News Items.

THE Olema hotel was burned up on the 29th ult.

AN oil excitement is engaging the attention of the Los Angeles people.

THEBE were very few fires in San Francisco during the celebration.

THE Chinese question in Congress may be regarded as in abeyance until next session.

THE Grand Army of the Republic, 5,000 strong, paraded in Philadelphia on the 3d.

CHILE contemplates the issue of an additional $3,000,000 in bonds. The measure is unpopular.

THE largest streamer in the State was displayed from the flagstaff in Portsmouth square. The flag is 125 feet long.

A MADRID telegram represents that the Spanish Government has determined to resist the claim of foreign residents in Cuba to exemption from war taxes.

THE House Private Land Committee have voted to recommend the passage of a hill appropriating $450,000 for the relief of General John A. Sutter.

THE Auckland *Star* of June 3d says that the Government favors the proposal of a cable via San Francisco, over the route surveyed by the *Tuscarora*.

SARGENT and Page have withdrawn their application for the consolidation of the Visalia and Independence land offices and the joint removal to Bakersfield. They will therefore be continued as at present.

SERVIA has notified the powers that unless they declare the Danube neutral and prevent the Turks from using it, Servia will obstruct it with torpedoes. It is stated that Prince Milan has arrived at Alexinatz. Servia has suspended the foreign telegraphic service.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertieements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business.
Buckeye G & S M Co	Nev	17	50	May 19	June 22	July 11	C A Sankay	331 Montgomery st
Cole S M Co	Washoe	28	5 00	June 14	July 19	Aug 9	J F Lichtner	309 Montgomery st
Crown Point G & S M Co	Nev	26	1 00	June 13	July 18	Aug 8	Chas E Elliott	419 California st
Chollar Potosi M Co	Washoe	10	5	June 26	July 28	Aug 16	W E Dean	419 California st
Eclipse G & S M Co	Nev	1	15	May 15	June 20	July 13	G R Spinney	320 California st
Eureka Con M Co	Nev	2	1 00	May 26	June 30	July 20	W W Traylor	309 Montgomery st
Europa M Co	Washoe	6	25	June 19	July 25	Aug 15	R S Noyes	419 California st
Florida S M Co	Washoe	5	25	June 19	July 27	Aug 22	L Herm nn	220 Sansome st
Gould & Curry S M Co	Nev	26	1 50	May 18	June 23	July 13	A K Durbrow	309 Montgomery st
Hale & Norcross S M Co	Washoe	50	1 50	May 16	June 21	July 12	J F Lichtner	Nevada Block
Ida Elmore M Co	Idaho	20	1 00	June 26	July 31	Aug 21	W Willis	309 Montgomery st
Kossuth M C	Washoe	6	50	May 29	June 29	July 19	E F Stone	419 California st
Lady Bryan M Co	Washoe	12	75	May 26	June 28	July 19	W H McClintock	419 California st
Leviathan M Co	Nev	3	50	May 19	June 21	July 11	E Lary	507 Montgomery st
Mansfield G M Co	Cal	5	25	May 19	June 22	July 12	J M Buffington	311 California st
Newark S M Co	Ely District	12	50	May 16	June 20	July 11	Wm Willis	309 Montgomery st
N Con Virginia M Co	Nev	3	25	June 3	July 7	July 29	J Magnire	419 California st
North Coso M Co	Inyo Co Cal	3	50	May 3	June 14	July 12	D F Verdenel	409 California st
Niagara G & S M Co	Nev	2	15	June 12	July 13	Aug 1	W R Townsend	Nevada Block
North Dayton M Co	Nev	2	10	June 21	July 31	Aug 18	R S Culverwell	330 Pine st
Overman S M Co	Washoe	25	3 00	June 26	July 31	Aug 21	G D Edwards	414 California st
Piston M Co	Washoe	10	25	May 24	June 27	July 15	S Phillips	408 California st
Rising G & S M Co	Idaho	6	50	May 18	June 23	July 13	W H Stilwell	309 Montgomery st
Rock Island G & S M Co	Washoe	11	50	June 26	July 31	Aug 22	J W Clark	418 California st
Savage M Co	Washoe	24	2 00	May 31	July 6	July 25	E B Holmes	309 Montgomery st
Sierra Nevada S M Co	Nev	44	2 00	May 23	June 26	July 14	W W Stetson	309 Montgomery st
South Chariot M Co	Idaho	17	30	May 26	July 5	July 27	W H McClintock	419 California st
Trojan M Co	Washoe	2	30	June 14	July 20	Aug 10	D Wilder	328 Montgomery st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Aureola G & S M Co	Nev	1	10	June 17	July 20	Aug 5	T S Fitch	240 Montgomery st
Black Hawk Coal M Co	Cal	5		Mer 18	May 20	July 8	H A Powell	520 Montgomery st
Beaver M Co	Nev	1	10	May 20	June 24	July 15	W G Hughes	314 Montgomery st
Big Bar M & M Co	Cal	1	5	May 29	July 3	July 22	J M Buffington	311 California st
Cherokee Flat Blue Orsvel Co	Cal	35	5	June 8	July 18	Aug 5	O H Bogart	323 Montgomery st
Coos Bay Coal M Co	Oregon	4	40	June 20	July 27	Aug 15	T P Soach	424 Montgomery st
Coquille Black Sand M Co	Oregon	3	20	June 24	Aug 6	Sept 21	F P Reynolds	111½ Leidesdorf st
Eagle S M Co	Nev	4	25	May 16	June 26	July 24	H L Byrne	533 Kearny st
Eclipse & Lee M Co	Cal		25	June 22	July 22	Aug 5	D Buck	309 Montgomery st
Enterprise Con M Co	Cal	8	13	June 2	July 15	Aug 8	F J Hermann	418 Kearny st
Glencove Con G M Co	Cal	1	5	June 12	July 14	Aug 9	L Leavitt	309 Montgomery st
Gen Thomas M & M Co	Nev	1	5	May 10	June 15	July 8	W Willis	309 Montgomery st
Hope Quicksilver M Co	Cal	1	3	May 12	June 17	July 10	Jacob Hardy	408 California st
Kelsey G & S M Co	Cal	16	10	June 6	July 11	July 31	J H Sayre	320 Pine st
King River Hydraulic M Co	Cal	1	10	May 18	June 24	July 14	W F Bryant	328 Montgomery st
Mariposa L & M Co	Cal	6	1 00	July 6	Aug 7	Sept 2	L Laavitt	309 Montgomery st
Modoc Con M Co	Inyo Co Cal	1	1 00	May 3	June 6	July 10	P M McLaren	328 Montgomery st
New England T & S Co	Cal	2	10	June 10	July 20	Aug 10	C O Tripp	401 California st
Omega Table Mt & M Co	Cal	11	50	June 23	July 31	Aug 21	David Wilder	328 Montgomery st
San ose M Co	Nev	12	5 00	June 14	Jn y 17	Aug 2	A Jorrigen	105 Front st
Oro Fino M Co	Idaho	2	75	June 6	July 12	Aug 8	W H McClintock	419 Calif rnia st
Rising Star G M Co	Cal	1	10	May 16	June 17	July 15	J W Ooppage	330 Pine st
Silver Sprout M Co	Cal		10	Mar 18	June 14	July 10	T B Wingard	328 Montgomery st
Silver Wave Con M Co	Nev	6	10	May 24	July 8	Aug 5	F E Bunker	605 Montgomery st
South St Louis M Co	Nev	1	10	June 6	July 13	July 30	R B Noyes	419 California st
Umpire Tunnel & M Co	Utah	5	5	June 23	July 24	Aug 14	W W Davis	605 Montgomery st
Washington Blue Gravel Co	Cal	1	60 00	June 1	July 15	Aug 15	H Steincgger	Britton & Rey
Woodside M & M Co	Cal	5	25	June 16	July 17	Aug 17	S M Cutler	226 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Best & Belcher M Co	Washoe	W Willis	309 Montgomery st	Annual	July 10
Belmont M Co	Nev	W H McClintock	419 California st	Annual	July 14
Calaveras G M Co	Cal	T B Wingard	328 Montgomery st	Annual	July 10
Chollar Potosi M Co	Washoe	W E Dean	419 California st	Annual	July 10
Ledy Franklin M Co	Nev	Called by Trustees	507 Montgomery st	Special	July 26
Mammoth Grove M Co	Cal	T B Wingard	328 Montgomery st	Annual	July 10
Overman S M Co	Washoe	Called by Trustees	414 California st	Special	July 25
Overman M Co	Washoe	Geo D Edwards	414 California st	Annual	July 13
Savage M Co	Washoe	E B Holmes	309 Montgomery st	Annual	July 20
Utah S M Co	Washoe	G C Pratt	309 Montgomery st	Annual	July 11

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	O D Squire	Steveneon's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	419 California st	1 00	April 10
Black Bear Quartz	Cal	W t Oliver	316 California st	40	June 19
California M Co	Washoe	C P Gordon	309 Montgomery st	2 00	June 11
Con Gold Hill Quartz M Co	Washoe	R Wegener	411 California st	25	April 17
Con Virginia M Co	Washoe	Chas H Fish	401 California st	2 00	June 11
Comenche M & M Co	Nev	W W Traylor	Nevada Block	25	June 19
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	2 00	April 11
Empire M Co	Sierra Co Cal	Chas Collishonn		5 00	Mar 15
Empire M & M Co	Washoe	W E Dean	414 California st	25	April 17
Imperial S M Co	Washoe	W E Dean	414 California st	25	April 17
Leopard M Co	Nev	R H Brown	402 Montgomery st	75	Feb 15
Northern Belle M & M Co		W Willis	309 Montgomery st	1 00	May 15
St Patrick M Co	Cal	D F Verteual	409 California st	30	Mar 10
West Comstock G & S M Co	Washoe	Clive G Wood	534 California st	50	Feb 24

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

EMPIRE M. Co.—June 23d. Location: Nevada Co., Cal. Trustees—Seth Pinkham, Wm. H. Sharp, J. E. de la Montaigne, J. B. Fargo, John H. Crocker. Capital, $5,000 000, divided into shares of $100 each.

SEATON GOLD QUARTZ M. Co.—June 26th. Location: Bath, Volcano gulch, Piscer Co. Capital stock, $5,000,000. Directors—John Finch, W. B. Murdock, C. A. Gould, W. H. Murray and J. J. Ayres.

EAST JUSTICE M. Co.—June 26th. Location: Nevada. Directors—J. J. Wentworth, John C. Welch, G. S. Van Vleck, W. W. Hickles and Samuel Grainger.

LOYAL LEAD O. M. Co.—June 26th. Object: A general mining business. Capital stock, $5,000,000. Directors—George Hearst, C. E. Searson, P. M. McLaren, D. M. Seafer and Joseph Clark.

RESURRECTION M. Co.—June 26th. Location: Storey Co., Nevada. Capital stock, $5,000,000. Directors—C. Churchill, J. B. Valentine, F. D. Heterick, F. M. Smith and L. Aldrick.

SEGREGATED EUROPA M. Co.—June 27th. Location: Nevada. Capital stock, $10,000,000. Directors—C. L. Weller, S. K. Thornton, P. D. Moore, C. Coates and R. B. Noyes.

EL TESORO S. M. Co.—June 27th. Location: Lower California. Capital stock, $10,000,000. Directors—David Goodman, L. P. F. Waller, S. H. Phillips, J. Nataly, C. Oppenheimer, H. P. Curtis, A. L. Frank, Philip Falk, W. H. Reynolds, David Held and L. Jacobi.

EUREKA PARIS M. & M. Co.—June 28th. Location: California. Capital stock, $1,000,000 in 100,000 shares. Directors—J. E. Grover, J. B. Curtis, G. J. Slocum, W. H. Smith and V. Resseyre.

EAST CROWN POINT M. Co.—June 28th. Location: Nevada. Capital stock, $10,000,000 in 100,000 shares. Directors—B. Kneek, M. F. Brady, Horace Baker, J. L. Boone and John S. Wilson.

HOUSTON M. Co.—June 28th. Location: Ormsby Co., Nevada. Capital stock, $10,000,000. Directors: W. Stairly, A. R. Smith, W. H. Haverstick, A. M. Wilder and W. A. Searles.

EAST MODOC CON. M. Co.—July 1. Location, Lookout district, Inyo county, Cal. Capital stock. $5,000,000. Directors—H. C. Rollins, S. N. Putnam, S. E. Holcombe, M. A. Cachot and R. T. Carroll.

DERWENT G. M. Co.—July 1. Location, Meripose county, Cal. Capital stock, $5.000,000. Directors—J. Weightman, J. W. Rockwell, E. B. Rogers, J. P. Mosher and Frank Moyer.

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, July 5, 3 P. M.

LEGAL TENDERS in G. F., 11 A. M., 89½ to 90. Silver, 71½@8.

GOLD in N. Y. 112.

GOLD BARS, 880 to 890. SILVER BARS, 12 and 20 per cent. discount.

EXCHANGE on N.Y., 50-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¾; Paris, five francs per dollar; Mexican dollars, 9 per cent. discount.

LONDON — Consols, 93 to 93¾; Bonds, 102¾

QUICKSILVER in S. F., by the flask, per lb, 47½@48c

METALS.

[WHOLESALE.

THURSDAY, M., July 6, 1876.

American Pig Iron, ₩ ton	38 00	@	36 00
Scotch Pig Iron, ₩ ton	35 00	@	37 00
White Pig, ₩ ton	— —	@	38 40
Oregon Pig, ₩ ton	— —	@	32 50
Refined Bar,	— —	@	— —
Boiler, No. 1 to 4	— —	@	— —
Plate, No. 5 to 9	— —	@	5½
Sheet, No. 10 to 14	— —	@	5¾
Sheet, No. 18 to 20	— —	@	— —
Sheet, No. 22 to 24	— —	@	6 —
Sheet, No. 26 to 28	— —	@	6½ —
Horse Shoes, per keg	5 50	@	8 00
Nail Rod	— 10	@	— —
Norway Iron	— 9	@	— —
Rolled Iron	— 8	@	— —
Other irons for Blacksmiths, Miners, etc.	— —	@	4¼
COPPER—			
Brazier,	— —	@	37½
Copper Tin'd	— 40	@	— —
Sheathing, ₩ lb	— 24	@	40
Sheathing, Yellow	— —	@	25
Sheathing, Old Yellow	— —	@	12½
Composition Nails	— 24	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ₩ lb	— 20	@	25
Anderson & Woods' American Cast	— —	@	15
Drill	— —	@	16½
Flat Bar	— 18	@	22
Plow Steel	— 9	@	10
TIN PLATES.—			
10x14 I C Charcoal	10 00	@	10 50
10x14 I X Charcoal	10 50	@	11 00
Roofing Plate I C Charcoal	10 00	@	— —
Banca Tin	— —	@	28
Australian	— 18	@	22
ZINC.—By the Cask	— —	@	11
Zinc, Sheet 7x3 ft, No 7 to 10 ₩ lb	— —	@	11
do do 7x3 ft, No 11 to 14	— —	@	11½
do do 8x4 ft, No 8 to 10	— —	@	12½
do do 8x4 ft, No 11 to 14	— —	@	13
NAILS Assorted sizes	3 60	@	3 75
QUICKSILVER, per lb	— —	@	47½

LEATHER.

[WHOLESALE.]

WEDNESDAY M., July 5, 1876.

Oity Tanned Leather, ₩ lb			22@29
Santa Cruz Leather, ₩ lb			22@28
Country Leather, ₩ lb			22@28
Stockton Leather, ₩ lb			25@29
Jodot, 9 Kil., per doz			$50 00
Jodot, 11 to 13 Kil., per doz		65 00@	70 00
Jodot 14 to 19 Kil., per doz		82 00@	84 00
Jodot, saoond choice, 11 to 16 Kil. ₩ doz		57 00@	74 00
Cornellian, 12 to 16 Ko		57 00@	67 00
Cornellian Females, 12 to 13 Kil		63 00@	67 00
Cornellian Females, 14 to 16 Kil		71 00@	76 50
Simon Ullmo Females, 12 to 13, Kil		58 00@	62 00
Simon Ullmo Females, 14 to 15, Kil		66 00@	70 00
Simon Ullmo Females, 16 to 17, Kil		72 00@	74 00
Simon, 18 Kil. ₩ doz		61 00@	63 00
Simon, 20 Kil. ₩ doz		65 00@	67 00
Simon, 24 Kil. ₩ doz		72 00@	74 00
Sobert Calf, 7 and 9 Kil		35 00@	40 00
French Kips, ₩ lb		1 00@	1 15
California Kip, ₩ doz		60 00@	80 00
French Sheep, all colors, ₩ doz		8 00@	15 00
Eastern Calf for Backs, ₩ lb		1 00@	1 25
Sheep Roans for Topping, all colors, ₩ dna		9 00@	13 00
Sheep Roans for Linings, ₩ doz		8 00@	10 00
California Russett Sheep Linings		1 75@	4 50
Best Jodot Calf Boot Legs, ₩ pair		5 00@	5 25
Good French Calf Boot Legs, ₩ pair		4 00@	4 75
French Calf Boot Legs, ₩ pair		4 00@	— —
Harness Leather, ₩ lb		24@	32½
Fair Bridle Leather, ₩ doz		48 00@	72 —
Skirting Leather, ₩ lb		33@	37½

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE.

O'Harra Furnace.—Alpine *Chronicle*, June 24: Manager Chalmers, of the Exchequer mine and mill, has perfected his arrangements for the erection of an O'Harra Champion furnace at the Exchequer mill, and Mr. O'Harra will arrive here next week with a corps of men to commence work. With the completion of this furnace we look for the inauguration of better times in Alpine.

AMADOR.

Plymouth Rock Mine.—Amador *Ledger*, July 1: John Evans and Philip Kehres, the owners of this mine, which we incorrectly styled the Centennial mine in our last issue, write to us as follows: "The shaft is down 90 feet, and the bottom looks prosperous. The casing of the ledge is mixed up with decomposed quartz, iron and black sand, the gouge being a kind of whitish hine. The ground is soft and sinking consequently easy, and no trouble is experienced from water. Appearances are favorable for a permanent mine. The banging and foot walls are soft, but not heavy. The claim is favorably located for the running of a tunnel to strike the ledge at a considerable depth. A good mill site is close by, and water may be obtained at small cost all the year round. The last prospect that we made was from a hole drilled about 18 inches into the ledge, which yielded 25 cents. The shaft is well timbered, and a whim has recently been put up." The owners are poor men, but are anxious to prosecute work on the claim. They would be glad to dispose of an interest in the property, so as to secure the means to continue its development.

Hubbardville Mine.—Preparations are being pushed ahead in connection with this mine. A boarding house is in course of erection close to the works. Some time must elapse before the preliminary work is through with and actual mining commences. The operations are under the superintendance of Mr. Tregloan, an efficient miner, who will soon place the property on a paying basis if it is possible to do so.

Damming the Blue Lakes.—Amador *Dispatch*, July 1: The Amador canal company are preparing to construct a dam across the Blue lakes in Alpina county, for the purpose of supplying their ditch with an additional amount of water during the dry season.

BUTTE.

Gravel Mining.—Oroville *Mercury*, June 30: We met J. McSmith the other day, just down from his claim at the head waters of Big Timshew. He reports everything as looking in the best possible condition for a good run this season. He has a 70-foot bank of gravel before him, and plenty of water to work it with. The ground is rich, and he expects good returns from it when he washes up.

CALAVERAS.

Gravel Mining Jots.—Calaveras *Chronicle*, July 1: In Veith's hydraulic piping continues with unabated energy, the employment of powder in blasting the bank greatly forwarding operations. An immense quantity of gravel is being washed daily and the prospects are that the next clean-up will be something to brag of. At Duryea's, in Chile gulch, work is going on actively. The necessary drifts having been run, a large force is at present employed "breasting out" gravel. A mill for crushing the dirt is to be speedily erected. Emerson's hydraulic in Happy valley is in full blast and everything working to a charm. Operations are conducted on a big scale and we think it will take a big pair of scales to weigh the dust extracted. Cook & Co., the Calaveras hydraulicists, are also "pressing things." They have piped away a large area of ground and are now preparing to make a Centennial clean-up. The Gopher, Red Hill, Bob Paul and other claims are being actively worked which results that will give the "boys" a handsome Fourth of July "stake."

Brady Mine.—We learn that the giant crusher at the Brady mine is now working satisfactorily, the difficulty in discharging the pulp, at first encountered, having been obviated. We are informed that the crusher, Cooper & Cowles' patent, is developing a grinding capacity of from a ton to a ton and a half per hour. If the mill will work that quantity of rock there is no question but that the mine will pay large dividends. Mr. James Brady, a practical miner, has been reinstated superintendent.

Gwin Mine.—Work is progressing steadily in the 1100-ft level of the Gwin mine. The ledge has widened out considerably, all good milling ore. The batteries are kept in constant operation, the yield of the mine continuing about the same as heretofore reported. Sinking the shaft an additional 100 feet is also progressing rapidly and will soon be completed. Machinery is being placed upon the "middle" shaft through which the mine is to be worked when it has been sunk to the necessary depth. Great activity is observable in all operations connected with the mine, and the results are altogether satisfactory.

New Mill.—Mr. James Duryea is preparing to erect a mill on his claim, in Chile gulch, for the purpose of crushing the gravel. The grading of the mill site is already completed, and it is expected to have the machinery on the ground this week. Mr. Duryea has purchased the Hepburn quartz mill at Railroad—a 10-stamp battery—and will have the machinery at work as soon as it can be hauled to his claim and set up. The mill is to be run with water power, the iron pipe necessary for conveying water for that purpose being already in position. Mr. Duryea is now working his claim by tunneling, instead of hydraulicing as formerly, and keeps a large force of hands constantly employed "breasting out" gravel. The dirt is hard to wash, however, being so tenacious that it will not yield up all the gold it contains without crushing. To remedy that difficulty Mr. Duryea is going to put the gravel under stamps, and we have no doubt but that the increased yield that will result will much more than repay the extra expense incurred.

West Point Mining Jots.—The water has been pumped out of the Mina Rica, and sinking the shaft commenced. The ledge in the Champion is showing fully two feet in width, composed of very rich rock. Our informant states that the ore will mill $200 per ton. Sinking continues at the Josephina. First grade ore is being obtained. Fields & Co. are taking good rock out of the old "Williams" mine.

EL DORADO.

About Completed.—El Doredo *Republican*, June 27: It is expected that the work of completing the gap in the big ditch between Plum creek and the South fork of the American will be consummated the last of this or first of next week, when 5,000 inches of water will continually flow to us.

Bide.—We saw some specimens, said to be the average ore, a few days since, from the Bine lead, Spanish Flat, owned by Varozza, Witmer & Schreder, that were very fine. It will work $60 to $70 per ton, we should say. They intend to haul 50 tons to the St. Lawrence mill, three miles distant, for crushing, during the summer, and accumulate sufficient ore to warrant them in building a first-class mill before another year passes. A tunnel has been run in 80 feet alongside of the ledge, and wherever the ledge has been tapped, good ore has been developed. They are now sinking upon the ledge at the end of the tunnel, where the rock mentioned is being taken out. The ledge where they are now at work is about two and a half feet wide.

INYO.

Coso District.—Coso *Mining News*, July 1: We paid a visit to the Defiance mine yesterday, and found the main incline being pushed with vigor. The hoisting works are doing splendidly. No ore is now being taken from vein No. 1, in consequence of the sinking of the main shaft, which will facilitate the extraction of the ore, and at a much reduced cost. From the incline shaft on No. 2, large quantities of fine carbonate ore are now being extracted. The vein here looks remarkably well. On the south drift, No. 2, 84 feet from main tunnel, an incline shaft is being sunk in solid ore, and is now down 30 ft, shewing very fine ore. Vein No. 3, drifting and stoping. The front vein of No. 3 shows a body of five feet of splendid galena ore, with rich chlorides—drift running north 25 feet and south 20 feet—solid ore all the way. Back vein of ledge No. 3, opened up for 40 feet in length and 25 feet in width, with six feet of high grade ore, carbonate and chloride. Between both strata, which really form vein No. 3, another body of fine ore was struck on the 28th, which no doubt will connect both veins. Large quantities of ore of the very highest grade are now being shipped from this vein to the furnaces. The outlook for the Defiance was never more favorable.

Lee District.—The Emigrant company are sinking on the Valentine ledge, the ore increasing in quantity and quality as they go down, dissolving smooth, straight walls, leaving no doubt as to the fissure character of the vein. The Cactus proves to be between 30 and 40 feet in width. The mill started up on the 27th ult., and has been running very smoothly. The first shipment of bullion will be made in a few days.

KERN.

Havilah Mines.—*Southern Californian*, June 29: Jenin, Hoffman and other San Francisco men, after spending a week examining the mines at Claravtie, have purchased them, and are moving the Kelso valley mill there, with a large gang of men, intending to devote a large outlay to the development of that section. The mines of Havilah are showing great improvement. The New World, which lies due west of town, has shown better prospects, and is likely to be put in a state of progress.

Mr. R. H. Stretch, who has taken the management of the Amoor, is making advancement which promises well, and encourages the dormant owners of adjacent mines. The Band Hill is attracting a good deal of attention. The lack of good miners is an impediment not easily overcome, but with the new discoveries there will be a return of the rush to that section, and the prediction is general that a great change is at hand.

NEVADA.

Rich Gravel.—*Foothill Tidings*, July 1: Very rich gravel has been struck in the prospect claim of Mr. Ragan, near Cement hill, in this county. Rumor has it that $6 to the pan was washed out. On the other side of the same hill the claims belonging to Scott and others are looking splendidly, and both are supposed to be on the old river channel.

Prospects Well.—Nevada *Transcript*, July 1: We learn that the mining claims located on Selby flat, superintended by John Cashin, and which have been opened this spring are being worked, and that the gravel prospects well, and everything looks favorable for the development of a good mine.

PLACER.

Opened Again.—Placer *Argus*, July 1: The old Caperton ditch, a branch of the Bear river ditch, starting at Newcastle and following the ridge for ten or twelve miles, has been put in a complete state of repair, and water will be turned in the early part of next week. This branch has been allowed to go down has not been in use for two or three years. The flumes have been replaced, the ditch cleaned out and and everything put in good shape. It will be kept up hereafter, and the country along the line is assured of a steady supply of water, something it has not enjoyed for some time.

Mining Items.—Dutch Flat *Forum*, June 29: We have nothing particularly interesting to offer this week, further than nearly all the claims in the district continue washing as constantly as the character of the gravel and circumstances will permit. The Pacific cleaned up yesterday and fully sustained its reputation of being the most profitable claim in the district. The Lakamp was cleaned up and is on again. The Boston is washing and is doing as good as could be expected under the circumstances. The Franklin is under a small cloud at present, owing to the misfortune of having the shaft plugged by a blast. It will, however, be but a temporary delay, and washing will soon be resumed with sufficient loose gravel in sight to keep the claim washing for some time to come. The Southern Cross is at present attracting considerable attention, from the fact that the incline which was being raised from the end of the tunnel has reached the surface of the gravel. Sluices will be immediately constructed in the tunnel below and washing commenced soon thereafter. The Polar Star continues washing and working. From the numerous reports we conclude that the claim either contains a great many boulders or the foreman is practicing for the Fourth of July. The Elmore Hill claim, with its rocky front, is being worked with unusual vigor. A blast of 60 kegs of powder was exploded on Friday evening last, crumbling the front of the bank in excellent style. The Yankee tunnel is being driven with vigor. During the week ending last Saturday evening, the drillers fired 11 face shots, advancing 43 feet. Considering that the rock is trap, and the face of the tunnel is 8x9 feet, this can really be termed very fast. The Baker shaft is being sunk by one shift of men. It is the intention of the superintendent, however, to increase this force to three shifts on the first of the month, men for this purpose having already been engaged.

PLUMAS.

Mining Jots.—Plumas *National*, July 1: The tunnel now being run by the Bell company is progressing at the rate of 25 feet per week. Archer, formerly of Newtown, has an extensive mining operation in full blast at Long bar on the East branch. The claim is nicely fitted up, and Arch thinks he has got a deep channel through the bar which will pan out big when he gets bottom.

SAN LUIS OBISPO.

Quicksilver Mines.—San Benito *Advance*, July 1: In the Cholame valley the mines are nearly all idle at present through dissensions and lack of means. The California, Nevada, Avenal, Fords, Delalu and Bosina quicksilver mines present excellent prospects. Tunnels extend into all of them, and several shipments of metal have been made from the California and Nevada. The Bed Rock coal mine has the appearance of being a mountain of solid coal; the deeper it is penetrated the better is the quality. Samples of the black diamonds have been forwarded to this office for public inspection. We consider this coal equal to the Cumberland, and when placed together and compered, it is a difficult matter to distinguish the difference. There is a fortune in this mine as soon as a railway connection is secured. The mining developments of the whole district excite the wonder of old miners, who consider the prospect equal to any district on the coast. The principal metals known to exist in large quantities in the district are quicksilver, iron, antimony, menganese, gypsum and coal.

SONOMA.

Palham Mine.—*Russian River Flag*, June 29: The Palham mine is situated at Sausal creek, about one-half mile above the fork, and near the head of the canon. Last fall a Vallejo company sunk a shaft 60 feet, but during the winter it fell in. They commenced work again last spring, engaged Silas Peter to haul lumber and by this time they have the shaft clear, no doubt. Specimens from the lead of which they were in search assay rich in gold and silver.

Nevada.

WASHOE DISTRICT.

Con. Virginia.—Gold Hill *News*, June 29th: Daily yield, 350 tons of ore. The mine is looking well. The station at the 1500-ft level has been completed. On the 1400-ft level the drifts and winzes are being enlarged, so as to give a better passage for the air and cool the level. On the 1500 ft level a drift has been run west to tap the bottom of the shaft, and enable the extraction of ore from that portion of the mine. The east drift on the 1500-ft level has been connected with the west drift from the C. & C. shaft, and although the draft of air is not so strong as expected in the beginning, the benefits will soon be apparent in the steady cooling of the whole mine. The north drift on the 1700-ft level is steadily advancing, and taking into consideration the large size of the drift and the intense heat encountered, is making good progress. Sinking the C. & C. shaft is making the usual rapid rate of progress. The yield of bullion for June will not fall short of that of May, notwithstanding the loss of four days' time during the month. The erection of the new battery and amalgamating mill are each making rapid strides toward completion.

Sierra Nevada.—The north drift on the 1000-ft level of the new shaft is steadily advancing, the face still in soft ledge material. Sinking the winze below the 700-ft level of the old shaft to connect with the main south drift on the 1000-ft level is also making steady progress. Everything is and about the mine is in splendid working condition, and the developments at all points are being forwarded with all the dispatch possible.

Opher.—Daily yield, 350 tons of ore. The ore breasts both north and south on the 1800-ft level are showing finely and promise an excellent yield of good ore. The north drift on the 1600 ft level is steadily advancing toward the south line of the Mexican, the face in porphyry. The 1700 ft level is again in good working condition, and the prospecting in that portion of the mine can now be resumed in good earnest. Sinking the incline is being pressed with all possible force at three different points, and will now soon be completed down to the 1600-ft level. The mills are kept running up to their full crushing capacities, and the yield of bullion for June will exceed that of any month since the destruction of the hoisting works by fire.

Justice.—The ore stopes are looding from the third station down to the 600-ft level are opening out finely and promise a large yield of excellent ore. On the 600-ft level both the north and south drifts are steadily advancing, the face of each in very favorable quartz. The yield of bullion for June will not be far from $55,000. The company is now contracting for a lease of the Pioneer mill, which, if they obtain it, will give them a crushing capacity sufficient to much more than pay the running expenses of the mine.

California.—Daily yield, 500 tons of ore. The ore breasts on the 1500-ft level are looking splendidly and are yielding rich ore. The ore breasts are also being opened on the 1350 ft level preparatory to extracting ore. The east and west cross-cuts on the 1600-ft level are still in rich ore, and that level is giving promise of a richer, better yield of ore than either of the levels above; in fact the more the mine is opened the richer and better it shows. On the 1400-ft level two crosscuts are being run to cut and prospect the ledge further to the northward than it has yet been developed. The yield of bullion for June will exceed that for the month of May, and insures the payment of the regular monthly dividend of $2 per share.

Bullion.—No work was done during the week in the Alpha drift on the 2000-ft level until yesterday, on account of the rise of water in the 2030 ft station of the Imperial shaft. On account of lying still the drifts are still so hot that but slow speed can be made. The upraise from the 1700-ft level is hourly expected to connect with the winze below the 1400 ft level. When this so desirable result is attained, a ventilation of the 1700 ft level will be secured, and the working of the mine to that depth can be commenced in good earnest.

Julia.—The south drift on the 1300 ft level is opening up with every prospect of a valuable ore development not very far ahead. The ledge is much more solidified, and the quartz and ore of a more concentrated character than it has been heretofore, on either of the levels above. On the 600-ft level the face of the west drift has penetrated the hard belt of rock encountered and again pessed into soft ledge material of a very encouraging description.

Calcutta.—This is a new mine in American Flat district, a little to the south and west of the Rock Island, recently located by parties in San Francisco. E. W. Worsham, President of the company, arrived here last week, and started men to work immediately grading a road to the mine. The company intend boring to a depth of 500 or 600 feet, and feel confident of striking a rich body of ore at that depth. The machinery, boiler, diamond drills, etc., are being hauled to the mine to-day, and the work will at once be prosecuted with all vigor to a depth of 600 feet.

Gould & Curry.—Enlarging and repairing the main shaft is making excellent progress. The new pumps for the stations in the shaft have arrived, and nearly all of the other machinery is now on the ground. The machinery for driving the large fan at the mouth of the old lower tunnel is finished. The fan is something entirely new in this section, and its operations for a while will be noted with much interest by the mining men of the Comstock.

Imperial.—The stoppage of the pumps on the 2000-ft station, and the consequent rise of water in the station and in the drift has prevented much being done in either the drifts or north winze on the 2000-ft level during the week.

Belcher.—Daily yield, 400 tons of ore. The ore breasts are looking well and showing little or no change. Sinking the main incline is going steadily forward.

Phil Sheridan.—Sinking the shaft is making steady progress, the bottom still in very favorable ground. A considerable pocket of water was struck during the first part of the week, but the flow is now rapidly subsiding.

Chollar-Potosi.—Daily yield, 120 tons of ore, the average assay value of which is $31 per ton. Sinking the main incline is going ahead at the rate of two and a half feet per day. The rock in the bottom is quite hard.

Ward.—Sinking the shaft is making splendid progress. It was sunk and timbered in the best of style during the past week a distance of 35 feet, and is now down a distance of 250 feet in depth. The erection of the new hoisting works is steadily progressing.

West Belcher.—The heat has been so great in the drifts for the past week that but slow progress could be made. The erection of a large blower will, however, greatly benefit the circulation in a day or two more.

Daney.—The shaft is now down 517 feet. The heavy flow of water is gradually decreasing, and the pump is now handling it with the most perfect ease.

Utah.—Sinking the main shaft is going rapidly ahead, notwithstanding the extreme hardness of the rock in the bottom. The flow of water from the bottom of the shaft is steadily decreasing.

Yellow Jacket.—Sinking the east winze in cross-cut No. 3 is making fair headway. It is now down about 80 feet, the formation penetrated showing little or no change.

Savage.—The erection of the new machinery is getting well advanced, and will probably be ready to start up by the 20th of July next.

Alta.—The foundations for the huge pumping machinery have been completed, and the sole plates laid ready for the reception of the engine and other heavy machinery.

Kossuth.—The main south drift on the 350-ft level is in quartz and ore of a very encouraging character.

Bock Island.—The flow of water is still strong from the west drift on the 850-ft level. The pumps are kept running up to their full working capacity. The flow of water has the appearance of being gradually on the decrease.

Best & Belcher.—Everything waiting on the repairs to the Gould & Curry shaft, and the starting up of the new pumping machinery.

Baltimore and American Flat.—Sinking the main incline is going ahead rapidly, the bottom in good sinking ground.

Silver Hill.—The flow of water is now easily handled by the pumps.

Overman.—Daily yield of ore, 30 tons. Sinking the main shaft is making good progress.

Twin Peaks.—The fine ore developments in the ledge found at the 75-ft level being fully satisfactory and such as to warrant the expenditure of any amount of capital in its practical working, work is suspended at this point and only confined to keeping the water ont. Grading for a first-class new working shaft of three compartments is now commenced 300 feet further east. This shaft will intersect the ledge between 300 and 400 feet below the surface and work it to any depth.

Hale & Norcross.—The coping stones are being placed on the foundations for the new machinery, ready to receive the sole plates of the engine. The engine, and in fact almost all of the machinery, is on the ground ready for erection.

Mexican.—The connection of the north winze in the Ophir ground with the north drift on the 1600-ft level has greatly benefited the ventilation in the Mexican, and enables the miners to make much better progress with the work at all points.

North Con. Virginia.—Cutting out for the boh pits and pump stations in the shaft is making excellent progress. The erection of the heavy stone foundations for the new machinery is making steady headway. A large portion of the new machinery is already on the ground ready for erection.

Dayton.—Sinking the the main shaft is making splendid progress. Driving the prospecting drifts on both the 500 and 700-ft levels is going steadily forward. A day or two since a strong flow of water was encountered in the north drift on the 700-ft level, which run the pump up to ten strokes per minute, but fatied to give any serious trouble, as the pump worked with as perfect ease at that rate as at less.

Succor.—Finding the old pumping machinery totally inefficient to drain the heavy flow of water at the bottom of the shaft, all work has been stopped in the shaft and much larger and more powerful pumping and hoisting machinery has been contracted for. The grading and excavations necessary for the foundations for the new machinery is now being made ready for its erection as soon as it arrives on the ground.

Crown Point.—Sinking the main incline is being pushed vigorously downward, the bottom in very hard rock. The main south drift on the 1700-ft level is steadily advancing, the face still in low grade ore. A steady but limited flow of water is coming in at the face of the drift.

Lady Washington.—Some little delay has been experienced owing to the non-arrival of the plunger pump machinery, but that has arrived, is in position, the connections are being made, and the whole will ha started up and sinking recommenced about the Fourth.

North Carson.—The new works are now in full and successful operation, and the machinery works smoothly and well.

Superior.—Sinking the shaft is being energetically prosecuted as usual, but no increase of water to interfere, and ground working favorably.

Mint.—The main shaft is now down 1,140 feet. The flow of water is still light

Vivian.—The ore breasts both north and south on the tunnel level are showing well, and are yielding the usual amount of good milling ore. The water in the incline is gradually decreasing.

Tahoa.—Sinking the new shaft is making steady and favorable progress.

Cosmopolitan.—Face of main tunnel or adit north still in good milling ore. The fine ventilation given by the upraise to the surface is of great advantage in the working of the mine.

Monumental.—Sinking the shaft is going steadily ahead; the only trouble encountered is having to hoist the rock so great a distance by hand. The shaft is now down 193 feet.

Pictou.—Streaks and bunches of quartz continue to be met with, giving good assays.

Hazon Con.—Sinking the combination shaft is making steady headway, the rock in the bottom blasting out finely.

Union Con.—The face of the north drift on the 1300-ft level is still in quartz and ledge matter.

Caledonia.—The water is reduced in the shaft to within ten feet of the bottom.

Flagala.—Both drifts are making good progress. Quartz in face of west drift showing better, with small streaks of ore coming in.

Lady Bazan.—Work on the pits and foundations for the new machinery is going steadily forward.

Prospect.—Total depth of shaft, 358 feet. Bottom in hard but good working porphyry.

South Con. Virginia.—Expect to have good ore developments to report before long.

Nevada.—Face of drift still in low grade ore, some streaks of which give high assays.

Baltic Con.—Drift pushing ahead, with good working material in the face.

Montana.

Items.—Butte *Miner*, June 17: On the Ohio mine Messrs. Thompson, Venner & Co., continue to hoist about two tons per day or $500 to $700 ore. This mine is about two miles north of Butte, and promises to be one of the best in the camp. The Howe mill continues to pound away on Burlington ore. The former run on this ore yielded $104 per ton, which was an average of the ore. We will give an extended notice of this mine at an early day. At the Banker lead, which mine has been worked for some time past, taking out rock running from $50 to $150, there has been discovered a rich streak of quartz which assays from $300 to $350. This is a fortunate strike at the present time, as the Banker is a comperatively free milling ore, just such as the mills here with furnaces incomplete for roasting stand most in need of. A ready market can at once be found for all high grade ores of this character. Yesterday, at the La Plata mine, while engaged in sinking upon the main shaft, a heavy charge of powder was exploded with a result not expected, for, instead of knocking the bottom out of the mine, it came near raising the top off, destroying the railroad track and somewhat injuring the shaft house. With the present force engaged at work, Messrs. Downs, Larry & Co. expect to lower the shaft at the rate of four feet per week, so that by fall they will put in eight many additional hundred tons of ore.

Utah.

Bingham.—Cor. Salt Lake *Tribune*, June 21: The old Telegraph rattles away on that inexhaustible ore body with a force of 80 men. The ore house on the tramway is now fixed so that seven cars can be loaded at one time. The Grecian Bend works 25 or 30 men on ore, and Brother Bartlett is still at the helm. A rich strike has been made in the Hamlin, since which time—three days—two of the boys took out 20 tons, and are now delving away on a three foot breast of first-class ore. The owners of the Hamlin are in a fair way to see Philadelphia.

Rush Valley.—Mining matters have decidedly improved throughout this district the past two weeks. Quite a town has sprung up at La Ronville, surrounding the Southport mine. Lawson and Shull are pushing everything in and around their mine, and making all improvements of the most substantial kind. The quick and energetic development of the Southport mine, with its grand yield of much sought-after ores, has stirred miners and prospectors into renewed activity and exertion. Many mines and prospects that have lain idle for years will, within a few weeks, be contributing ores to swell the bullion production of Utah.

(Continued from Page 26.)

cylinder in three and a half hours! He also shows a riveter which has a hydraulic pressure accumulator that will give a pressure of 6,000 pounds to the square inch. Not much chance for a rivet to escape being jammed well down under such a pressure! Nearly all the iron work in the main exhibition building was riveted by these machines.

Machine Tool Making in England and America.

Machine tool making, as a distinct branch of industry, is of quite recent origin. Mechinists formerly made, each for himself, such mechines as they needed in their shops. The result of such practice was very imperfect tools, and still more imperfect work was obtained from them. Mr. Joseph Whitworth, of England, has done much to secure precision in tool making, a condition which the delicate and intricate state of manufacture now demands; and especially the practice recently introduced into this country of manufacturing machines and implements by "assembling," or meking all the parts of a machine interchangeable with others of the same class and size, as in Colt's pistols, American watches, sewing machines, etc. We believe Mr. Whitworth was the first to urge upon machinists throughout the world the adoption of certain conventional standards which have now come into general use. As early as 1848 Bancroft & Sellers, now Wm. Sellers & Co., commenced the manufacture of machine tools, and from that time to this that firm has kept at the head of the business, both in regard to perfection of manufacture and extent of business carried on. As an evidence of the perfection which Mr. Sellers has attained in his manufacture, he shows here a machine for the production of true surfaces, so accurate in its work that two straight edges of steel, when finished by it and pressed together perfectly clean and dry, will adhere so closely as to require considerable force to separate them. A special piece of work of this kind was recently executed in England by Mr. Whitworth, which was heralded all over the world as a most remarkable triumph of the precision to which that eminent mechanic had arrived in finishing off his work. Mr. Sellers does this every day, and the fact would scarcely have been thought worthy of record, had not your correspondent in seeing it been reminded of the publication in regard to Mr. Whitworth, and which was noticed some three or four months since in the Mechanical Progress department of the SCIENTIFIC PRESS.

The introduction of American tools into the English market, as above alluded to, and American ideas into English shops, is a very significant fact, and worthy of a prominent niche in the records of our first hundred years of mechanical progress. Our English cousins have become convinced that, in order to hold their place in the mechanical world, they must copy after the Americans in a more general substitution of tools for head labor, as being both cheaper and more precise. Fortunately for them, the advanced intelligence of the age is fast driving away with the opposition of the English laborer to the introduction of labor saving appliances, and the question is beginning to be asked now, "Where shall we get our tools?" Such exhibitions as the one now in progress furnish the answer. No such exhibition of machinery as is here shown would be possible in Europe—from those to the manor born. Many of the machines have no existance there, while those that they have are used but sparsely on account of the opposition of workmen to their more general introduction, which still prevails. The general spread of knowledge and liberal ideas, greatly aided by district, national and international fairs, are working important revolutions, which will continue to go forward and tell largely upon the world's progress during the next hundred years. We of the present generation cannot witness the results, but our children's children will, and may we not hope—have we not good reason to believe—that such progress will be equally as fruitful in results as those we see before us to-day, as the result of the last hundred years. W. B. E.

Botanical Excursions.

[By J. G. LEMMON.]

No. 3.—The Big Trees Revisited—Criticisms and Consequences.

"Mail! Webber lake mail!"

The trapper's voice was never more welcome.

"Come down, come in," I cried, flying to the door and throwing it wide open.

Leaving his snowshoes up on the high white plateau, he descended by the ice-floored steps cut in the snow to the porch, and tossed a large package of letters and papers into the room.

To the devotee of a science whose better prosecution often requires months of secluded study amidst out-spread subjects, scarcely a visitor is endurable save the mail carrier.

While eagerly discussing the local news with the weary mountaineer, I placed substantial food and a cup of hot coffee before him, then ate eagerly seated myself to devour my letters. Reserving those from the good Dr. Gray until the last, I tore away envelopes and reveled in a right royal feast. Messages of remembrance from soul kuit friends in the valley below, lisping of love from the left and lone, tokens of friendship from comrades on late excursions, careful inquiries from devotees of the amiable science of botany, propositions to exchange specimens from new and distant correspondents, warm congratulations from patrons who know of the long struggle and its glorious reward, messages of cheer from eminent and venerable scientists. Oh, the feast was a full requital for the long dearth which gave it zest. At last I reached the viands—the double-sheeted letter from Dr. Gray. His letters always thrill me with emotion. In brief, but plain terms, they reveal the warmest heart, the kindliest interest, the most helpful self-denial. Reverently I drew the sheets from the envelope and read, first, a report of my last flowers sent him. With quickened pulse I noted the new species found, and read the comments thereon and the names, conferring more honors upon assisting friends. Next came suggestions as to territory for further research, practical directions for gathering valuable seeds and plants, then congratulations upon past successes, hopes for the future, and envyings of my opportunity to roam the Sierra at will in summer, then to retire to Webber lake and study in winter, etc.

A length I reech the words, "I lately read your 'Scenes in the High Sierra.'" (My heart throbs violently at thought of the high compliment.) "They please and interest me." (Tumultous emotion, expressed by springing from my seat and capering around the room.) "They are racy and artistic." (Ecstatic delight! chairs, tables and libraries are surmounted, and I perch upon a high cabinet.) "But," he continues, "in your graphic description of the Big Trees, like California writers in general, you fall into a great error." (Heart stops with a pang!) "Over 3,000 years old!" he quotes. "Did you count the rings?" ("Fool that I did'nt!" I hiss, sliding down to the sofa.) "Did you ever see any one who did?" ("That lying report of Hittell's!" I gasp, jumping to the floor and stamping a figure of the carpet.) "It is only writing large after the fashion." ("Consternation!" I cry, sinking upon the sofa.) "That is an over-statement" ("Horrors!") "which I have been fighting" ("Zounds!") "for the last 25 years." (Speechless I roll upon the floor.)

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Going For the Facts.

The summer following, that is, in 1875, I took a trip of 400 miles to revisit the Big Trees, count their rings and bring away sprays, cones, seeds, bark and wood sections for the Centennial. I visited several groves, closely examined hundreds of trees, especially giving attention to the fallen and shattered monsters, generally larger than living trees of the same grove.

The great *Sequoias* are monsters indeed for size and magnificent in their colossal appearance; they are well worthy a trip across the continent to behold, but why exaggerate their age? The truth is strange enough. "Over-statement," Dr. Gray mildly puts it. It is, indeed, a wonderful deviation from the truth when to large figures we add double their sum. From this time forward I must help fight the "over-statement." The battle will be long and fierce, no doubt, for the story of 3,000 or 4,000 years is very prondly related and never fails to excite interest; and it is repeated in nearly every guide book for tourists, moreover reiterated by eminent travelers and close observers, including John Muir, than whom none gives us such charming views of mountain scenery, such picturesque forest studies. But let the truth always be told, searching for it, if need be, under the most deceptive appearances. I scold myself daily because, for want of time, I took the figures of reputed authorities and gave currency to the big story of the Big Trees. Let me retract so much of last year's "Scene II, The Big Trees" as was carelessly based upon their reported great age of 3,000 or 4,000 years, and substitute the following cold facts and estimates. I substitute the true figures cheerfully, gladly, triumphantly. The big trees are but 1,200 to 1,500 years old, and I am glad they are not older. There is proud satisfaction in the thought, but let me repress my joy and its reason for the present and proceed with the cool facts.

At the Big Trees.

On the 1st of September, 1875, I arrived at the famous Mammoth Grove of Big Trees in Calaveras county, and at once commenced careful observations.

First, a quiet, reverential walk among the tall fluted columns, my spirit dumb with wonder, my mind raised to sublime conceptions, my reason almost persuaded that any large story of the great *Sequoias* must be true. Round and round, in and out among the vast trunks the well-worn path leads. Here and there a long flight of steps enables the visitor to reach the upper side of the fallen trunks, where a most impressive view and delightful promenade may be enjoyed. Marble slabs imbedded in the soft bark, high up on each tree, bear its name and generally the initials of the namer. Near the road, almost the first to greet the visitor approaching from the north, stands a group of noble trees bearing the names of Henry W. Longfellow, Prof. John Dana, Dr. John Torrey and Prof. Asa Gray. During this first half-day of silent gazing, I found myself frequently returning to this group of scientists with a sublime poet added, and trying to commune with the master spirits they commemorate. During my last call a cone from the lofty crown of "Prof. Asa Gray" fell at my feet; eagerly I seized it and wrapped it in paper; another and another followed. The squirrels were harvesting, so the seed must be ripe. I drew my army revolver and fired a round of six cartridges up into the crown, rewarded by the fall of a limb bearing a dozen cones. As I bore away the beautiful little cones with their tiny, parsnip-like seeds, I thought how much this precious fruit symbolizes those richer fruits which that other Professor Gray showers upon all who but ask his bounty. Hard at work in the great herbarium at the Cambridge university, he is devoting, perhaps, the last herculean energies of a life filled with toil to the completion of our California Botany. Receiving no salary while on this extra work, and hiring assistants in special fields, he toils almost incessantly, ever the master mind to direct research, ever the umpire to decide knotty points, yet ever the kind patron, ready to turn aside, examine the plants of the young collector and help the humblest applicant for knowledge.

Then the good doctor's tenacity for truth is so strong! No big stories for him, no flights of fancy, no careless writing! I think of this with bated breath, compressed lips, clenched hands and firm tread as I prepare for work in earnest on the morrow.

Age of the Big Tree Stump.

The stump of the very large tree which was bored off with pump augers in 1852 to form the floor of a house, affords a fine opportunity for counting, since it is so evenly smoothed off, but still more time is necessary to do it accurately than most observers allow themselves. This tree should certainly be considered a fair sample of the oldest of the present generation, for it is one of the largest ever seen. Its circuit at base is 97 feet by my tape line, held at one end by a Puritan and master builder from Boston. Longest diameter without bark, five feet above the base, 24 feet 10 inches. Shortest diameter, 22 feet eight inches. The bark averages 18 inches in thickness, making the entire longest diameter of the tree at five feet above base, over 27 feet. A few other trees are met with measuring as much or more at base, but they are generally swollen outward and hollow like the shaft of a light house. This monster tree was as straight and sound as a candle, hence it was undoubtedly the largest perfect tree ever yet seen.

I spent nearly a day counting the rings of this stump, and of the butt cut of the tree lying near it. I counted carefully both ways, putting in pins to mark the place of hundreds. The stump being a little irregular in consequence of its near roots, I counted in three places along three equidistant rays. The first count was 1,260 rings, the second count was 1,258 rings and the third count was 1,261 rings—average age, 1,260 years. Counting on the butt, cut 24 feet from the base, the rings were of course a few less, 1,242 in number, but all very plainly discernible, and presenting exact uniformity in their decrease in thickness from heart to bark. I availed of this uniformity of decrease by establishing, after many counts of different trees, a rule for determining the mean number of rings to the linear foot, and fixing the locality on a cut across these trees where the rings are of average thickness. That point is just one-third of the distance from the bark to the heart. At the heart the grains are often three-eighths of an inch thick, at the bark as thin as paper. The average, as determined by countings of all the logs in the grove which have been cut across, some half dozen or more, clearly established the rule that the rings of average width are found one-third of the way from the bark to the heart. This rule proved very useful afterward in estimating age of broken trunks.

Age of "Hercules."

This monstrous tree was leveled to the earth by a gale in 1862. His body has been repeatedly cut across by an ingenious device, and the timber manufactured into relics and carried away. He was 285 feet high, and now measures 14 feet in diameter 25 feet from his roots. A careful count of his rings showed only 1,232 years. Eighty-eight of these rings, the average number to the half foot, just covered the space of half a foot at the distance of two and one third feet from the bark, which is one-third the way to the heart, as seen above. This tree is often reported as over 3,000 years old.

Leviathan,

Another prostrate monster, is about the same size, being 270 feet long, and 14 in diameter, but his body is not cut across or so broken as to reveal his rings.

The Father of the Forest.

Armed with the rule, derived as above stated, on the third day I approached the shattered trunk of this famous tree, fabled to have sprung from the earth soon after the deluge of Noah, over 4,000 years ago.

This huge patriarch has been shamefully overrated every way—his size given at 40 feet in diameter and his length at 450 feet. Exact measurement shows the diameter as only 18 feet at a distance of six feet from his roots, and his length about 300 feet. His trunk is broken or burned out in places, thus exposing cross sections where the rings of annual growth may be examined. With a hatchet and sharp knife I smoothed spaces of wood in three places, widely removed from each other along the trunk, but each one-third of the distance between the bark and heart, and thereon counted one foot of rings, with the result following: First count, 66 feet from roots, 232 rings; second count, 186 feet from roots, 254 rings; third count, 210 feet from roots, 276 rings. The diameter of the tree at each place must be considered, and is as follows: First place of counting, 12 feet; second place, 11 feet, and the third, 10 feet. Now the estimated whole number of rings (age), at each place is obtained by calculating, viz:

232x6,	semi-diameter at 1st place.....	1,392 Rings
254x5½,	" " 2d "	1,342 "
276x5,	" " 3d "	1,380 "

Adding these products and dividing by the number of counts, the average of rings (age), is 1,371⅓ years only. Probable full age at base, 1,500 years.

One oft-repeated story is true, however; that of a passage through a part of his body large enough to admit horsemen. This passage burnt out of his heart commences at a point 66 feet from the roots and extends 120 feet, coming out where was once a knot-hole, now enlarged by relic seekers to a wide doorway. I saw several ladies ride horses of medium size through this wooden tunnel, and one day while passing, riding one of my horses and leading the other packed with bulky specimens, I turned into the cavity and rode safely through. The ceiling overhead is four to six feet thick, so the grand promenade for visitors above is perfectly safe.

South Park Grove.

This grove contains about 500 trees, some of them of the largest class. One, the home of "Trapper Smith," is a vast swollen trunk at base, 90 feet in circuit and 30 in diameter. The "Livery Stable," which has received 22 horses at a time into its hollowed base, is 84 feet in circuit, and the "Primitive Church" is 81 feet. A fallen tree is 15 feet in diameter 20 feet from the roots. A cavity is burnt in it sufficient to comfortably shelter 25 or 30 horses, or to afford the passage of a Concord coach and its four-horse team for over 200 feet. Another, near "Trapper Smith's Cabin," and used by the tourists as a temporary shelter for their horses, is 16 feet in diameter and hollowed for a long way. These are certainly fair samples of the largest *Sequoias* both living and fallen, and the dimensions above given do not materially differ from some published statements, but counts and estimates of their rings reveal only 1,200 to 1,500 in number.

Other groves visited afforded exactly corroborative evidence, that though the dimensions, being easily determined, are often given accurately, the age has been generally grossly exaggerated.

As late as February last the writer saw a specimen of *Sequoia* in the Central Pacific railroad collection at San Francisco for the Centennial exhibition, which was sent from the Calaveras Mammoth Grove, and is marked "four thousand years old."

Triumphant Conclusions.

Now I firmly believe with Dr. Gray that this is an "over-statement," and, as I said, I am glad that it is such. Let India with her banian tree—which by the way is a mass of trunks, not a single one—take the palm for growth of 4,000 years, let African baobab trees reach back still nearer to the Garden of Eden, let Palestine boast of her cedars of Lebanon growing since Moses' time, and let Australia present upon every exploration by the close observer trees of undeterminable ancient origin; all these trees of the old world almost, without exception, are slowgrowing, fine-grained, stunted, gnarled, decrepit, unsightly old relics of past ages—only interesting because of their great age.

The tamona baobab, *Adansonia digitata*, is the largest in circuit at base of any tree yet known, but it is only 70 to 80 feet high. The cedar of Lebanon, with annual layers, so fine that a lens is necessary to distinguish them, is similar in shape, the trunk an abruptly tapering spike.

Now all observers admit that the California Big Trees, with their vast straight-fluted columns, 200 to 300 feet high and their immense crowns of finely divided, evergreen branches, are the most symmetrical and magnificent in form, the tallest and actually the largest in dimensions of any yet known in all the world. How satisfying to the pride of a true American, to reflect upon the inference derived from this comparatively new fact—formerly a most unwelcome one to the thoughtless, insomuch that loyal Californians prove their loyalty by declaring their belief in the great age of the Big Trees; hence the warfare to which Dr. Gray refers, and the great but pardonable assistance given to the erring side by eminent writers through their praiseworthy love of country.

But science always searches for the truth. Sooner or later the facts will come to be believed and they are always best. And the truth, in this case so long repressed, is most welcome because it gives foundation for the most reasonable and enthusiastic loyalty. Why, these grand giant trees are mere vigorous saplings yet, only 1,200 to 1,500 years old! Ages hence full-grown trees may be seen 50 feet in diameter and 1,000 feet high, only limited by the proximity of brother trees and the depth of the valleys where found. We can't expect them to be so unneighborly as to choke their brothers to death, nor to rise above the leveling winds that sweep over the canons of the Sierra. So let the old world pride itself upon old things, old nations, old creeds, old arts, old customs, old monuments; we of America rejoice that this is a new, unfinished world, with young yet colossal vegetable growths, strange yet beautiful animal forms, modern yet matchless peoples, adolescent yet full-fruit-bearing institutions, unprecedented yet unimaginable destinies!

"For still the new transcends the old,
In deeds and wonders manifold."

Finishing Centennial Work—Adieus.

Dear reader, again adieu for a reason; my

other excursions for 1875 were short runs here and there for isolated plants, and a flying trip late in the season through these beautiful northern valleys again, just to collect the autumn flora and tree specimens for the Centennial. As the season advanced the labor increased, employing my utmost energies to secure and prepare a creditable set of specimens of all the Sierra plants known to me, including 25 or 30 collected lately for the first time.

In September I hastened up to the forests around Webber lake to get sections of trees; that district embracing nearly all the trees of the Sierra and some species rarely seen elsewhere. With a hired assistant I cut down representative trees, often very large ones,—the *Picea amabilis* was 30 feet in circuit,—and took out uniform sections exhibiting bark and all the layers of growth to the heart, also cross sections of saplings, young stocks with stubs of limbs, leading shoots of old trees, blossoming and bearing twigs, cones, acorns, etc., so that the visitor by examining a set of specimens of any species can readily get an idea of the tree. These tree sections filled six large boxes and weighed over a ton. Despatching them with much trouble through the mud of the late fall season, and prepaying freight charges, I then set to work upon the flowers collected during the entire season. There were thousands of them, making three wagon loads, and were scattered all through my bales of papers just as gathered.

To arrange them into families at least 500 large receptacles were necessary. Three weeks of hard, swift work provided beautiful and appropriate herbarium rooms, and three more placed the plants hurriedly but carefully in their respective pigeon-holes. Another week brought out a choice selection of representative plants, packed them into a large box and despatched them after the tree sections, but by express, prepaid, to Dr. Geo. Vasey, Botanist, Agricultural Department, Washington, to be exhibited at the Centennial. During the week following I wrote these "Botanical Excursions" for the PRESS, then started for southern California, to meet and work with Dr. Parry during the winter and spring season of this commemorative Centennial year.

Though my work performed in good faith for the love I bear my adopted State was most arduous and expensive, costing at common rates of wages and for coin paid out nearly $2,000, for which I received but $400 in currency, yet I have the satisfaction of knowing that California will have a fine set of her flora at the great exhibition, which Dr. Vasey declares "is very satisfactory, but causes me much regret that you had so much expense upon them."

Dear, patient reader, good-bye, until we meet at the Centennial—or *somewhere*. Perhaps only in the RURAL, but anywhere, always welcome.

A MECHANICAL HORSE.—A mechanical horse is being made at the National iron works, New Brunswick, N. J., which is quite a curiosity in its way, and is to be on exhibition at the Centennial. The life size model has been operated satisfactorily to all who have seen it. Every movement of the horse is as natural as life. It walks, and lo! each joint of the leg is put in its proper motion, while the neck and head bob in appropriate unison, and yet the simplest mechanism is used, being nothing more than a few pulleys and one or two belts, the latter corresponding with the tendons of the natural animals. There are also four steam men being manufactured at Munn's machine shop. These men are for exhibition at the Centennial.

QUICKSILVER MINES.—Sheriff Philbrook was in from Cinnabar last week and represents everything in that district in a most favorable light. In the lower level of the Altoona mine a more extensive deposit has been struck and it proves to be richer than any of those heretofore worked. At present they are running one bench of five retorts and producing 10 flasks of quicksilver daily. When the furnaces are erected and put to work this mine will yield close on 1,000 flasks per month. Mr. Philbrook further tells us that prospecting is being extensively carried on and that parties at work on the various locations are hopeful and happy, indications being very favorable.—*Trinity Journal.*

VENTILATING FABRICS.—A patent has been taken out in France by M. Loubier for the production of tissues for upholstery purposes, which, while they admit air, shall keep out insects, and, at the same time, be capable of decoration and ornamentation like other fabrics, and retain their suppleness. These new fabrics, intend especially for use in hot climates, are produced by employing yarns of unequal thickness, both in the warp and the weft, in such a manner that the coarser produce interstices among themselves, which give passage to air and light, while the finer bind the coarser together and supply the ornamentation of the tissue.

TURBINES.—In 1854, Emile Geyelin made a wheel at Saltillo, Mexico, which was a double turbine (that is, a turbine receiving water between two movable wheels on the same shaft, which counterbalanced each other, and avoided the necessity of resisting the thrust from the head of water), for 160 feet fall, producing 125 horse-power, and turning with a speed of 1,850 revolutions per hour. This double turbine, though only 11 inches in diameter, propels a cotton mill of 10,000 spindles.—*Scientific American.*

GOOD HEALTH.

Care of the Hair.

A writer in *Harper's Bazar* says: To get and retain beautiful hair you must attend to daily brushing it, occasionally washing it, and periodically trimming it, and striving at all times to keep the general health up to the average.

Now as to brushing. The skin of the head, like that of every other part of the body, is constantly being renewed internally, and throwing off minute scales externally, and these are removed by means of the body brush. But it is not so easy to brush the hair as one might imagine. Few hair dressers, indeed, know very much about it. The proper time for the operation then, is in the morning, just after you have come out of your bath, provided you have not wetted your hair. Two kinds of brushes ought to be found on every lady's toilet table, a hard and a soft. The former is first to be used, and used well, but not too roughly; it removes all dust, and acts like a tonic on the roots of the hair, stimulating the whole capillary system to healthy action. Afterward use the soft brush—to give the gloss from which the morning sunshine will presently glint and gleam with a glory that no Macassar oil in the world could imitate. Whence this gloss? you ask. Why, from the sebaceous glands at the root of the hair, nature's own patent pomade, which the hard brush does not spread.

Secondly, one word on washing the hair. This is necessary occasionally, to thoroughly cleanse both head and hair. One or two precautions must be taken, however. Never use soap if you can avoid it; if you do, let it be the very mildest and unperfumed. Avoid so-called hair-cleansing fluids, and use rain water filtered.

The yolks of two new-laid eggs are much to be preferred to soap; they make a beautiful lather, and when the washing is finished, and the hair thoroughly rinsed in the purest rain water, you will find when dry that the gloss will not be destroyed, which an alkali never fails to do. The first water must not be very hot, only just warm, and the last perfectly cold. Dry with soft towels—but do not rub till the skin is tender—and afterward brush. Be always careful to have your brushes and combs perfectly clean and free from grease, and place other brushes on the table for friends of yours who happen to be Macassarites.

Pointing the hair regularly not only prevents it from splitting at the ends, but renders each individual hair more healthy and less attenuated—if I may apply the term to hair—and moreover, keeps up the growing process, which otherwise might be blunted or checked. Singeing the tips of the hair has also a beneficial effect.

It will be seen that I am no advocate for oils and pomades. My advice in all cases is to do without them if you possibly can, for by their clogging nature and overstimulating properties they often cause the hair to grow thin and fall off sooner than it otherwise would. Let well alone.

One word in conclusion, about dyes. Avoid them if you be your own friend. Hair dyeing is very satisfactory as far as dead hair is concerned, but on the living head its perfect success is a chemical impossibility. As to hair restorers, those that are not simply stainers, but depend upon the action of the light chemically altering and oxidizing the application after it has been used—their incautious use, I must add, is fraught with great danger.

A NATURAL DISINFECTANT.—Some interesting experiments were made very recently at Campbell's sewage works, Wandsworth road, London, with a new substance which is practically animal charcoal, and which will probably find extensive use at no distant date in purifying the effluent water of districts that treat their sewage by precipitation, in clarifying the waste water of dye works and mines, and the thousand and one other ways that will suggest themselves at once to persons conversant with sanitary matters. It is the product of a company that owns some 1,200 acres of the district on the Dorsetshire coast where the famous Kimmeridge shale deposit is found. This is a deposit which is of undoubted animal origin, and is supposed to consist of blubber, fish and other forms of marine animal life. However this may be, the shale is found to yield more plentifully than cannel coal, and at less expense, an excellent carbon, one ton of the shale, after giving off 9,000 cubic feet of gas, leaving 11.6 cwt. of residue, which is the sanitary carbon in question. This substance is found to have precisely the same properties and action for all sanitary purposes as animal charcoal that costs from £14 to £18 per ton, and the company hope to be able to produce it for one-fourth the price. The experiments adverted to, consisted in running sewage through a layer of the sanitary carbon, when the effluent water came out as clear as crystal. A more crucial trial still was made by mixing sewage with a compound of ink dye stuffs in solution, forming a liquid more intractable than would ever be met with in actual drainage operations; but the result was the same, the water running off perfectly clear, with no perceptible odor.

NECK VS. FEET AND WRISTS.—Every one must remark that a favorite article of winter clothing for children is a comforter swathed round the neck. This is a great error; the feet and the wrists are the proper members to keep warm; the face and throat will harden into healthy indifference to cold; but that muffler exchanged for an extra pair of thick socks or gloves would preserve a boy or girl really warm and well. Bronchitis and sore throat have declined fifty per cent. since the absurd use of high collars and twice round neckerchiefs went out of fashion; and if the poor would take better care of their children's feet half the infantile mortality would disappear. It only costs a trifle to put a piece of thick felt or cork into the bottom of a boot or shoe, and the difference is often considerable between that and a doctor's bill, with, perhaps, the undertaker's beside.

SMALL-POX SPREAD BY DOGS.—A rural sanitary organization in England has applied through Dr. Mackintosh (*British Medical Journal*), for an order from the magistrates to have all dogs in the district of Bolsover chained until small pox has disappeared in that locality. Dr. Mackintosh considers, and very properly, we think, "that the disease is spread from house to house more by domestic animals than by anything else." We believe that the more this subject is examined from this point of view the more the views advanced will be considered correct. It is possible also that the spread of other contagious diseases, such, for instance, as scarlet fever, may be explained in this way when all other recognized reasons have failed.—*Medical Record.*

HASTE IS NOT ALWAYS SPEED.—No two things differ more than hurry and dispatch. Hurry is the sign of a weak mind; dispatch of a strong one. A weak man in office, like a squirrel in a cage, is laboring perpetually, but to no purpose, and in constant motion without getting out of the spot; like a turnstile, he is in everybody's way, but stops nobody; he talks a great deal, but says very little; looks into everything, but sees into nothing; has a hundred irons in the fire, but very few of them are hot; and with those few that are, he only burns his fingers.

USEFUL INFORMATION.

Singular Property of the Leaves of the Tomato.

Dr. C. B. Bates has favored the Santa Barbara *Press* with the following translation from *El Mercurio*, a paper published in Valparaiso. It will doubtless be useful to many of our readers. I planted a peach orchard, writes M. Siroy, of the society of horticulture, and the trees grew well and strongly. They had just commenced to bud when they were invaded by the curculio (*pulgon*), which insects were followed, as frequently happens, by ants. Having cut some tomatoes, the idea occurred to me that, by placing some of the leaves around the trunks and branches of the peach trees, I might preserve them from the rays of the sun, which were very powerful. My surprise was great, upon the following day, to find the trees entirely free from their enemies, not one remaining, except here and there where a curled leaf prevented the tomato from exercising its influence. These leaves I carefully unrolled, placing upon them fresh ones from the vine, with the result of banishing the last insect and enabling the trees to grow with luxuriance. Wishing to carry still further my experiment, I steeped in water some fresh leaves of the tomato, and sprinkled with this infusion other plants, roses and oranges. In two days these were also free from the innumerable insects which covered them, and I felt sure that had I used the same means with my melon patch I should have met with the same result. I therefore deem it a duty I owe to the society of horticulture to make known this singular and useful property of the tomato leaves, which I discovered by the merest accident.

TO TAKE IMPRESSIONS OF LEAVES, ETC.—M. Bertot, of the Paris Academy of Science, has just made known a simple method of taking impressions of plants, requiring only a large sheet of paper, some olive (or other) oil, black lead, ashes and resin (or colophony). The paper is first lightly oiled on one side, then folded in four so that the oil may filter through the pores, and the plant may not come into direct contact with the liquid. The plant is placed between the leaves of the second folding, and in this condition pressed (through other paper) all over with the hand, so as to make a small quantity of oil adhere to its surface. Then it is taken out and placed carefully on white paper; another sheet is placed above (since two impressions can be taken), and the plant is pressed as before. On now removing it an invisible image remains on the paper. You sprinkle over this a quantity of black lead (or ashes, etc.), and distribute it in all directions, as in applying sand to writing; the image then appears in all its parts. With an assortment of colors, the natural colors of plants may be reproduced. To obtain fixity, resin is added to the black lead (previously) in equal quantity; the impression is fixed when it is exposed to a heat sufficient to melt the resin.

CEMENT FOR STONE.—The following recipe is asserted to produce a cement of a very superior character for uniting stone and resisting the action of water. It becomes as hard as stone, is unchangeable in the air, and resists the action of acids. It is made by mixing together 19 pounds of sulphur and 42 pounds of pulverized stoneware and glass. The mixture is exposed to gentle heat until the sulphur melts, when the mass is stirred until it has become thoroughly homogeneous, and is then run into molds and permitted to cool. When required for use it is heated to 248 deg. Fahr., at which temperature it melts, and may be employed in the usual manner. At 230 deg. Fahr. it becomes as hard as stone, and preserves its solidity in boiling water.

COLORING PROCESS FOR GEMS.—There is a factory in Idar, Germany, where the coloring of stones, for art purposes, is said to be carried on to a greater extent and more perfectly than in any other part of the world, the process pursued in thus converting chalcedonies and red and yellow cornelians into onyxes resulting in the production of admirable specimens, which are known and prized in all the markets of Europe and America. The peculiarity of this process consists in the fact that the ribbons or zones in the different varieties of chalcedony — which, in the kidney-formed masses of that substance, lie superimposed— differ in their texture and compactness; but owing to their similarity of color in the natural state they can only be distinguished from each other with difficulty. The stone is, however, capable of absorbing fluids in the direction of the strata; and as the strata possess this property in different degrees, it necessarily follows that if a colored fluid be absorbed, and the quantity taken up by the pores of the stone is different from every stratum of zone, a number of tints will be produced corresponding to the number of zones, each being distinct and colored in proportion to the quantity of the fluid absorbed. In this way a specimen of stone naturally but slightly colored may be rendered equal to fine stratified chalcedony or onyx, and may be employed equally well in the engraving of cameos, or for any other purpose where the variety of color can be rendered available.

AN ESCAPE FROM SCRUBBING FLOORS.—A lady writer, in one of her letters to the *Christian Weekly*, tells how she succeeded in obviating almost entirely the drudgery of scrubbing. She says she procured from a druggist three quarts of boiled linseed oil, and the same amount of shellac varnish. Also a paint brush. This quantity of material will cover as much floor as 40 yards of carpet, and costs only $3.50. The floors were cleaned as thoroughly as possible, and all spots that will not wash off ought to be planed off. We put on the first coat of oil in the evening, and the next morning it was dry. The following evening we put on a coat of the shellac varnish, which was dry by morning. Then after two or three days we put on the final coat of oil, but as the wood will absorb very little oil this time, we put it on with a flannel, and rubbed it in as thoroughly as possible. It was soon dry and ready for use. Now we have beautiful floors, easily kept clean by wiping off the dust with cold water. Once in three or six months we can go over them with a little of the boiled oil, and have them look as well as ever again. Such floors would rob "cleaning time" of half its terrors, and add largely to the purity of the atmosphere of our houses already poisoned by air-tight stoves and furnaces. It is a cheap reform and easily tried.

EXTERMINATING BEDBUGS.—Where all other means have failed to exterminate bedbugs, sulphurous acid gas has succeeded. Take everything out of the infested room, plug up all the windows tightly, close all chimneys, and empty about one ounce of powdered sulphur on a pan of hot coals, placed in the middle of the floor. Shut the doors and cover all cracks; let the sulphur burn as long as it will. Where the room is large, it is a good plan to fasten a piece of tin tube to the bottom of the pan, and to this connect enough small rubber pipe to lead out of the nearest door. By blowing into the end of the pipe with the bellows, the sulphur will be caused to burn more quickly by the draft created, and to give a denser smoke. After the sulphur has burned out, paint all the cracks in the floor and around the mop board with a strong solution of corrosive sublimate, and treat the furniture to the same before replacing it.

SCOTCH PIG BRANDS.—The letters "G. M. B.," used in connection with Scotch pig iron, indicate that they are "good merchantable brands." Of course there are also the special brands, which always sell at higher prices than the general bulk of iron known as "G. M. B.," and these include such brands as "Gartsherrie," "Coltness," "Langloan," "Shotts," "Summerlee," and "Glengarnock." At one time the "G. M. B." did not include the Ayrshire and East Country brands, as they were not deemed good enough to go into store as "warrants," but some of them have since been improved in quality, and have been also admitted into the "select society" of first quality special iron, which may be depended upon.

THE green outer husks of walnuts contain a yellow brown and remarkably fast dye, which is well suited for dyeing woolen or cotton materials, staining wood, etc. Wool thus dyed requires no mordant, is very soft to handle, and not like that died with vitriol. The shades of color obtained are from bright to dark brown. The husks may be simply kept dried till used, or placed moist in tubs, by which means their coloring power is further increased.

A good and simple furniture polish consists of a little Castile soap scraped into a pint of warm water. Add three tablespoonfuls of sweet oil; heat, and apply while hot.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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SAMPLE COPIES.—Occasionally we send copies of this paper to persons who we believe would be benefited by subscribing for it, or willing to assist us in extending its circulation. We call the attention of such to our prospectus and terms of subscription.

THE ORIGINAL ARTICLES in this paper are mostly se in solid type, giving in our columns one-third mor reading than is contained in ordinary leaded matter.

Our latest forms go to press on Thursday evening.

San Francisco:

Saturday Morning, July 8, 1876

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A DISASTROUS REVERSE.—The sad news has been received from the Indian country, where Custer and his command were fighting the Indians, that the gallant general and his whole command were cut off and annihilated. General Custer with his two brothers, his nephew and brother-in law, seventeen commissioned officers and 300 regular troops, were all massacred by the fierce Sioux. The battle was fought on the 25th inst., 30 or 40 miles below the Little Horn. Custer attacked the Indian village of 2,500 to 3,000 warriors on one side, and Colonel Reno was to attack it on the other. Three companies were placed on a hill as a reserve. General Custer, officers and every man belonging to the five companies were killed. Reno retreated under the protection of the reserve. The whole number killed was 315. General Gibbons joined Reno. The Indians left the battle ground. It looked like a slaughter pen, as it really was, being in a narrow ravine. The dead were very much mutilated. This is all as yet known of one of the most terrible reverses that has befallen American arms in Indian warfare for many years. It is probable that the massacre will raise a feeling against the Indians more than that excited by the Modoc outrages, and that the Sioux will suffer for it to the end. The miners in that part of the country will have to leave until the difficulties are settled.

HALF A MILLION SACKS.—We are informed that Dr. Glenn, of Colusa county, laid in 500,000 sacks for this year's crop. It took two full boat loads to carry them up. The yield of the Glenn farm this year is estimated to be 30 bushels per acre.

The New Mining Bill.

We have not yet received the full text of the new amendment to the mining laws of the United States which passed the House last week. The brief telegram concerning it which has reached us, states that the bill provides that the annual expenditures on mining claims shall not be required until the patents are actually issued, but only after the application and final proofs of payment have been made. It also provides that in case an adverse claim is asserted and suit commenced after the filing of an application for patent, the annual expenditure shall not be required until the contest is determined by the courts. Page and Piper opposed the bill on the ground that the existing laws are working well, and that the amendments are unnecessary and tend to disturb the time for developing, that non-residents or speculators could hold claims without developing them by inducing other persons to assert bogus claims to the same land, and beat them in litigation indefinitely under this bill. Luttrell, Wigginton and McGinnis, of Montana, favored the bill, and it passed as recommended by the House Committee by a large majority.

There is evidently something wrong in the dispatch, or else this amendment totally changes the existing laws as far as they refer to annual expenditures on mining claims. According to the dispatch no further annual expenditures are required on claims which are not patented. It has always been understood that the clause requiring these annual expenditures was intended to make people work their claims and not let them lie idle, and also to compel miners to patent their ground, which they would do in order to get rid of the annual expenditure. If the telegraph has informed us correctly then we are to have no more annual expenditures except on claims which are patented, and henceforth there will be very few patented. It may be, however, that the sum required for annual expenditure will not have to be paid until a patent is issued and then must be paid in a lump; but this would not compel miners to do the work every year. In fact, the information so far received is so indefinite that we are unable to make any comments on the bill. As soon as we receive the full text of the bill we will publish it.

The National Holidays.

Dispatches from all parts of the State bring tidings of patriotic and spirited commemorations of the nation's birth. The local celebrations throughout the State were planned with unusual care and executed with unusual liberality. They were witnessed by large concourses and the Centencial spirit ran high.

Readers in distant parts will doubtless be interested to know some of the points of the three days' celebration in this city, and how the great things which we described in last week's PRESS were realized. Let us say first, in a general way, that the celebration was of such a grand and comprehensive character, awakening such general participation among all citizens, and was witnessed by such a concourse of the city's guests from all parts of the coast, that it will be always memorable. Never before has anything like it occurred; but so rapid is our growth and progress, one cannot tell how soon it may be surpassed in the future. If before the nation's second Centennial our State and city advance in the proportion they have during the last quarter of a century, what we shall call great to-day will be small indeed.

The Decorations.

As early as Friday before the Fourth, the city began to deck itself in Centennial livery. The stars and stripes were woven and interwoven into every conceivable shape and form. The beautiful red, white and blue colors tinged, edged, and crossed our somber city marts and business blocks until even the lower part of the city seemed crowned by a halo. Farther up, upon the hillsides, the decorations waved in graceful lines and shapes. The mansions of the wealthy were brilliant with gilt and colors, but many an humble habitation outstripped its proud neighbors in the fullness and grace of its patriotic drapery. During the day time the breeze was resonant with the flip and rustle of the flags, and at night the city was ablaze with colored light and fantastic lanterns. Some of the private and public decorations were notable, but we have no space to particularize. Suffice it to say that several streets were embowered with festoons of flags from roof to roof across the walks and carriage way. Arches were sprung across the streets bearing the national colors and the portraits of patriots. Large canvas sheets reproduced the scenes at revolutionary battles. Never before has the city shown such a bright attire. Everyone bought flags until the flag market was cornered, and even colored cambric increased its price six fold. We doubt not that a million dollars would be a low estimate of the amount of money expended for the one item of public and private decoration.

The Days of the Week.

On Saturday and Sunday the churches spoke the patriots praise. Sermons were on appropriate themes, and choirs sang patriotic anthems with thanks to God for the day. Special services of praise were held in some of the churches and the populace surged around the doorways unable to reach the densely packed areas within. Thus the week began with thanksgiving.

On Monday the incoming thousands from the country crowded the avenues of travel and the hotels were besieged for accommodations. Even the chairs in the waiting rooms were engaged and turned to temples of Somnus. In the early morning the throng tended upward, and took possession of the hillsides overlooking the scene of the

Bombardment

Which we illustrated last week. The hills were black with people, and when one considers the large stretch of surface which looks down upon this part of the bay, some little appreciation of the numbers can be formed. A little before noon the firing from the forts and ships began. The first shot was hailed with gladness by the throngs, and for three hours the crowd watched the puffs of smoke and the fall of the projectiles and heard the reverberation of the explosions. The firing of the guns contained many points of interest to the one unacquainted with such occurrences, but the general feeling was one of mild disappointment. The people expected and anticipated too much. Many expected, doubtless, to be well nigh prostrated by the thunder of the reports and to behold an exciting scene of circling vessels, belching broadsides, and a ship fired by the shots. The distance of the spectators from the guns made the reports but dull growling, the long minutes which intervened between the shots bore heavily, and the stationary frigates, which one expected would circle around their prey and seize it in exciting action, coldly and calmly fired for three hours and never once hit the mark which the throng was watching, and failed to fire the doomed craft until a small boat was sent out to apply a match. The absence of what anticipation pictured gave the bombardment a bad name in many a mouth, and yet if the beholder will recall the spirited scene upon the water, the fleet of small steamers flying hither and thither, decked with a multitude of people and clad in streaming flags, the three-mile flight of solid shot and shell and other interesting points which will recur to memory, the bombardment will seem a notable feature of the week's events.

The Sham Battle

Which occurred on Monday afternoon at the Presidio was more stirring and consequently more generally applauded. The evolutions of the infantry, the dash of the cavalry and the discharge of the field batteries won the full interest of the multitude and gave them a full taste of mimic war.

The Fourth.

The glorious day lost no luster from the stirring day of rejoicing which ushered it in. At an early hour the city was fully awake. The most intense excitement prevailed everywhere. The streets were soon overflowing with people, and numerous processions began to march in various directions, all clad in the gayest and and most gorgeous decorations, and forming to join in the procession of the day. By 10 A. M. the streets were literally lined with men, women and children thronging the sidewalks, sitting on the curbstones and stoops, and in every available position, while all the balconies and windows along the route of the procession were filled with fair faces and expectant eyes. Positions had been engaged weeks beforehand of the happy owners of a door or window along the line of the procession, and every room was filled by friends and acquaintances, who crowded in to witness the grand march. Multitudes had come in from the country, and the streets were literally blocked with a crowd which increased until room for more could not be had. The great procession which moved before the eyes of all was formed of at least 10,000 men. Civic, military, social and commercial organizations were represented. Trades were displayed by appropriate vehicles and decorations. Two hours were required to pass a given point, and the beholder turned away in a whirl of excitement over the changing scene.

The literary exercises which occurred in the Mechanics' pavilion after the grand parade were of a high and patriotic order. They consisted of an address by General Coey, prayer by Rev. W. H. Platt, oration by Rev. Dr. Stebbins, song by Mrs. Banta, and poem by Mr. J. F. Bowman. Afterwards a collation was served, at which addresses were made by Governor Irwin and others.

The remainder of the day was occupied with a carnival and with fireworks, torchlights and all the traditional glories of the old fashioned July Fourth.

The holidays were continued on Wednesday, the banks, insurance offices, wholesale houses, etc., remaining closed. The feature of the day was the regatta of the San Francisco yacht club, which was the most interesting ever witnessed on our bay. Some thirty yachts participated and they had all the wind they wanted. The largest of the schooner fleet, the *Cousins*, won the schooner prize; the old favorite, *Emerald*, won the prize for sloops; the *Lizzie* won the prize for second class sloops; and the *Annie* that for plungers. The race was well contested and excited great interest among the nautical portion of our population. Everybody has now settled down to work satisfied with the three days' holiday, and pleased to know that the celebration was so successful and that so few accidents of any kind occurred.

The Yellowstone Geysers.

There is probably no region in the world where there is such a variety of peculiar and wonderful scenery as in the Yellowstone country. It has as yet been visited by but few, and the only extended accounts of it which have been published are those furnished by the members of the U. S. geological survey, under Prof. F. V. Hayden. They have pretty thoroughly explored the region and given us many details concerning it. It may be taken as a very good indication of the wonders of this natural scenery that the scientific, matter-of-fact geologists and naturalists have described it at such length and praised it so highly. Fortunately for the people of the United States this extensive region has been set aside as a great National Park, where the land belongs to the people as a whole and no individual rights can interfere with the liberty of the tourist. Of course it will be some time before the railroad will render the Yellowstone country easily accessible, but we can rest with a consciousness that its wonders are not all perishable, and that at some day we will be able to visit and examine the most curious tract of country in the world.

The large engraving on our first page will give some idea of one of the special features of the Yellowstone, viz., the hot springs. The engravings were made for the *Christian Weekly* from photographs taken by Mr. Jackson, of the geological survey, and afterwards published in the report.

The entire Yellowstone basin is covered more or less with dead and dying springs, but there are centers or groups where the activity is greatest at the present time. On the south side of Mt. Washburn there is quite a remarkable group of active springs. The number of frying or simmering springs is great. Many of the dead springs are mere basins, with a thick deposit of iron on the sides, lining the channel of the water that flows from them. The steam vents are very numerous and the chimneys are lined with sulphur. Many of the springs seem to remain full to the rim of the crater, and are in a continual state of ebullition, and yet no water flows from them. Throughout this whole tract of country are hundreds and hundreds of geysers and hot springs of all characters and varieties. Some of them are in violent though intermittent action, while others are in a partially quiescent state. There are some that might be called spasmodic springs. The springs appear to operate perfectly independent of each other. Professor Hayden says he does not know that there is a connection between any of the springs in the whole basin.

The "Hot Spring Cone" shown in the engraving they called the "Fish Pot," from the fact that it extended out into the lake several feet, so that one could stand on the silicious mound and hook the trout from the cold waters of the lake, and without moving boil them in the steaming hot water of the spring. There seemed to be no connection between the orifice of the hot spring and the cold water around. In the upper right hand corner is the Castle Geyser and the most beautiful spring in the upper geyser basin of the Madison. The Grotto and Giant Geysers are first-class spouters, throwing a column of water up from 100 to 200 feet, and continuing the operation from one to two hours. The "Boiling Spring" at Sulphur mountain is in the valley of the Yellowstone, at the locality known as "Seven Hills." The open portion of this is about 15 feet in diameter. The ornamentation about it is beautiful in the extreme. At the lower right hand corner is a small sketch of the calcareous springs on Gardner's river, with the enormous terraces and bathing pools, which vary in temperature so the bather can find any degree he desires.

Mineral Fields of New South Wales.

The mineral fields of New South Wales are more extensive than most persons imagine. The proclaimed gold fields alone embrace an area of about 16,000 square miles, partly reserved from sale by the government for the purpose of public mining for gold. The total production of gold to the end of 1874 was £30,535,246, and the total value of gold coined at the Sydney mint to 1874 was £35 857,000. The approximate area of the coal fields is 24,840 square miles. The total quantity of coal raised up to 1874 was 12,387,279 tons, valued at £6,655.328. In 1874 they raised 1,304,567 tons. The approximate diamond mining area is 500 square miles, in which territory is included noble opals, ruby, sapphire, topaz, zircon, etc. The approximate area of lead and silver is 500 square miles. The approximate area of kerosene shale is 660 square miles. The total production of this substance in 1874 was valued at £261,414. The approximated area of the iron ore deposits is 1,400 square miles. The tin fields cover an area of 6,250 square miles. The total production of tin ore to the end of 1874 was £866,461, and the exports in that year were valued at £484,354. The approximate area of the copper mining region is 3,300 square miles. The total production of copper to the end of 1874 was £807,476, and the exports in that year were valued at £320,444.

Mineral lands in New South Wales may be leased from the government at the annual rental of five shillings per acre for a term of twenty years, renewable at the option of the lessee, or may be purchased at £2 per acre, on condition of spending a like amount within three years.

Placer County Mines.

[By our own Correspondent.—No. 1.]

Having made the rounds of El Dorado county, the American river was crossed on Lyon's new suspension bridge, three miles from Auburn. Two miles above the bridge, on the north side of the Middle fork, is situated the property of the Gold Bar mining company, on what is better known in this section as Mammoth bar, receiving its name, no doubt, from its unusual size. The claim is about three-quarters of a mile in length and from 100 to 300 yards in width, with a depth of gravel of somewhere from 30 to 60 feet.

There is every reason to believe that it will pay well if properly worked. Texas bar and many others above, and Murderer's bar not far below, are said to have filled the pockets of many an honest miner in days of yore. The amounts represented to have been taken out are almost too large to be realized, and are proceibly somewhat exaggerated. No one, however, questions their richness.

The bar, as far as prospected, if reports are true, cannot be far behind its neighbors. It is situated immediately below one of the richest gravel deposits in the State, and in the vicinity of some of our best seam claims and quartz ledges, where much gold has been found, set free from the decomposition of the quartz and sulphurets. The company has been incorporated with a capital of $10 000,000. There is ample fall in the river for power, and also for sluices. I understand that preparations are making to commence operations in earnest as soon as sufficient working capital stock can be disposed of for the necessary machinery.

From this point to Todd's valley and Yankee Jims, more or less mining is going on, both on the river and on the divide. There are one or two good quartz claims near Powell's ranch. The Sentinel shows a lode from 25 to 30 feet wide, and prospects well. Mr. Martin Martz was preparing to run a tunnel and put up machinery on the Spring Garden, a drift claim of the most promising character, having been already fully prospected. At Yankee Jims I met Mr. T. G. Durning, an old Placerville acquaintance, and the superintendent of the Union ditch, who gave me a full account of the mining operations in this vicinity for the past year, only a few details of which can be given. It seems that the mines had languished somewhat for the want of sufficient supply of water. After the Union ditch was finished, some two years ago, several new mines were opened, and new energy was infused into the community.

Although the new ditch has a capacity of 1,000 inches in addition to the former supply of water, still there is demand for much more, and there is evidently an opening here for the investment of a considerable amount of capital. At Mr. Lowell's, one and a half miles distant, a San Francisco company had just commenced operations on a fine gravel claim, from which you will probably soon hear favorable accounts. The claims of the Gilbert Brothers have paid good wages the past season, and some others have done well. The Georgia Hill claim, Nouges & Co., has a large bank of fine looking, lively blue gravel, that has paid remarkably well, $9,000 being cleared up in a 20-days' run, using a little over 1,000 inches of water at a pressure something upward of 300 feet. At Smith's point, almost within sight of the village, there are two or three very valuable gravel claims. Adams & Co. have a bank of 240 feet in hight that yields as much as $225 per day of 10 hours.

The claim of Cranage & Co. has a front of 1,000 feet; bank from 150 to 200 feet high. Pipe 11 and 15 inches, 700 inches of water, pressure 200 feet, and four men engaged and averaged last season from $150 to $200 per day of 10 hours' run. The yield this season will be considerably better. This company has a claim adjoining the Consolidated Washington not yet opened by hydraulic, from which it is said $500,000 have been taken out by drift.

Messrs. Pond & Constable, at Todd's valley, have been running five claims and doing a thriving business, employing usually about 30 men, using 2,000 inches of water per day, with a pressure of from 200 to 300 feet, and have a large supply of pipes of all sizes, and six little giants. Owing to the unusual supply of water the present season they expect to get a much larger return than last.

Within less than one mile east of this place Messrs. Wilson & Lawler have a good drift and hydraulic claim that pays so evenly that they can usually predict very closely the amount before cleaning up. Every run of six weeks yields almost invariably from $1,000 to $1,100. Seldom more than three men engaged. The claim is at present worked by drift, and there is a large bank to be hydraulicked which will last for 10 or 15 years.

The above would probably be classed among the Forest Hill claims, several of which are well spoken of, such as the Modoc, Big Spring, San Francisco, Hope and Baltimore; the two last named now at work, as also the Dardanelles and Oso. The Consolidation has a frontage of 2,200 feet, 1,600 feet opened and now being worked; bank from 130 to 150 feet high and extending one mile into the hill. This is one of the rich claims of this divide, having yielded up in the past at least a round million, according to the best information at hand, the books showing $150,000 in three years, and worked since 1853. It is at present and for the past four years has been averaging from $25,000 to $30,000 per season, according to supply of water, and is believed that this amount could be easily doubled with the use of larger and better machinery for working.

Two miles above Forest Hill there were originally perhaps upwards of 30 locations made of gravel mines at the bustling little village of Bath. They are now grouped together, and are held at this time principally by three companies.

Messrs. Clark & Co. have about 400 acres, prospected partially by two tunnels, which were too high. They are now driving another considerably lower, which will enable them to determine the true value of their ground. Owing to the hardness of the gravel and the difficulty of extracting the gold by means of sluicing and washing, little, comparatively, was taken out here in former years. Milling was next tried, which proved more successful, and now the hydraulic is resorted to almost entirely, a process of working far more remunerative than either of the other methods, as indicated by present results.

Roach & Co. have a front of 700 feet, bank 200 feet high and extending back about a mile; have taken out this season about $10,000. It is said here that $50,000 could have been turned out, but for a ditch that crosses the ground, which has temporarily stopped the work. Five hundred inches of water are used and from 10 to 15 men employed. Bedrock tunnel 500 feet and nine 30 inches, with a very fine outlet through a steep gulch. Iron riffles are exclusively used, instead of rocks or wooden blocks, as more dirt in this way can be run through, the flume easier drained up and more gold saved. The undercurrents are so complete and so well arranged for saving gold as to deserve more than a passing notice. There are four series of tables, iron riffled, with four different division or undercurrents in the upper table and two in other three. The last division in the upper table has clear water introduced to dilute the sediment and settle the fine gold. The pannings, black sand and sulphurets are passed through a simply constructed wooden concentrator—with an iron screen in bottom of box—and the riffles below filled with quicksilver.

The Paragon mining company, perhaps better known as the Bruce & Wheeler mine, lays claim to be the best gravel mine in the State. Front, 750 feet; rear, 1,900 feet; hight of bank, 300 feet; linear extent perhaps a mile; flume only two feet wide; 480 inches of water used; day shift, 10 hours; 20 men employed, and average yield per day $890. The last clean-up amounted to $30,000. The estimate for the season is in the neighborhood of $100,000. From a tunnel 1,600 feet long, $150,000 have been drifted out. The whole bank pays very evenly, averaging about 70 cents per cubic yard. A drift had been run along the upper lead 120 feet from bedrock to the distance of 4,000 feet, and the gravel when crushed paid very much the same throughout. A calculation based on these facts and present workings shows that the mine ought to yield $15,000,000.

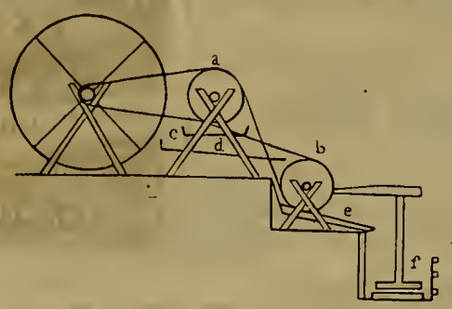
The information was received from the foreman and taken from the books, and believed to be fully reliable. No comment is necessary. The owners are practical miners and working men. There is no one so base as not to be pleased at a showing like this.

Both have also a quartz mine, and a good one: the Hancock & Watson, owned by Messrs. Dewey & Burt. The lode is from four to five feet in width. Thirty feet from surface it works about $7 per ton; at the 100 foot level about $13, showing that it grows in richness as depth is attained. They are stoping at present and have commenced to sink another 100 feet. The ore that has been crushed has paid very evenly, averaging $10 per ton. The whole cost of mining and milling has been about $5.50 per ton, showing a nice margin for profits. Five men drifting keep a 10 stamp mill running 10 hours per day. This is another of the paying mines of the county, and we are glad to be able to chronicle the fact.

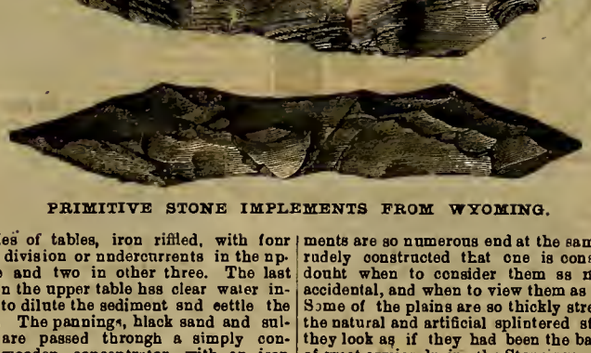
In one of the gulches, below two of the richest gravel claims described, there are several tailings claims, coming one after another, which are doing a good business. The Lehigh, at the upper part of the canon, the property of Hosmer & Co., saved one year 16 per cent. of what came from the claims above. This company expect to clean up this season about $10,000. They have three stringe of flumes, one of which is seven feet in width. So much for Bath. It will be difficult to find a mining town of the same size that is doing any better.

Remains of Primitive Art in Wyoming.

Professor Joseph Leidy, connected with the U. S. Geographical Survey, describes in one of the reports a number of specimens of the remains of primitive art in the Bridger basin of southern Wyoming. He says that in some localities the stones strewn over the lower buttes and plains are broken and flaked in such a manner as in many cases to assume the appearance of rude works of art. With these there are mingled implements of art of the rudest construction, together with a few of the finest finish. In some places the stone implements are so numerous and at the same time so rudely constructed that one is constantly in doubt when to consider them as natural or accidental, and when to view them as artificial. Some of the plains are so thickly strewn with the natural and artificial splintered stones that they look as if they had been the battle-fields of great armies during the Stone age.



A HOME-MADE QUARTZ MILL.



PRIMITIVE STONE IMPLEMENTS FROM WYOMING.

An engraving showing two views, one-half size, of one of these specimens of a prehistoric age, is given on this page. It is composed of gray and black striped jasper much weathered, and white and yellow on the surface. The question arises, who made the stone implements and when, and why should they occur in such great numbers in particular localities? The Indians know nothing of them and the Shoshones look upon them as the gift of God to their ancestors. They were, no doubt, made long ago, some probably at a comparatively late date, that is to say, just prior to communication of the Indians with whites, but others probably date centuries back. Their great number may, perhaps, be accounted for in particular localities from the circumstance that the neighboring buttes may have been especially the places suited for the materials of which the implements were made and the ruder ones cast aside. Stone arrow heads and numerous other implements have been found in the vicinity of Fort Bridger.

There is no prospect of passing this session the bill prepared by the California wine growers' association, introduced last December by Luttrell, for a reduction of the tax on native brandy and establishment of a bonded warehouse system for the benefit of fruit distillers.

A Small Quartz Mill.

From a "Practical Treatise on Testing and Working Ores," by Chas. H. Aaron," which is now in press and will be shortly issued, we take the following description of a small quartz mill for miners' use. The sketch represents a mill for working 200 or 300 pounds of rich ore per day. The large wheel may be a water wheel or treadmill. The pulverizing barrel, *a*, is a beer or wine cask, as is also the amalgamating barrel, *b*; the separator, *f*, is a large washtub. Beneath the pulverizing barrel is a sieve, *c*, to retain the balls or lumps of rock, the ore falling into the box, *d*. Under the amalgamating barrel, which is driven by a belt from *a*, is a trough, *e*, to carry the pulp to the separator, which is worked by a half twisted belt from a pulley on the shaft of *b*. The boiler for heating the barrel is not represented. In a larger affair the pulverizing barrel, *a*, may be replaced by a small arastra.

Perhaps the best way to utilize a very small power is to apply it all to one part of the process at one time. Thus, ore may be crushed for several days in succession, and then amalgamated in one day. In this way there are not so many things to attend to in one day, which is one of the difficulties of a small mill. Of course, however, the machinery to work a given quantity of ore per day must be larger than when it is all used at once. However, where only two or three tons of ore are worked per day, this plan must be adopted to some extent, in order to use a roasting cylinder to advantage. The power of two Chinamen or Indians, working turn about, will work 200 or 300 pounds of ore per day; that of two common horses, 400 to 500 pounds; and 60 miners' inches of water, or about 100 cubic feet per minute, on a 30-foot overshot wheel, with a mall battery or arastra, will work from two to three tons in 24 hours.

*——Published by Dewey & Co.; price, $2.

Book Notices.

Architectural Iron Work.—This work (for sale at Bancroft's) is a practical one for iron workers, architects and engineers, and all whose trade or business connects them with architectural iron work. It shows also the organization and mechanical and financial management of a foundry and shops for the manufacture of iron work for buildings, with specifications of iron work, useful tables and suggestions for the successful conduct of the business. The book is by William J. Fryer, Jr., and contains appropriate illustrations. The branch of iron manufacture treated of has increased largely within the past 15 years, and the probabilities are that the future will develop a still greater proportional growth. Good construction, economy of material and beauty of form in architectural iron work are important, and a knowledge of the subject requires diffusion. The author states that years of study, observation and hard practical work were the price of his thorough knowledge of this class of work; the aim in giving publicity to the knowledge thus acquired is largely for the enlightenment and advancement of workingmen. They need to have placed before them in plain and intelligible form an outline of how the works in which they daily toil are managed, and so to help educate up operative mechanics to become competent to command and control the coming great industrial workshops of the land. We should judge the work to be an excellent one for those in this line of business. The tables which the author gives in connection with his subject are valuable, and are conveniently arranged for reference. He seems to have gone thoroughly into the details of the business and has produced a work of great value to foundrymen.

California Notes.—This is the title of a little book by Charles B. Turrill of this city, and is, in a measure, a guide for tourists, although the author has compiled many facts of interest to the resident of the State. He treats of sections made familiar from personal observation, coupling with his notes of travel such information gleaned from standard sources as the size of the work would permit. This volume is the initial number of a series which Mr. Turrill proposes to issue on kindred topics. This one is especially devoted to the Mammoth Trees, Yosemite valley, the gold mines and San Francisco. The work was printed by Bosqui, and is, of course, neat in typographical appearance. The author has produced a readable little work, of convenient size for the pocket, and one which will be found of great interest to tourists.

High Masonry Dams.—This is the title of No. 22 of "Van Nostrand's Science Series." The subject is that of the profile of masonry dams of such hight, breadth and general dimensions as would be required for reservoir purposes, or for impounding the waters of rivers and large streams for mill or irrigation use. The author has avoided as far as possible all purely theoretical discussion, and has considered no forms of profiles that have not after repeated practical application demonstrated their excellence, even under the severest tests. The work is after the usual well known style of this excellent Science Series.

Telegraphic dispatches indicate that the Centennial Fourth was joyfully celebrated all over the Union.

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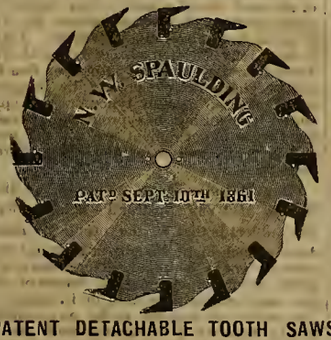

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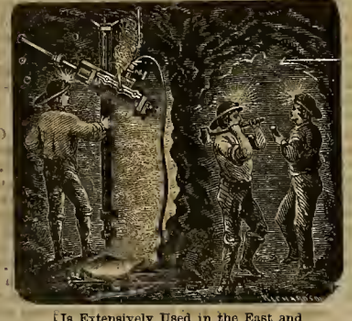

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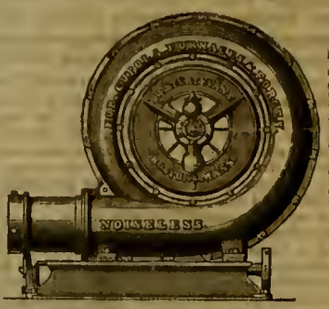

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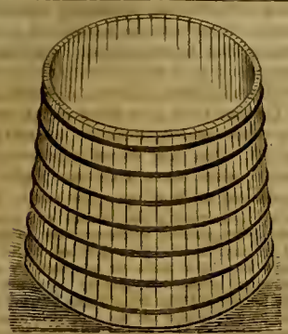

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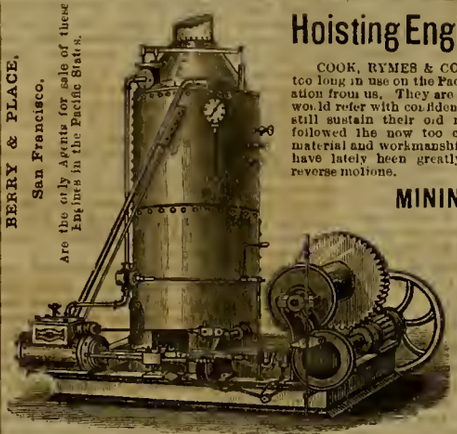

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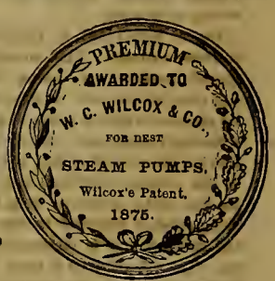

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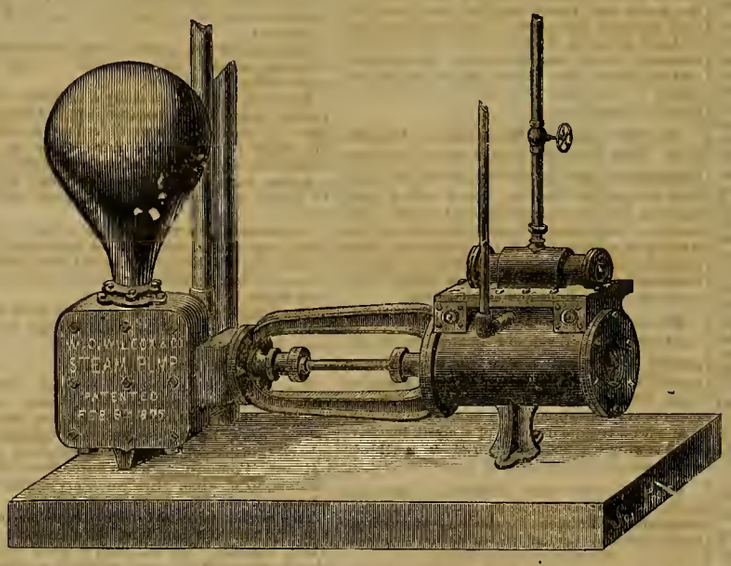

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Also to our Especial Construction of Pumps FOR HANDLING QUICKSILVER or heavy liquids.

We claim that our Pumps are the **best** ever made in **simplicity** of construction, economical use of power, **durability** and perfect adaptability for general uses, and we ask all persons interested to investigate **our title to this claim.** Salesrooms at our Machine Shop, 114 and 116 BEALE STREET, SAN FRANCISCO.

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PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING JUNE 27TH, 1876.

WATCH CASE SPRINGS.—Charles O. Fercoit, S. F.

FURNACES FOR STEAM BOILERS.—John L. Heald, Vallejo, Cal.

LUBRICATORS.—Nicholas Seibert, S. F.

AXLE SETS AND GAGES.—William C. Carlton, Boise City, Idaho.

PROPELLING CANAL BOATS.—Houston I. Chapman, Portland, Oregon.

BUCKET EARS.—Joseph F. Donkin, Grayson, Cal.

FRUIT DRIERS.—Hiland G. Hulburd, Placerville, Cal.

MARKING IMPLEMENTS.—Joseph Perkins, S. F.

BAG FASTENINGS.—Antone Rihn, Coulterville, Cal.

LINIMENTS FOR RHEUMATISM.—Clinton Skene and James Kearney, S. F.

ARTESIAN WELL BORER.—John A. Woodhouse, Anaheim, Cal.

DESIGNS.

PHOTOGRAPHIC MOUNT.—Isaish W. Taber and Thomas H. Boyd, S. F.

TRADE-MARKS.

FLOUR.—Savier & Co., Portland, Oregon.

The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency the following are worthy of mention:

FRUIT DRIER.—H. G. Hulburd, Placerville, El Dorado county. This invention is an improved machine for drying fruit, vegetables and other substances. It consists of an annular chamber which is arranged to rotate around a heating furnace and receive hot air from it. The hot air is received into the upper portion of the rotating chamber, and as it becomes charged with moisture from the substances being dried, it descends to the lower part of the chamber, and is discharged into the open air. The natural draft is used for drawing the heated air through the drying chambers, and the saturated air is renewed by its own gravity, so that there will be no forced currents to give uneven degrees of temperature in the chamber, and the fruit will be subjected to the gentle action of a uniform temperature. Where the fruit is subjected to an upward moving current of hot air, whether the fruit is carried towards or away from the greatest heat the air when it becomes saturated with moisture has a tendency to descend and will arrange itself in strata, according to its specific gravity or degree of saturation. The fruit is therefore compelled to pass from one degree of heat and moisture to another during its entire passage through the machine; whereas, many kinds of fruit, vegetables and other substances require a perfectly uniform dry atmosphere, and, the inventor thinks, should not be subjected to any great quantity of moisture during the drying process. This is illustrated, the inventor claims, by the power of this machine to produce perfect raisins from grapes, which it has accomplished in the most satisfactory manner. The fruit is subjected in this machine to a constant and uniform temperature of dry air, which is heated by radiation which will not eliminate the moisture too suddenly to overheat the fruit.

SHINGLE MACHINE.—Frank A. Huntington, S. F. In the first place Mr. Huntington has invented an improved arrangement for securing saw blades upon their arbors, which arrangement will be especially useful in a shingle machine, because it admits of carrying the bolt or block close up against the saw arbor and thus utilizing a greater portion of the blade, consequently rendering a saw of smaller diameter capable of doing the work of a saw of larger diameter when mounted in the ordinary way. He has also invented an improved arrangement for automatically operating the carriage which handles the bolt or block, and provided in connection therewith a novel feeding device and a stop for preventing the carriage from operating when the bolt or block has been sufficiently cut.

CONSTRUCTION OF WOODEN TANKS.—Edgar M. Morgan, S. F. Mr. Morgan's improvement in the construction of tanks consists in building up the sides of the tank of two or more thicknesses of overlapping boards, which are properly bent so as to be applied horizontally. It also consists in the application of an inside and outside brace at the base of the sides in the angles formed by the conjunction of the bottom and sides of the tank.

ARTESIAN WELL BORER.—John A. Woodhouse, Anaheim. Considerable difficulty has heretofore been experienced in boring wells for the reason that frequently at the depth of several hundred feet very hard rock is reached, in which the ordinary form of drill fails to cut a bore of sufficient size and regularity for the well pipe shoe to pass through. To obviate this and other defects, the inventor has constructed a drill which, by reason of an arrangement of automatically expanding or projecting side drills and chisels, and a main center drill below such arrangement of side drills, a bore of sufficient size and smoothness will be insured in every instance. When rock is reached which requires this construction of drill, it is coupled with the working shaft, inclosed within the shoe or lower cylindrical case of the well tube and sunk to the bottom of the well; after this the shoe is raised above the several series of side cutters and the operation of drilling commenced.

FIELD BOILER.—John A. Heald, Vallejo. This is an improvement in that class of boilers which are used for threshing engines and similar purposes. On the chimney of the boiler is placed a metal plate to deflect the wind in such a manner as to cause a good draft. Another improvement is in the construction of the door, which turns on horizontal hinges, and is made adjustable so that the opening can be made larger or smaller to accommodate any class of fuel—wood or straw as desired. There is also an arrangement of transverse tubes in the main flue which serves the purpose of diverting the heated air and prevents it striking the back plate, assisting it in returning through the smaller tubes to the chimney.

PARTITION BRICK.—Julee Borie, Oakland. This comprises certain improvements in hollow bricks by which they are rendered especially useful for constructing partition walls in buildings. Owing to their lightness, as compared with solid bricks, and to the fact that a circulation of air can be maintained through a wall composed of hollow brick, they are especially adapted for partition walls. The improvements consist first in such a formation of the ends of this class of bricks that the abutting ends of each two bricks in the wall will interlock with each other, and thus form a wall or partition in which all the bricks are bound together as a unit. Secondly, in providing in the sides of each brick perforations for holding the plastering of the wall and binding it firmly to the bricks.

BAG FASTENING.—Antone Rihn, Coulterville, Mariposa county, Cal. The improvement to which this patent refers can be adapted to bags and sacks of all kinds, but they are more especially adapted to grain bags. Metallic eyelets or rivets are used to fasten the corners of the sacks, and hooks made of best wire are used to fasten the mouth. The inventor claims to have provided a cheap and effective bag fastening, which can be readily manipulated and which will save much time in closing the mouth of the bag. We expect shortly to illustrate this invention.

MARKING IMPLEMENT.—Joseph Perkins, S. F. This invention relates to an improved implement or pen for marking heavy and light lines such as are usually formed with a broad marking pen or brush and colored liquid. The improved implement is especially adapted for writing or printing by hand directions upon packages and boxes, and for making figures, characters or sketches which are composed of alternate heavy, light and shaded lines.

MECHANICAL MOVEMENT.—Robert Swarbrick, Oakland. This invention relates to an improved mechanical device for converting a treadle or reciprocating motion into a continuous rotary motion. This mechanical movement is very cheap, and can be used in connection with a treadle instead of a crank for driving a sewing machine or such other machines as are usually driven by foot power.

MEDICAL COMPOUND.—Shane & Kearney, S. F. This discovery is an improved medical compound or liniment for the cure of rheumatism, gout and similar inflammatory diseases.

A LOCOMOTIVE SALUTE.—Among the specialities arranged for the Centennial celebration was one devised by Mr. Fellows, of the Central Pacific railroad, which was rather unique. On the morning of the Fourth, twenty or twenty-five locomotives were coupled together and backed up to Brooklyn on the overland track. Just at five o'clock they all commenced whistling in chorus and were run slowly down to the round-house, rousing nearly all the citizens of Oakland at that early hour to commence the celebration. The programme was kept quiet, and no one knew that anything of the kind was going to occur. The engines were decorated and presented a handsome sight.

VISITORS to San Francisco can spend a considerable time profitably any day in examining the wonderful and interesting things to be seen at Woodward's Gardens. The attractions there are constantly increasing.

IT is reported that an oil well was struck at San Francisquito, Santa Barbara county, June 23d, that flows 500 barrels a day.

Gems and Precious Stones.

[Written for the PRESS by HENRY G. HANKS.]

F. Topaz.

This gem is generally found imbedded in primary rocks, commonly granite or gneiss with tourmaline, mica and beryl; but it is not unusual to find the crystals detached and free in streams with stream tin, as in Durango, Mexico, and at another locality 120 miles southwest of Salt Lake, Utah. A fine variety of smoky topaz comes to us from Arizona. The purest crystals are found in the Ural mountains, in Kamechatka, and in Brazil. There are several localities in the Eastern States but no fine specimens are found.

Different names are given to topaz of various colors, as follows: White with blush tinge, Siberian topaz; gold yellow, Brazilian topaz; wine yellow, Saxon topaz; saffron yellow, Indian topaz; rose red, Brazilian ruby; light blue, Brazilian sapphire; mountain green, aquamarine; greenish yellow, Brazilian chrysolite; limped or colorless, Nova Minas.

The Brazilian ruby is artificially colored by exposing a brown topaz to a dull red heat in a sand bath. The color is permanent.

The name topaz is thought to be derived from the island of Topazicon in the Red sea, where a yellow stone was found by the ancients. According to Dana this stone was not the true topaz, as it could be cut with a file. This gem was sometimes called "chysolithno" (golden stone) by the ancients.

The topaz occurs both crystallized and massive. Primary form of the crystals, right rhombic prism. Colors generally light; luster vitreous and splendent, transparent and translucent. Hardness, 8; specific gravity, 3.499, 3.641. B. B. infusible alone, with borax melts slowly to a transparent glass. Yellow topaz becomes rose red when gently heated. Dissolves slowly in bead of microcosmic salt, leaving the silica in a spongy state undissolved; dissolves in bead of soda and gives a blebby, semi-transparent slag, with more soda, swells and becomes infusible; when strongly heated, wet with solution of nitrate of cobalt, and again heated, it becomes blue, which is the reaction of alumina, streak uncolored. If the powdered mineral is mixed with strong sulphuric acid, placed in a clean glass tube and strongly heated, the glass will be attacked by the hydrofluoric acid set free. The best way to observe this reaction is to cut off the closed end of the tube, wash it out with water and dry with filtering paper.

The composition of topaz is as follows: Silica 22 3, alumina 54 3, silicon 6.5, fluorine 17.3,=100 4.

In making an analysis of topaz the silicon becomes oxidized to silica and gives an excess of weight, as will be seen by the following analysis of the yellow variety: Silica 34.01, alumina 58 38, fluorine 15.06,=107.45. There is also an error from a part of the fluorine being volatilized.

The topaz is pyro-electric; that is to say, it becomes electrical when heated. It may also be electrified by friction.

Although the topaz is really a beautiful stone yet it is held cheaply because it is not fashionable. A crystal the size of a bean is sold at the mines for $1 00, one pure white of one carat $8.00, a yellow one of the same size $3.00, a yellow burned one (Brazilian ruby) $5.00. In Brazil very fine stones sometimes sell for $30.

Aquamarine, chrysolite and quartz (false topaz) are sometimes sold for the topaz, but by studying the characterisiios of these different stones it may be with certainty distinguished from them.

The highest price on record ever paid for a topaz was $60,000. This stone belongs to the Great Mogul and weighs 157¾ carats.

G. Zircon, Hyacinth.

The zircon is a silicate of zirconia. Hardness, 7.5; specific gravity, 4 75; luster adamantine like the diamond; color, red, brown, yellow, gray, limpid, some times opaque, at others transparent; fracture conchoidal and brilliant. Composition when pure: Silica, 33.0; zirconia, 67.0,=100. System of crystallization tetragonal.

The zircon takes its name from jargon, a name by which it has long been known, and which signifies that although it much resembles the diamond it is comparatively worthless.

B. B. infusible. The colorless varieties are unaltered, the red becomes colorless, and the dark colored varieties change to white. Is decomposed if fused with alkaline carbonates or bisulphate of potash. If finely powdered and fused in a loop of platinum wire it becomes decomposed. If the bead is dissolved in dilute muriatic acid, the solution imparts a characteristic orange color to turmeric paper.

The zircon is found in crystalline rocks, as limestone, chloritic and other schists, gneiss, granite and sometimes in beds of iron ore. Found in alluvial sands in Ceylon, in the gold region of the Urals, in Transylvania, in Bohemia and numerous other European localities. It is not uncommon in the United States. In California it is reported in the auriferous gravel in the north fork of the American river.

The hyacinth is a zircon which is of a reddish orange color, having a shade of brown. The best hyacinths come from Ceylon. It is electric by friction. The colorless varieties are often sold for the diamond but it may be distinguished from its inferior hardness.

Zircon is sometimes calcined in a crucible with lime, when it loses its color and assumes the appearance of a pale straw colored diamond, for which it is sold.

The value of the zircon depends on purity of color, but it is not considered as a valuable gem. When the hyacinth is of a smoky white color it is called a jargon.

The zircon possesses the property of doubly refracting light to a high degree. It does not become electrical by heating.

The Tendency of Machine Manufactures.

Quite recently several able articles have appeared from the pens of mature thinkers, upon the social influences likely to be produced by the extended use of machinery. While we have felt a laudable pride in the triumphs of mechanical skill, yet many evils resulting therefrom are becoming alarmingly apparent. To such a degree has the facility for production been carried by the adaptations of labor saving inventions, as to almost sweep out of employment whole classes of heretofore useful citizens.

It seems to be a law of nature that men have a predilection or aptitude for different pursuits in life. One may be an admirable cabinet maker, while his twin brother delights in manipulating the iron upon his anvil. Another is happy in plying the shears and goose, and fitting the garment symmetrically to the forms of his customers. The devotees of St. Crispin have but little taste or adaptability to other pursuits, evinced frequently by some boy of the household who constitutes himself the custodian and healer of the foot dressings. The manufacturer of jewelry and the watchmaker must follow the proclivity that is a constituent part of their nature. And in the whole round of useful occupations we see displayed the beneficent scheme of the creator, that while these men are ministering to the necessities of others they are promoting their own happiness in such manner only as no other pursuits would obtain. As a rule, men must have employment in callings for which their temperaments, physical powers and innate tendencies have fitted them, or they will be a burden to themselves and to society. But a few years since, the fraternity of tailors constituted a very numerous class; now the iron nerves and sinews of the sewing machine has cast them ruthlessly aside. Not a tenth, no, not a twentieth of them all are to be found cheerily anipping the cloth or plying the needle. They are not only thrown out of their wonted and preferred employment, but they may well exclaim, with Othello, that their occupation is gone! Suppose they try to become carpenters; your machinery, planing machines, sash factories, door factories, blind factories and so on have played the deuce with them. All that is left over for that class of mechanics to do is to bring into place and adapt the various materials already prepared. Three or four will build a house as quickly now as twenty would have done but a score of years ago. Should our surplus carpenters turn their attention to shoemaking, there the sewing machine has again made a terrific onslaught, and together with other obnoxious inventions of the enemy has thrown four-fifths at least of their number out of their occupation, and they cannot adhere to their motto, "Let the shoemaker stick to the last."

The appliances of mechanism have invaded the precincts of manual labor in all directions alike. Even in agriculture, what with your gang plows, harvesters, threshing machines, mowing machines, etc., a large farmer will carry on operations successfully with a tithe of his former laborers. Aside from the great injustice done to these discarded men, what are they to do; whither are they to fly for support? From all quarters we hear the complaint that idle men are accumulating on society. This is no fault of the idle men; they simply have nothing to engage in for a livelihood. The men who mobbed and destroyed the first saw mills, and those who fought the first steam shovels, were only contending against a gigantic enemy who was endeavoring to oust them from their legitimate means of support, and they were correct in their philosophy.

Notwithstanding the difficulties involved in this question, political economists will have to grapple with it. In this connection, the oft repeated question, "What shall we do with our boys?" presents one of the most disagreeable phrases of the matter. All mechanical pursuits are practically shut off from them. All boys should learn a trade, it has been truly and wisely said. But the trades afford no field for an occupation, or only to but very few. What then? Agriculture? No. Farm products can only be proportionate to the home demand, as a general rule. Formerly such demand was caused by the necessity of all classes of mechanics at their own doors. The few comparatively who now engage in the other class of pursuits are congregated at manufacturing localities. It is evident that the unemployed, idle and vicious are fearfully increasing, and that to the foregoing causes are to be attributed this great evil. WILLIAM TEAL.

Bingham, Utah, June 22d, 1876.

SOME of those philanthropists who are devising plans for contributing to the comfort and improving the health of the poor, would find money expended in the purchase of GLENN'S SULPHUR SOAP serviceable in bettering the physical condition of the latter.

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BRASS and BELL FOUNDRY

SAN FRANCISCO,
MANUFACTURER AND IMPORTER OF
Church and Steamboat BELLS and GONGS,
BRASS CASTINGS of all kinds.
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FIRE HYDRANTS,
DOCK HYDRANTS,
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STEAM PUMP

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11th Industrial Exhibition,

Under the Auspices of the

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The managers have the honor to announce that the forthcoming Exhibition will be opened to the public on

Tuesday, August 8th,

At 11 A. M., with the usual ceremonies. By the desire and co-operation of the leading citizens of San Francisco, the Exhibition will be held on a much grander scale than heretofore.

The Exhibition Building, Occupying an Area of over 214,000 Feet

Of floor room, will be completely filled with the varied products of the skill and industry of the people and of the soil. **Over 700,000 persons** were admitted during the last Fair. The managers intend to engage the services of the best instrumental talent of the country, so as to enable them to give unequaled

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In every department applications for space for exceed expectations, and surpass those of former Fairs. Intending exhibitors must not delay filing their applications, otherwise they will be excluded.

The Exhibition will continue at least one month.

There will be no charge for exhibiting space.

Application for space or for information should be addressed to the Secretary of the Board of Managers, Eleventh Exhibition, 27 Post St., San Francisco, or to J. H. Gilmore, Supt., at same address.

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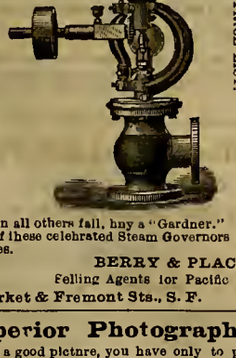

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Superior Photographs.—To be sure of a good picture, you have only to patronize G. D. Morse's Palace of Art, at No. 417 Montgomer street, S. F. The publishers of this journal have patronized Mr. Morse for many years, and do not hesitate to say that his pictures are not excelled by any we have seen produced in this or any other country. No one can ask for a better man to patronize than Mr. Morse. He is affable and respectful to all.

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A first-class 16-page Agricultural Home Journal, filled with fresh, valuable and interesting reading. Every farmer and ruralist should take it. It is immensely popular. Subscription, $4 a year.

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ROASTING OF GOLD AND SILVER ORES, and the Extraction of their Respective Metals without Quicksilver. 1870. It contains 142 pages, embracing illustrations of furnaces, implements and working apparatus. Price $2.50 coin, or $3 currency, postage free. Published and sold at this office.

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FOR QUARTZ MILLS,

AWARDED FIRST PREMIUM AT THE TENTH INDUSTRIAL FAIR OF THE MECHANICS' INSTITUTE.

It may be considered as now fully demonstrated, by careful and long-continued experimentation, that the plan upon which a perfect ore feeder must be constructed is that of the *carrier*, and not that of the shaking table. Uniform and accurate feeding is not possible upon the latter plan. The ore must be evenly carried, upon a steadily advancing plane, or table, to the line of discharge, and there simply *dropped*. Spasmodic or jerky contrivances will not answer the purpose.

REFERENCES.

A letter received from the Julian Mill, Newcastle, says, of the Table Feeder: "It is the most perfect Feeder we have ever seen; don't see how any mill can do without them."——A letter from Mr. O. C. Belding, of Amador County, speaks in the highest terms of them.——Two of the machines were shipped to the Bunker Hill Mill, Amador County. —— Mr. Stevenson, of Boston Mill, Gold Hill, Nevada, says they are the best Feeder he has ever seen.——Mr. Lachman, of the Soulsby Mill, Tuolumne County, says they work splendid; could not do better.——Two of the machines were shipped to the California Company, Nevada City. —— C. J. Garland, of Mosquito Gulch, Calaveras County, says: "I find them an excellent machine."——S. D. S. Stewart, Supt. Lincoln Gold Mining Company, says they are a perfect success.——O. C. Hewlit, Supt. Keystone Mining Company, says: "I can safely recommend them to all millmen."

We warrant the machines to give perfect satisfaction, and to be a better and more durable Feeder than any other in the market, and will sell them as cheap as any other machine of its class.

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AND DEALER IN

QUARTZ MILL MACHINERY.

To Mining Secretaries.

An amendment to Section 336 of the California Code, taking effect July 1st, 1874, provides that in addition to the regular publication, daily or weekly, of the assessment and sale notices as heretofore,

PERSONAL NOTICE

Must be served as provided in the following quotation from the law:

"The notice must be personally served upon each stockholder, or in lieu of personal service, must be sent through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where the principal office of the Corporation is situated."

The above refers to the ASSESSMENT NOTICE only. Advertisers in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assessment notices printed on slips suitable for serving personal notice under this law at short notice.

DEWEY & CO., Publishers.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Amador Canal and Mining Company—

Location of works, Jackson, Amador county, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 1), levied on the eighth (8th) day of May, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
T J Gallagher, Trustee	18	250	750 00
James Bolpb, Trustee	22	2500	7500 00

And in accordance with law, and an order of the Board of Directors, made on the eighth day of May, 1876, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, on Wednesday, the fifth (5th) day of July, 1876, at the hour of two o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Secretary.

Office, Rooms Nos. 1 and 2, 418 California street, San Francisco, Cal.

POSTPONEMENT.—The above sale is postponed by order of the Board of Directors of the Amador Canal and Mining Company to the eleventh (11th) day of July, A.D., 1876, and will be held at the same hour and place.

J. W. CLARK, Secretary.

Cherokee Flat Blue Gravel Company.—

Location of principal place of business, San Francisco, California. Location of works, Cherokee Flat, Butte county, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 8th day of June, 1876, an assessment, No. 36, of five cents per share, was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, Room 13, No. 328 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 18th day of July, 1875, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Saturday, the 5th day of August, 1875, to pay the delinquent assessment, together with the costs of advertising and expenses of sale. By order of the Board of Directors.

O. H. BOGART, Secretary.

Office, Room 13, No. 328 Montgomery street, Safe Deposit Building, San Francisco, California.

Hope Quicksilver Mining Company—Lo-

cation of principal place of business, city and county of San Francisco. Location of works, Cinnabar Mining District, Sonoma County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No 1), levied on the 12th day of May, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Alvord, Frank & Mary Jane	64	1000	$ 30 00
Becraft, Mrs. Henry L	26	10	30
Bell, William S	44	750	22 50
Bell, William S	46	750	22 50
Bell, William S	47	250	7 50
Bell, William S	49	250	7 50
Bell, William S	53	100	3 00
Bell, William S	55	100	3 00
Bell, William S	58	100	3 00
Bell, William S	57	100	3 00
Bell, William S	58	100	3 00
Bell, William S	59	100	3 00
Bell, William S	60	100	3 00
Bell, William S	61	100	3 00
Blake, P H	96	150	4 50
Blake, P H	97	100	3 00
Blake, P H	122	100	3 00
Blake, P H	123	50	1 50
Blake, P H	124	100	3 00
Drake, Henry A	135	25	75
Drake, Henry A	136	25	75
Drake, Henry A	137	25	75
Drake, Henry A	138	25	75
Eberhardt, A (not issued)	133	12,500	Bal. 288 34
Forbes, C Ford	82	100	3 00
Gilcrest, S F (not issued)	132	9500	Bal. 260 55
Herdy, Thomas	29	1000	30 00
Hardy, Thomas	30	1000	30 00
Hardy, Thomas	39	100	3 00
Hardy, Thomas	40	100	3 00
Howland, S W	6	100	3 00
Howland, S W	7	100	3 00
Howland, S W	8	100	3 00
Howland, S W	9	50	1 50
Howland, S W	65	500	15 00
Howland, S W	66	500	15 00
Howland, S W	68	500	15 00
Howland, S W	69	500	15 00
Howland, S W	70	500	15 00
Howland, S W	74	250	7 50
Howland, S W	75	270	7 50
Howland, S W	76	250	7 50
Howland, S W	77	100	3 00
Howland, S W	114	100	3 00
Howland, S W	115	100	3 00
Howland, S W	116	100	3 00
Howland, S W	117	50	1 50
Howland, S W	118	00	3 00
Howland, S W	119	50	1 50
Howland, S W	120	50	1 50
Howland, S W (not issued)	134	50	1 50
Lowell, Charles P	24	90	2 70
Meyer, John H	63	100	3 00
Morey, W R	5	100	3 00
Morey, W R	21	100	3 00
Morey, W R	22	100	3 00
Morey, W R	41	500	15 00
Morey, W R	50	200	6 00
Morey, W R	51	300	9 00
Morey, W R	98	50	1 50
Morey, W R	99	50	1 50
Morey, W R	100	25	75
Morey, W R	101	25	75
Morey, W R	102	25	75
Morey, W R	103	25	75
Morey, W R	104	25	75
Morey, W R	105	25	75
McLean, Edward	127	10 0	60 00
McLean, Edward	128	500	15 00
McLean, Edward	129	500	15 00
McLean, Edward	130	1000	30 00
McLean, Edward	131	1000	30 00
Parsons, William	106	50	1 50
Parsons, William	107	50	1 50
Parsons, William	108	25	75
Parsons, William	109	25	75
Parsons, William	110	25	75
Parsons, William	111	25	75
Parsons, William	112	25	75
Parsons, William	113	25	75

And in accordance with law, and an order of the Board of Directors, made on the 12th day of May, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the Secretary, 419 California street, room 23, San Francisco, on Saturday, the 10th day of July, 1875, at the hour of 12 o'clock, M., of such day, to pay delinquent assessments thereon, together with costs of advertising and expenses of the sale.

JACOB HARDY, Secretary.

Office, 419 California street, Room 23, San Francisco, Cal.

The Manhattan Marble Company of Cal-

ifornia. Location of principal place of business, San Francisco, Cal. Location of works, Oakland, Alameda county, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, levied on the 23d day of May, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
C Beach	75	25	$ 75 00
C Beach	76	25	75 00
C Beach	77	25	75 00
C Beach	78	25	75 00
C Beach	79	19	57 00
D M Bokee, Trustee	259	7	21 00
D M Bokee, Trustee	260	3	9 00
E Tripp	302	5	15 00
E Tripp	303	5	15 00

And in accordance with law, and an order of the Board of Directors, made on the 23d day of May, 1876, so many shares of each parcel of said stock as may be necessary, will be sold at the office of the company, 13 and 15 Fremont street, San Francisco, on Monday, the 17th day of July, 1875, at 12 o'clock M., to pay the delinquent assessment thereon, together with the cost of advertising and expenses of sale.

L. L. ALEXANDER, Secretary.

Office, Nos. 13 and 15 Fremont St., San Francisco, Cal.

Mariposa Land and Mining Company

of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors held on the sixth day of July, 1876, an assessment (No. 6) of one dollar per share was levied upon the capital stock of the corporation, payable immediately, in United States currency, to the Secretary, at the office of the company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office, No. 8 Nassau street, New York.

Any stock upon which this assessment shall remain unpaid on the seventh day of August, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the second day of September, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

LEVANDER LEAVITT, Secretary.

Office, Room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal.

Union Consolidated Silver Mining Co.,

San Francisco, June 15th, 1876.

The annual meeting of the stockholders of the Union Consolidated Silver Mining Company, for the election of trustees for the ensuing year, and for the transaction of such other business as may properly come before it, will be held at their office, 311 California street, rooms 3 and 4, second floor, over Ætna Insurance Office (entrance 309 California street), on Monday, July 17th, 1875, at 2 o'clock P. M. Transfer books will be closed July 12th, at 3 o'clock P. M.

J. M. BUFFINGTON, Sec'y.

Umpire Tunnel and Mining Company

Of Utah. Principal place of business, San Francisco, Cal. Location of works, Big Cottonwood District, Utah.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 23d day of June, 1876, an assessment (No. 5) of five (5) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, 605 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 24th day of July, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 14th day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. W. DAVIS, Secretary.

Office, 605 Montgomery street, San Francisco, Cal.

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The TULLOCH AUTOMATIC ORE FEEDERS have been practically tested during the last year and a half in twenty-seven mills, of from five to eighty stamps each, and have, in every case, given perfect satisfaction. Refer to the following Mills: California, Con. Virginia, Northern Bells, Leopard, Trench, Humboldt, Douglas, Phœnix, Hite, Crescent, and others. Prices Reduced. Send for Circulars.

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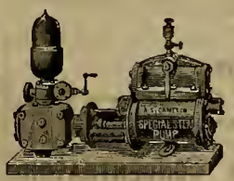
For the Draining of Mines, Feeding Boilers or Elevating Water.



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STODDARD'S PATENT CONDENSER, for All Kinds of Steam Pumps.

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RAILROAD AND OTHER IRON

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Every Variety of Shafting

Embracing ALL SIZES of

Steamboat Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames,

—ALSO—

HAMMERED IRON

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INDESTRUCTIBLE, NON-CONDUCTOR OF HEAT

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Asbestos Roofing and Paints

FIRE AND WEATHER PROOF;

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Made from Pure Long Fiber Asbestos,

INDESTRUCTIBLE! SELF-LUBRICATING!

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Prevents the formation of Scale in Boilers and removes the same, without injuring the iron or causing the water to foam.

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Uniform Speed in the Working of Steam Engines.

THE SIMPLEST AND MOST EFFICIENT GOVERNOR YET CONSTRUCTED.

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Especially Valuable with Adjustable Cut-Offs. Capacity of Machinery Increased by Accurate Regulation of Speed.

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Fig. 1. For Variable Cut-Off Engine.

The high rate of speed used acts advantageously in making the Allen Governor very sensitive; and all parts being lubricated, it works with the smallest amount of friction.

The speed of the Engine is maintained equally, without reference to the variations in amount of work being done.

The peculiar action of the Governor, which allows the use of a valve of large area, thereby admitting to the Engine cylinder the greatest possible boiler pressure at each stroke of the piston, has produced astonishing results by, being attached to old engines, greatly increasing their power or effecting a direct saving of fuel, and in hundreds of instances doing both. In running an engine with the Allen Governor with high or low pressure of steam and with all variations of power, the throttle is opened wide in the morning and remains so until closed at night, thus relieving the engineer from all labor and care except keeping the engine oiled, and giving him a great deal of time for other duties.

Allen's Patent Governor Valve is constructed with a double disc in a tubular frame, and is perfectly balanced, there being no spindle as in the ordinary throttle valve to interfere with its equilibrium. The valve is moved by means of a lever, and is opened and closed by a rocking motion of a steel spindle, which is covered with brass, insuring the greatest possible durability.

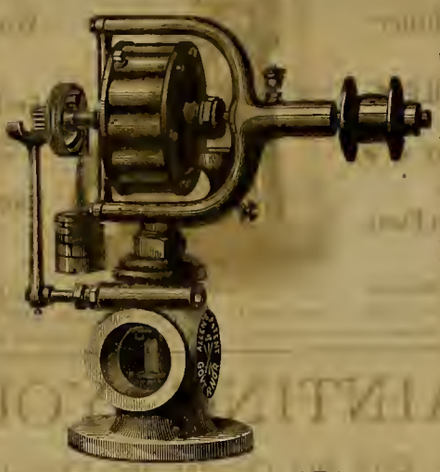

Fig. 2. Allen Governor and Valve.

We have Numerous testimonials from parties who have used this Governor, and watched its workings critically. In all cases the Governor has made the various engines to which it has been applied produce the most profitable results ever obtained.

Fig. 3. Section of Allen Governor.

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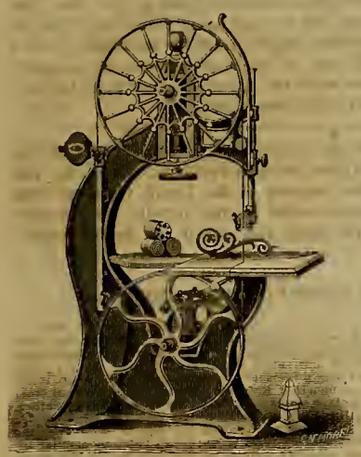

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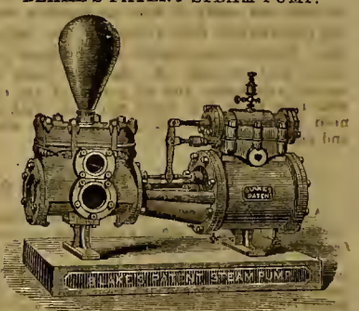

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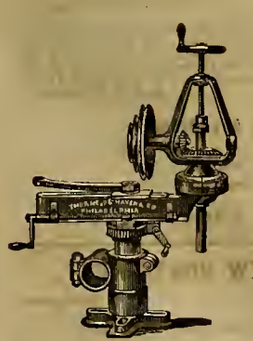

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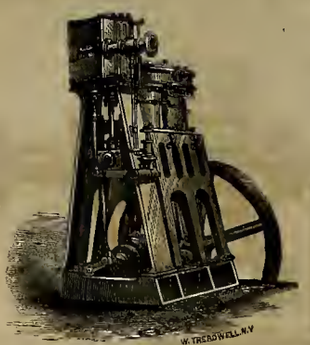

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We know of no subject of such importance to householders as that of a good, handsome, durable paint for their dwellings. Within the past few years we have watched the progress of the Averill Chemical Paint and have had frequent opportunities to test it fully. We think it just the article to supply the need, and give it our hearty endorsement.—*N. Y. Independent.*

From the Thousands of Testimonials sent us, we select the following, which we present for your careful consideration:

A PAINT FOR FARMERS.—Prof. J. B. Turner, Jacksonville, Ill., is a man of great practical knowledge and experience; hence, we attach a great deal of value to the following, from his pen, which we find in the *Prairie Farmer:*

"Some two years ago I sent for and got from a barrel to a barrel and a half of Averill Chemical Paint, of light dun color, which I thought would suit me well enough for all work—houses, doors, blinds, fences, bee-hives, wagons, tools and all. I put two coats upon my residence here, and run over three or four of my smaller farm houses on my farms. With what was left I painted my bee-hives, wagons, wheelbarrows, rollers, harrows, fences, etc., etc. and on all these buildings, implements, tools, gates, etc., the paint is as hard and glossy to-day, so far as I can see, as it was a month after it was put on, and bids fair to hold its own at least for five years to come, (if not ten of them,) better than ordinary white lead and oil does for even two years.

"I have watched it now for about two years with interest and care, and have never found a single spot where it peeled, cracked, or chalked off, as our other paints do. Others who have used this paint like it equally as well. But the point is, I can take one and the same keg and brush, and go over all my buildings, wagons and tools, with no needless waste of paint, brushes or time. It is quite as good for inside finish, as it leaves a coat that shines and washes like glass."—*Moore's Rural New Yorker.*

THE AVERILL PAINTS.—In reply to some inquiries of our readers, we would state that we have given these paints, prepared by the Averill Chemical Paint Company, a full trial, and they appear to possess all that is claimed for them; spreading easily, adhering well, drying soon, and imparting handsome shades of color to the surface covered. Farmers and others who do their own painting, may avail themselves of the convenience of purchasing these paints, of any desired shade, already mixed for use, at a very reasonable price.—*Cultivator and Country Gentleman.*

PLACERVILLE, October 7, 1875.

TO THE CALIFORNIA CHEMICAL PAINT CO: Gentlemen—In reply to your letter I have to state that for more than six years I have dealt in and used your paint. I have during that time carefully observed its application and use, and from practical knowledge can certify to its unrivalled excellence. During my six years' acquaintance with it, there has not come to my knowledge a single instance of failure in any case where it has been used. All to whom I have supplied it unite in commending it for its superior claims over all other paints now in use. The Averill Paint externally used, or, in other words, exposed to the action of the weather, neither rubs off nor changes color, as do other paints, and will retain its freshness and adhesive property for years. Pure lead and oil will in a short time become dry, and are easily rubbed off; the loss of oil leaves the lead in a dry, oxidized state. As a matter of economy the claims of the Averill Chemical Paint to popular appreciation and general use are beyond question. A house properly painted with it once will be better preserved, and present a neater appearance at the expiration of seven years, than it would if twice coated with lead and oil paints now in use. There can be no question, then, that to use it is both labor-saving and economical. So well assured and convinced am I of its established right to this distinction over all kinds, that had I fifty houses of my own to be painted, the "Averill" alone should be my choice and used.

Yours, very truly, S. J. ALDEN, Druggist.

UNIVERSITY OF CALIFORNIA, BERKELEY, August 16, 1875.

TO THE CALIFORNIA CHEMICAL PAINT CO: Gentlemen—In reply to your note of the 13th inst., I willingly state that the work done by you in painting the exterior of the North Hall or College of Letters is in every way satisfactory, and the appearance of the building since it was painted excites the favorable comment of all who have seen it. As I have had occasion to use the Averill Paint before, my experience has been such that I prefer it to any and all others when properly applied. I am very truly yours, ROBT. E. C. STEARNE.

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Central City, Colorado.

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

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SAN FRANCISCO, SATURDAY, JULY 15, 1876.

VOLUME XXXIII Number 3.

Interest in California.

To the capitalist, the fact thet a high rate of interest rules in Californie, ie a enbject of congratulation, hut to the mase of the people it ie a great drawhack, as well as en impediment to the growth of the State. Capitalists do not care to nndertake the risks of hneiness so long as they can get a high rate of intereet on their money. Of couree no one can hlame them for this, hnt it is none the lese to he deplored. The maunfecturing intereete of the State of Californie have never heen npheld ae they ehould have heen for thie very reaeon. The mining and agriculturel interests have also felt the haneful effecte and there is eccrcely any hranch of hneiness which has not heen retarded.

Take it all in all the ruling rete of intereet in thie Stete may he coneidered as one per cent. per month, verying of course with the money market hut oftener going ahove than helow thet figure. The large horrower with *city* eecuritiee gets it cheaper eometimes, hnt the emall horrower with *country* eecurities never does. In fact it ie very difficult to get money at all from city capiteliste on property sitnated ontside of San Francisco. and when it ie procured it is at an edvanced rate.

The farmers here, as elsewhere, alwaye want money to pnrchnse sacks, implements, etc., end in this matter sre not always as independent ae the prevalent idea of their calling wonld imply. They are nearly always dependent for a temporary eupply of fnnds on the country storekeeper, for small local hanks are not as nnmerone as would he convenient, the hulk of money accumnlating in the city for reasons before stated. The storekeepere in the interior of thie State derive a large proportion of their income from thie ecurce, hut such high retes of interest are charged that it keepe the farmers poor to pay it. One and a helf and two per cent. per month are not hy any means nnusnal chargee, hnt money ie never procnred nuder these circumetances, for lees than one per cent.

The interest rate ie prohehly leee hnrdensome to the working miner than to the working farmer, for he takee out his money ae he goee along ae a general thing. But the mining intereets at large feel ite hurtfnl effects no less then the agricultural. There are hundrede of mines all over the country which could he worked to a profit could capital he provided to furnish machinery and properly develop them. But unless a perfectly enre five or eix per cent. per month profit is ehown to the capitaliste they wont tonch them. Ae to lending money on cleims, thet is out of the question, nnlese they are fully developed and have machinery and portahle property which will more than cover the loan, With inveetmente they muet have a controlling intereet or none at all.

This ieaside from stocks of conree and refers to legitimate mining enterprise alone. Ae to stocke of minee on the stock hoard, money can he procnred on them accordling to their standard and the etate of the market. But with what are called ontside stocks this is not alweye the case. It eeems somewhat etrange, hut is none the lese true, that money can he more easily procured on stocke that may he worth hundreda or nothing in a weeke time, than it can he on a farm with a permanent vaine.

More mannfactories are needed in this State to support a certain part of the popnlation, and to nitilize ite producte. Page upon page might he written to prove that millions are annually lost to us which might be saved, were different maufactories eetahlished. Every cargo or train of manufactnred articlee brought from other countriee help to keep idle our mechanics and decrease the wages of those who are already employed. We are importing every day manufactured articlee which conld he made at home, hetter and cheaper, and at the same time give employment to those who need it. As long, however, as the capitalist can eit at his desk and get one or one and a half per cent for his money, without riek or labor, he will not put it into any new mannfacturing industry. Arguments ahout huilding up the State or giving employment have no effect npon him, who cares nothing for either as long es he gets hie "cent per cent."

It is not, we contend, our increese of popnlation which caneee eo much idleneee and comparatively low wagee, hut the high rate of interest which prevails. California ought to support comfortahly five or ten timee as many inhehitante as are now within her horders. But hefore ehe can do it with credit, the rates of intereet must he lowered. Unlese this is done mennfactnring industry muet languieh, the mining interests will decline and the farmere keep poor. Capitaliets ehonld not make euch hroad distinctione hetween city and country property. They eeem unfortunately to he impressed with the idea thet nothing outside of San Francisco is worthy of finencial attention. If it were not for the interior of the State, San Francieco would amonnt to hut little, as ehe depends almoet entirely on the interior for her prosperity. With an inoreaee of proeperity in the interior comee a corresponding increese here, and onr capiteliete shonld rid themselves of any helief to the contrary.

The more mechanics, citizens, farmere or lehorere there are who come to reside with us the hetter it ie for the State, hut they mnst he found employment, which it ie the duty of the capitelist to provide. Leaving money at such rates that those desirons of estehliehing mannfacturing enterprises can get no profit, ie not fostering industry, as some persone seem to suppose, hut does more harm then good. When one faile nnder theee circumetances othere fear to make the attempt, and eo onr mannfactures are few to what they should he.

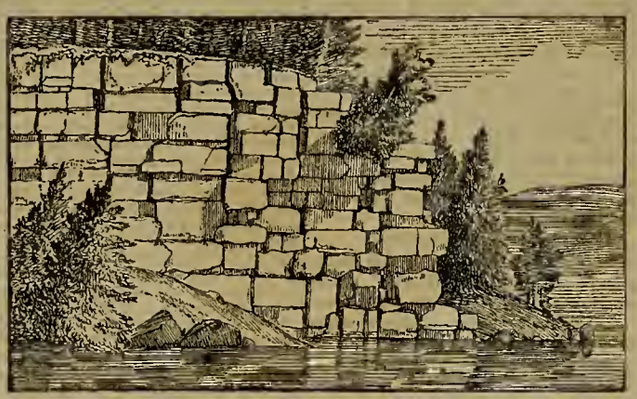
We mnst confe s, in conclusion, that we are in the same predicament as the horrowers, who eee no way out of it hut to accept the eituation, of which the capitalists have the hest. As long as they can get high rates of interest they will take them; and aa long as leuding money without risk pays better than inveeting it in husiuese enterprises, they will lend it. But the situation doee not impress one with any very exalted opinion of the California capitalist who may glory in the richness of the reeources of the State, hut does nothing whatever to assist in developing them. We shall continne thie euhject next week, and mention some of the reasons why capitaliete from ahroad ehonld he enconraged to extend their loans here, and how they can do it on a safe hasis.

THE Oakland harbor appropriation has been incressed from $75,000 to $95,000.

Avenues of Water for Hot Springs.

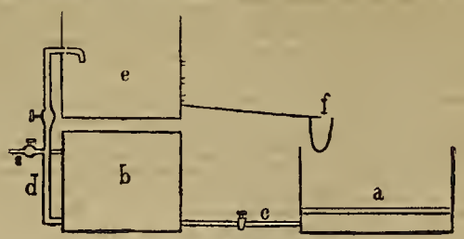
In epeaking of the origin of the remarkehle lake haein of the Yellowstone, in which the greatest part of the wondere is located, Prof. Hayden eeye it is moet intereeting in a geological poiut of view. He ie convinced it is not altogether one of eroeion hut in pert of elevation. It ie prohehle that the watere surrounded and perhepe covered the highest mountain peake. He concindes not only that the carving ont of the channel of the Grend canon was a very modern event, hut that the diepoeition of the entire meteriel which forme the canon is, in a geological eense, of quite a modern occurrence.

The drainage of the country commenced long before the excavetion of the present water



WALL OF BASALT, YELLOWSTONE RIVER.

conrses. Ae the watere slowly subsided, they were separated into lakee of greater or smaller size, and then came the excavation of the Grend canon, which elowly drained the great lake hasin above the falls. The hot springs, which are now elowly dying ont, are, of conree, the laet of thie eeriee of remarkahle physical eveute. The evidence eeema clear that all over the West during thie great period of volcanic activity the hot springs, and perhaps even geyeers, were very numerone. We everywhere find the remaine or deposite in all the States and Territories west of the Mieeiesippi, and now and then a warm or hot epring remaine to indicate the story of their former power.



AARON'S LEACHING APPARATUS.

An engraviug on this page is intended to illnstrate the prohahle avennes through which the meteoric waters pace down through the rocks to the heated portione. At Mud springs, about eix milee helow the Yellowstone lake, there is a vertical wall of hasalt about 50 feet high. Thie wall ie only a remnant of a vast mase which extended all along the river, hut which has now heen diesolved into clay of various colors hy the hot springs. The poiute are very regular.

THE white miuere on Jackass creek, Oregon, have commenced outraging the Chinese miuers on that stream hy hurning cahins and stoning them from, and taking poesession of their claims. A few daye ago a complaint was entered hy the Chinese that a man named John Miller, had shot a Chinaman and wonnded him in the hack, and a warrant for his arreet was placed in the hsnds of the eheriff for service.

Derricks for Hydraulic Mines.

At the gravel claim of Van Emen Brothere, Michigan Bluff, Placer county, they have four novel derricke in nee which they consider the best rigged end eesiest operated of eny in the State. A hrief deecription is eent to ne hy our correspondent in Placer county, which will he intereeting to eome of our readere, the mine iteelf heing deecribed in hie letter in enother colnmn:

One man eits at hie ease, attends the derrick alone, turns the water on and off, taking the dirt in and out and dumping the rocke without any aesistance, except from rope or pulley. It was wonderful. The improvement is the invention of Mr. D. L. Gorman of this plece. It ie specially neeful where there ie a head of water ae in hydraulic digginge; for the conetruction and attachment are euch that the force of the water is employed to raise the weighte.

The derrick ie monnted on a globe, out of which projects a pipe which furnishee the motive power, and by thns mounting it the whole machine can be turned in any direction without deranging the driving power. The pipe carrying the water ie diecharged into the lower part of the globe, which ie etationary. The npper half of the globe ia made with a flange, eo fitted ae to prevent the eecape of water. The two hemiepheree have an npright poet which ie festened at the hottom and extends through the top of the npper eection where there is a nut to hold the parte together, and yet allowe the npper hemisphere to turn independenttly of the lower. The mast and the friction wheel here ettached are supported upon the globe in euch manner ae to revolve with it.

Improved Leaching Apparatus.

From "A practicel Treetiee on Teeting end Working Oree" hy Charles H. Aaron, now in prese and ehortly to he issued from thie office, we take the following deecriptione of an improved leaching apparatus, invented by Mr. Aeron. In the engraviug, *a* is an ordinery leaching vat; *b* ie a wooden vacuum chamher; *c* and *d* are pipee, either of wood or rnhher, furnished with etop-cocks; *e* is a precipitating vat; *f* a flannel hag; and *g* a eteam pipe connecting with e hoiler. The ore heing placed in *a*, and saturated with the leeching finid, (the cock in c heing cloeed) the chemher *b* is filled with eteam, the air being expelled through *d* which ie open; *d* is then closed, and eteam shut off, when *c* heing opened, a vacnum is formed in *b* hy condeneetion of the eteam with which it ie filled. The preesnre of the atmosphere on the eurfece of the finid in *a*, forcee it repidly through the hed of ore into *b*; the cock c is closed, that in *d* opened, and eteam again admitted into *b*, and hy ite pressure forcee the eolntion through *d*, into *c*, where it ie treated with the precipitating agent, and when clear, ie drawn off end passed again to *a*, through the flannel bag *f*, hy which any floating particlee of precipitate ara retained. The hnlk of precipitate remaining in c, is then removed.

THE INDIAN WAR.—There ie very little news from the seat of the Indien war since that which hronght tidinge of the disaeter which reanlted in the death of the gallant Custer and his troops. It is evident, however, that the Goverument has a had Indian war to carry out. No volnnteere have been accepted, General Sheridan thinking that the regular troops are sufficient to quell the outhreak. Meantime every one ie anxione to hear of General Crook and his command.

THE Carhon silver mine, helonging to the mining company Nederland, of the Hagne, hae been attached for debt. It ie in Colorado, and was bought hy the Dntch company in 1870 for three millions of dollars. It has produced ahont $3,000,000 per annnm ever since, and ie considered ene of the most productive minea of Colorado. The mine is still enpposed to he rich, hut extravagant management has hronght it into difficulty. It has been managed entirely hy foreign mining engineere.

CORRESPONDENCE.

Placer County Mines.

[By our own Correspondent.—No. 2.]

From Forest Hill, by way of Bath, Michigan Bluff and Damascus to this point, (Iowa Hill) there is an immense gravel deposit, and some good gold-bearing quartz. Millions are looked up here awaiting the key of capital. Generally these mines are remunerative. Occasionally mistakes are made; some cases of mismanagement are heard of, and rarely some down-right swindling. It would be well for strangers to remember the old law maxim, "*Caveat emptor*," and take sufficient time for proper advice and

Examination Before Purchasing.

Many things are to be taken into consideration, such as water supply, out-let, and the channel on which the claim is located. Some of these are higher than others; have a richer and different deposit of gravel, varying in many respects, and of course requiring distinct methods of working. In view of all this, it is not much wonder that failures sometimes occur.

With the ordinary prudence and caution brought to bear in other kinds of business, there is a wide opening in this section for the profitable investment of capital. So much by way of introduction

After leaving Bath, where fewer idle men are found than in any other place of the same population in the mountains,

Michigan Bluff

Was next reached. The most productive claim at present worked is that of the Van Eman brothers, covering an area of about 120 acres.

The water season having just closed, it required no very keen sense of perception to see that they were by no means displeased with the result. This claim has been worked by hydraulic for 17 years, averaging from $25,000 to $30,000 per season. Although it has been giving out its gold for nearly 25 years, and is said to have yielded a million and considerably more, but a comparatively small portion has been worked out.

The gravel is mostly quartz, running from the finest through the cobble stone to the largest boulders. I send you with this a description of the novel derricks in use in this claim.

The Muir placer mining claim, as far as I could learn, lies east of the celebrated Bruce and Wheeler ground, and immediately west of the Weske claim, next in order to be described, and is thought to cover the same rich deposit. It has a slope down 105 feet, and from accurate survey has eight feet more to sink to reach the same level.

The Weske Gravel Mine,

Two and a half miles north of Michigan Bluff, comprises about 350 acres. A tunnel has been run in about 4,000 feet, at which point machinery amply sufficient for the work required has been put up for hoisting and pumping.

It has hitherto paid handsomely, sometimes as much as $30,000 being drifted out per month, requiring the employment of 15 to 20 men. It is looked upon as one of the best claims at present worked. Mr. Muir, who erected the machinery, and an experienced miner on this divide, says that they are now in or near the main channel, have eight feet of very fine looking gravel, and that by following the channel, taken in connection with the new and increased facilities for working, much larger returns may be expected within a few days.

The Red Hill hydraulic claim in El Dorado canon, coming next in order, has a bank of dirt and gravel 100 feet high, also, 50 feet of good drifting ground that pays from $6 to $8 to the man. A ditch has recently been brought in with a capacity of 400 inches of water, and a large reservoir to furnish the supply the year round.

One of the late and most promising discoveries is the Hidden Treasure consolidated, midway from Michigan Bluff to Damascus. From all accounts there was a nice little

Piece of Engineering

Connected with its opening. Mr. Cameron and others of the company, believing that the channel they were in search of was at the Mountain Gate at Damascus, (of which more hereafter), made a calculation by taking the level of bedrock in the tunnel of the last named at 75 feet fall to the mile, and from other observations in the immediate locality of their own mine, thereby enabling them to reach the desired point beneath the channel for drainage and working. An upraise of 30 feet at the end of this 500 foot tunnel brought them into a rich deposit of quartz gravel, that pays $9 to the man for ordinary working hours, which is looked upon by miners as a very fine prospect. It is a drift claim of 280 acres.

At Damascus, five miles north, is the

Mountain Gate,

With a width of 3,000 feet and a length of 10,000 feet—opened by a tunnel 5,800 feet, probably the longest in the State. This is in some respects

A Remarkable Claim,

Yet not so widely known as others of less merit. The object has not been speculation: The owners are working men. It has paid from the start. No assessment has been levied. Having been continuously worked since 1854, it has paid its regular monthly dividends. It has paid as high as $14 per day to the shareholder. The last year's payment was at the rate of $8.40 per share for each day, company time 280 days. The gross amount taken out last year was $65,000. The past month it yielded 400 ounces and the six months from January to July 2,100 ounces. Two hundred feet width of channel pays well for working, 40 or 50 feet of which would pay at least an ounce a day to the man.

An underground ride of upwards of a mile in hand cars, brought me into as fine a body of washed quartz gravel, to be found within the range of many a mile. In a portion of the works a channel of hard cement was pointed out, which was said to be at least 70 feet below the company's ground and something entirely distinct. It would make this article too long to describe all the curiosities to be seen here, but this much may be said, that a visit to the present workings some 700 or 800 feet from the surface will be amply rewarded for the slight attending inconvenience.

The Damascus Mill Company

Are at work on a parallel channel, composed of cemented gravel, about 70 feet lower at the mouth of the tunnel than that of the Mountain Gate. The company has a ten-stamp mill for crushing the cement, although not at present running. The dirt is now drifted out, and run about a mile through sluices and tail races passing on its way over three perpendicular falls from 30 to 50 feet in hight, which greatly aids in pulverizing the cement and setting free the gold. It is a claim that pays well. K.

[Editorial Correspondence.]

The Centennial at Philadelphia.—No. 9.

After spending some five or six weeks in close attendance upon the Centennial, your correspondent has left his post for a while, to attend to another duty equally imperative—that of visiting the "old folks at home" and spending a few days amid the pleasant retreats of his early years in eastern Massachusetts. What he has seen and learned there; the changes, progress, etc., of a quarter of a century or more, may form the subject of some future letter. From this distance he is of course unable to give in detail the progress or condition of things in Philadelphia, and instead thereof will endeavor to place upon paper some facts in regard to

The Peculiarities of the Centennial.

One of the chief peculiarities of this American exposition consists in the fact that, unlike the expositions of the old world, which have been expected to show merely the developments and progress which may have been made between one exposition and the next preceding, ours is called a "Centennial," and we are expected to show a century's progress, an effort which carries us back to the very infancy of modern mechanical appliances—to a point of time anterior to the faintest conception of many of the achievements in science and art which during the century have stamped themselves deep into the very existence of the present age. By the act of congress that has called into existence the commission which has inaugurated this exhibition, the American people were invited to show their progress during the century in the 'arts which benefit mankind, in comparison with those of other nations." This invitation gives us something of an advantage in point of historic interest over other nations, who have come hither as they have heretofore gone to London, to Paris and to Vienna, with those appliances only which tell of to-day—which show forth their perfected manhood, leaving *us* alone to contrast the great achievements of the present time with the germs from which they started "one hundred years ago." In this first Centennial period of our existence as a nation, it is natural to think of the past and strive to form some approximate idea of the real life and surroundings of those who participated in our struggles for national existence, and the early steps which were taken in the great march of material progress which has led to the triumphant results which we see before us in this great exhibition. The home life of our forefathers and the condition of the industrial arts one hundred years ago, are of much interest for our present consideration, made all the more so from the wonderful changes which have taken place during the past century—changes which during that time have wrought a complete revolution in almost everything which relates to domestic affairs and to the industrial interests of the world. History offers no other such marvellous spectacle, no other such example of the might, grandeur and progress of a nation. Therefore most fitting is it that on this anniversary we invite the nations of the earth to witness the triumph of art and industry, in the advancement of which our own people have performed so large a part. Although those who have had this great charge in hand have given us no cause to apologize for the general character of the entertainment to which we have invited the nations, it would seem to have been more in keeping with the call and the occasion had the exhibitors been instructed or encouraged to have more largely mingled the past with the present.

It is true they have done much in this direction, but with a little forethought much more might have been done to add to the interest and instructive character of the occasion. The progress of the spinning machine, from the primitive domestic wheel, might have been most profitably shown through all its principal gradations up to the present most approved machine. One of the rough and clumsy handlooms upon which many of our fathers wove the cloth they wore upon their backs, might have been most instructively placed in comparison with the light and elegant "jacquard" loom, which is to-day weaving, in machinery hall, elegant Centennial mottoes, with most perfect portraits of Washington, Victoria and other distinguished personages. So of the lathe and all the various machines for working in wood and iron. It would be interesting to look upon the clumsy contrivances originally used for hulling and ginning cotton, and be able to compare them upon the spot with the perfected machines now in use and on exhibition. The old lesthern fire-buckets, to use which at a fire we old men, when boys, had to "form a line," and the antiquated hand engine of the same period should have been shown in contrast with the brightly burnished steam fire-engine of the present day. We would like also to compare the bright steel blades of the Ames' shovel, as shown to-day, with one of the old tools which, 40 years ago, the writer was accustomed to see the present millionaire turning out with his own hands—his father working in the shop by his side.

One hundred years ago there were but two steam engines in the United States—one of which was running a small pump in a brewery in Philadelphia and the other pumping water from a shallow copper mine, just across the river, in New Jersey. What more interesting sight could have been shown than the intermediate steps by which these primitive machines have been gradually developed into the magnificent Corliss engine, which now stands out so prominently in machinery hall as one of the mechanical marvels of the day.

The First Locomotives in America.

The few pieces of antiquated machinery which are shown at the Centennial are just sufficient to create a desire for a more general exhibition of that character. Near the English exhibit, in machinery hall, there are several pieces of old iron, which the ordinary visitor would suppose were thrown aside for transportation to the junk shop, but which the more careful observer learns, from the label attached, are sacred relics, and all that remains of the first locomotive ever placed upon a railroad in America, called the *Stourbridge Lion*, built in England and placed upon the Delaware and Hudson railroad on the 8th of August, 1829, at Honesdale, Pa. What remains of this interesting relic are four tires and two hollow iron beams, the use of which latter, about a locomotive, would be difficult for any modern engineer to divine. In the engineering department, in the front gallery of the main building, is also shown the original drawing of the first American built locomotive ever put together, and which was first run on the Charleston and Augusta road, in South Carolina, on the 25th day of December, 1830. It was called the *Best Friend of Charleston*. The second built American locomotive, the *West Point*, was placed upon the same road on the 5th of March, 1831, less than three months later, at which time and place the writer of this letter was present. The wonderful progress that has been made in perfecting the locomotive and in advancing transportation facilities during the 45 years that have intervened since the dates above given, are among the marvels of the age.

Relics of Early Steamboat Experiments.

Near by the drawing above alluded to, in the gallery of the main building, may be seen the original boiler and twin screws built and operated by Stevens; also a second pair of screws, subsequently experimented with on a somewhat larger scale. They were mere models in size, designed for propelling nothing larger than an ordinary sized sailboat. There is also shown, in immediate connection, the remains of what we believe was one of Fulton's small boilers, used in his early experiments. These relics possess an interest of no ordinary magnitude to the engineer and student, and we think they will be preserved to grace the next Centennial, when, perhaps, even steam itself will have been superseded by some more potent or convenient motor.

Other Relics.

The first steam fire engine ever constructed is shown in the main building. Franklin's printing press—the one on which he is said to have worked in London—is also shown in the same building, and in the department devoted to the exhibition of printing presses and material. This department comprises one of the most interesting and instructive exhibitions shown, from the fact that by it the visitors may trace all the steps of progress from the old "Ramage" through all the various kinds of hand and power presses up to those marvels of perfection, the American Bullock and the English Walter press.

In the agricultural building we have also a few relics illustrative of the progress which has been made in the construction of agricultural implements. We have an old plow from Killingworth, Conn., said to be 120 years old, at least. The handles are made of roots formed by nature in the proper shape for such purpose. The mold board is of wood with an iron point. This plow was once used to turn up the virgin soil of old Connecticut; but is now preserved with the greatest care as a remarkable relic of the past. Another plow with a peculiarly elongated wooden mold board is shown bearing the date of 1776; and still another very ancient one from Ohio. These ancient relics of the olden time present a marked and interesting contrast with the polished steel blades and elegant woodwork of the modern instruments which are shown by their side. A similar exhibition in connection with other agricultural implements would have formed a most interesting and instructive study.

Among the relics of more modern days is a plow said to have been made on Daniel Webster's old farm at Franklin, N. H., and under the personal supervision of the great Granger-statesman himself.

Remington exhibits, in connection with his show of fire arms, the first breech-loading rifle ever made in the United States. It was made at Harper's Ferry in 1826. It is a "flint lock;" the chamber being raised by a spring, and hinged at the hind end. The cap is raised from the pan and the piece primed in the old way. This weapon is exhibited as the intermediate step in the manufacture of fire arms between the old flint lock musket and the modern breech-loaders and revolvers.

The Centennial System of Awards.

Another peculiarity in which the American Centennial differs from all previous international exhibitions is in the system of awards which has been adopted. It has been urged, heretofore, that the prizes and awards were too cheap; that the wish to be popular and not give offence has prompted the managers to bestow many medals that were not deserved, and which were conferred in classes whose preeminence had been taken on merit, but were considered vitiated by the repetition and multiplication of honors bestowed where there was no display to deserve them. At the Centennial there are to be no medals awarded. The substitute therefor and the general plan of awards is given in a report of the Executive Committee as follows:

"Awards have generally been made by an international jury of 600 members. The apportionment of jurors to countries was tried on various bases, but was usually made on the basis of relative space occupied by products of each country respectively in the exhibition. The great jury was divided into numerous small juries, who examined the products and prepared lists of names of persons whom they proposed for awards, and the proposals thus made were confirmed or rejected by higher juries. This system brought together, unavoidably, many individuals unqualified for the work. The basis of representation was apparently fair, but its results were delusive. The countries nearest the exhibition occupied the largest space. Numerous remote countries filled smaller spaces. The number of jurors allotted to the latter body left them in many instances without jurors on many classes, and thus in voting on awards they had no voice, and the awards were in effect decreed by the few contiguous countries. Written reports were not usually made by juries, and if made, were not printed, consequently no person outside the jury knew on what grounds awards were made. Medals, when distributed, were silent verdicts, and awards thus made conveyed little useful information. Awards were based upon anonymous reports or reports not published, and final decisions were recorded in vague and mystic language not satisfactory to producers or the public.

"The method of awards adopted by the Centennial commission differs from this system. It dispenses with the international jury, and substitutes a body of 200 judges, one-half foreign, chosen individually for high qualifications. It dispenses also with the system of awards by graduated medals, and requires of the judges written reports on the inherent and comparative merits of each product thought worthy of award, setting forth its properties and qualities and presenting the considerations forming the ground of the award. Each report must have the signature of its author. The professional judgment and moral responsibility of the judges being thus involved, the integrity of the reports is assured. The success of this method absolutely depends upon the judicious selection of judges." W. B. E.

SOUTHERN UTAH.—A correspondent of the Salt Lake *Tribune* says: Star, San Francisco and Bradshaw districts are now making every effort and will, no doubt, shortly command the attention of the great mining companies of the world. The steady increase of bullion of a high grade, which is now being shipped from the Shumar smelter, is a sure criterion to go by. Since last winter, regardless of bad roads, the want of coal and other materials to run, this smelter has turned out nearly 2,000 tons of bullion, which will assay from 170 to 200 ounces silver per ton. Refractory ores have been worked successfully under the skillful management of Mr. Harting, and he has truly made a great success in this district.

CALIFORNIA GRAPES AT THE CENTENNIAL.—From October 10th to 14th is the period especially designated by the Commission for the display of grapes at the Centennial; and as California can easily excel every other locality in the Union, if not in the world, with this particular fruit, her large grape growers should make their calculations in good time so as to make a large and expressive exhibit of this luxury for which their vineyards are so celebrated. The Golden State has not, thus far, particularly distinguished herself at Philadelphia, even in her specialty of precious metals; but she will have an opportunity to redeem her character during the grape display, a month before the Centennial closes.

MECHANICAL PROGRESS.

Fac-Simile Telegraphy.

The one thing wanted in telegraphy by which a meseage may be practically transmitted over a wire and appear at the distant terminus in the *exact handwriting of the sender*, has at last been accomplished by an American electrician, Mr. W. E. Sawyer. The field opened to the telegraphic world by this invention is almost without limit. The instruments are wonderfully simple in construction and easily comprehended. The system is capable of transmitting over a single wire from 50 to 150 words per minute, against a possible 30 or 40 by the Morse system, which is that now in common use. But by this system a person's own handwriting is transmitted by telegraph the same as though sent by mail, and, in brief, simply accomplishes letter writing by telegraph. In order to render its operation fully understood it may be described as follows:

First, the sender of the message writes it upon ordinary white paper; the written message is then laid upon a metallic plate and passed between two rollers, with the effect of transferring the copy to the plate, which may be done any time within ten hours after writing. Then the plate containing the copy is placed upon a semi-cylindrical holder which traverses the little track, and the instrument is set in motion, the whole operation up to this point having been accomplished in less time than it takes to write it; whereas, by the Morse system, quite a number of minutes elapse before the message reaches the operator. The metallic plate is a conductor of electricity, while the lines of writing are non-conductors. Over the cylindrical plate are carried metallic points upon revolving arms; whenever the point is upon the metallic surface, the electric current passes through to the wire; the instant the point touches a line of writing, the connection is broken and a dot is made upon chemically prepared paper, placed upon a similar instrument at the receiving point. The two instruments operate synchronously—i.e., the moment a point is passing over the surface of one instrument, it is followed exactly by the point on the other instrument. An ingenious mechanical arrangement perfects the transmitting powers and prevents the possibility of one instrument gaining over the other. At the same time the points are moving over its surface, the plate is moved slowly horizontally, so that the entire surface is traversed. The transferred message is, of course, in reverse, but is brought straight by running the receiving instrument in an opposite direction. Each instrument is fitted to either receive or transmit, at pleasure. The rate of speed varies according to the closeness of the writing; the pointe traversing the entire surface of the copy, it is immaterial as to the number of words, only the space they occupy requiring a given time to be gone over. Ordinary writing will be transmitted at the rate of from 50 to 100 words per minute.

The message, as received, is ready at once for delivery, and appears in close, dark blue dotted lines, on white paper. There is no loss of time in counting the words at the sending station, as is now the case, nor delay in getting to the hand of the operator; but, in a quarter of a minute's time from its being received, it is silently speeding its way to its destination, and automatically preparing itself for delivery. The wonderful facilities of the system render it peculiarly adapted to a large and hurried business. It is the fruit of many years' close application, hence the perfection with which it makes its appearance.

The writer of a message is, of course, as usual, supplied with blanks. In the system proposed—and which is now being perfected by the company already formed to utilize this great invention—for whatever may be written upon the blank he will pay an invariable sum of money, if under 250 miles; if over, double that amount in stamps, to be furnished by the company, and used the same as postage stamps. Whatever is written upon the blank, whether five words or 50, will be sent for the same amount. It is so much blank passing through the instruments, and no cognizance is taken of its contents.

A company called "The United States Postal Telegraph company" has been incorporated under the laws of the State of New York for the purpose of constructing lines and operating under the letters-patent granted to Mr. Sawyer. —*Boston Journal of Commerce.*

JUMPING THE TRACK.—To prevent the accidents to which railroad trains are liable from one car jumping the track, the plan has been devised of applying to cars a kind of shoe, consisting of a clamp-like arrangement which is affixed between the wheels of each truck. This runs about two inches from the rail, and if any thing happens tending to throw the wheels from the track, the clamp at once grasps the rails, holds the car on the track, and brings the train to a speedy halt. Such a shoe will, it is claimed, prove a great saving of railroad rolling stock, and add greatly to the strength of the truck, it being constructed of iron, and weighing some 500 pounds. Experiments made with cars provided with this device, show that the arrangement accomplishes very effectively the object in view, and it is estimated that on account of the additional strength thus imparted to the car, it must last much longer.

Dullness in English Ship-Building.

The London *Iron* notes much depression in the great ship-building port of Great Britain. It says: As the months roll onward, the amount of work in the ship-building yards and marine engineering establishments of the Clyde becomes rapidly diminished, and there is no saying when there will be any improvement to record. Compared with the condition of the two staple trades of the Clyde three or four years ago, or even more recently, that into which they have now passed is one that is exciting a very great amount of anxiety and even despondency in the minds of those most interested. To the outside world, however, the fact of the very dull state of the ship-building industry does not seem of itself to be at all abnormal, inasmuch as almost all other leading branches of industry are in a similarly depressed state.

Somewhere about 30 vessels of various sizes and kinds were launched last month, but exceedingly few orders were booked to build new vessels on the stocks thus left vacant; indeed, the past month has been one of the least fertile on record in bringing out new contracts, and those that have been booked are of comparatively little importance. In ordinary times there was rarely ever a storm at sea but what was shortly afterwards followed by a number of orders for new vessels to replace those lost in the storm, but now there is a totally different condition of things. During the month of March there were 115 sailing vessels lost, of which nearly 50 were owned in the United Kingdom, and 15 steamers, of which more than one-half were British; but the rule now with regard to the replacement of such vessels is to purchase others that have already seen service, but for which remunerative freights cannot possibly be obtained, or such as have been built on speculation and are lying idle in the hands of the builders. There are still a few yards that are tolerably well occupied with vessels in progress, but in other instances, unless fresh orders come to hand in the interim, the month of September will bring about a complete clearance. Certainly there does not seem any prospect of orders coming to hand, as the ocean-carrying trade is at an exceedingly low ebb.

DECISION ON A MECHANICS' LIEN.—A decision rendered by the United States circuit court at Davenport, Iowa, a few days since, in the case of the Delaware Railroad Construction company vs. the Davenport and St. Paul railroad, and involving some $300,000, possesses much interest. It appears to settle, so far as that particular court is concerned, one feature, at least, of the vexed question of mechanics' liens, and in favor of bondholders as against parties constructing a road. In the case mentioned, the construction company claimed a mechanics' lien on 25 miles of road, for work performed, and judgment had been rendered in their favor by the court below, and the road had been sold to satisfy the judgment. The United States circuit court, to which the case was appealed, decides that a mortgage to secure the payment of bonds takes priority of all mechanics' liens, and, as we are informed, in this case, also, holds that the construction company having accepted securities in the shape of town subscriptions along the line of the road, is by that act also shut out from all right to a mechanics' lien. The case will be taken up to the supreme court of the United States.—*Railway Age.*

SPANISH SWORDS.—During the visit of the Prince of Wales to Madrid he was shown the Fabrica de Armas, where are manufactured the far-famed Toledan blades, which are as celebrated as those of Damascus. This manufactory is on the banks of the Tagus, and was built and fitted up with forges in 1788 to 1798. Here all the bayonets and swords for the Spanish army are made of steel so finely tempered that the sword can be bent almost into a curve without snapping. The Prince of Wales seemed especially pleased with this *fabrica*, where His Royal Highness proved some of the blades and warmly praised their workmanship. The Prince took away a sabre and some other specimens, and one piece of steel, to show its metal, was absolutely bent into the form of an 8. The sword, or rather rapier, now being made at Toledo for General Stanchez Bregna, as a present from the citizens of Madrid, was then shown to the Prince. It is a most elaborate work of art, perfect in finish and metal, and was greatly admired.

NOVEL SKATING RINK.—A skating rink of highly polished white marble, and 18,000 square feet in extent is being laid down in the suggestive vicinity of the Orphanage, Clapham road. A fall upon asphalte is bad enough, but nothing to the cropper which an awkward or unlucky tinker would catch upon a marble slab. It is announced that the usual refreshment rooms will be provided; the addition of a well-furnished surgery would be a no less suitable provision.—*Iron.*

ETCHING ON METAL.—The *Metallarbeiter* recommends etching with a preparation of 250 grammes of perchloride of iron, which is allowed to slowly decompose in half a litre of water. The advantage of this preparation is that it has an effect on metals of all sorts without giving off noxious vapors. The object will need constant cleaning with a brush. The solution is rectified with oxide of iron when choked with metal, the etched ground is cleaned with turpentine.

SCIENTIFIC PROGRESS.

Insects and Plants.

In the Philadelphia papers we note full reports of a recent discussion before the Academy of Natural Sciences on the question of cross-fertilization by insect agency, between Mr. Thomas Meehan and Professor Asa Gray. Mr. Meehan remarked that there was no doubt that some plants have flowers which, so far as we at present know, are incapable of self-fertilization and are fertilized only by the agency of insects; but he differed from his friend as to the extent to which these facts prevail and in the interpretation of the facts. A large number of flowers are fertilized by their own pollen that are claimed as illustrations of the other view, and he did not know how far these errors had prevailed; and then he thought that the fact was patent that self-fertilizers had maintained their hold and fought their way through the world and through the ages as well as or better than those which exhibit what is claimed as a "horror of close breeding." Scrophularia had been so claimed; but *S. canina* was a fertilizer. The anthers were folded back in the corolla and one by one straightened out, carrying the anther to the apex of the pistil, where the pollen was ejected. The pollen was of a beautiful orange color, and it could be seen by the naked eye alone that none of the stigmas had pollen till they received it each from its own flower. Referring to the dandelion, he said the pistil grew through the mass of pollen, carrying a quantity with it. Reaching its maximum growth, the pistil curved, making a "pot-hook," then cleaving at the apex first on the upper side, spread its lobes out in finally opposite curved arms, its own pollen falling in at this first cleaving of the apex. Ox-eye daisy is a similar but still more easy way, self-fertilized. Independent of this, he urged that in many localities where sweet flowers were abundant winged insects did not visit these two flowers to any extent. In his vicinity, for instance, he had never seen any on these two species. He made the point that, even though one composite flower was fertilized by another in the same head, he thought that physiologically flowers side by side in a composite head were as much brother and sister as anything that could be brought up from higher life. The physiological value of such cross-fertilization, he thought, must be drawn to a very fine point. As regards the red clover, which is said to have such nice arrangements for cross-fertilization, even to the exclusion of the honey-bee and for the exclusive use of the humble bee. Mr. Meehan said the humble-bee did not enter the mouth at all, but collected the honey by slitting the tube from the outside. Professor Gray replied to Mr. Meehan that when he spoke of Scrophularia, in "How Plants Behave," he had reference to *S. nodosa;* and he described how he understood that species to act when in flower, and was sure, from that behavior, that that species could not fertilize itself. The facts pointed out by Mr. M in *S. canina* were in some respects new to him; but he felt sure that a careful examination would show his friend to be wrong, and that it did not fertilize itself. In regard to dandelion, numerous insects visited it, near him; and, though he would not say it might not occasionally fertilize itself, he was sure it had to be in most cases fertilized from other flowers in order to seed. And he had no doubt that was true of ox-eye daisy also. Clover he said he had never examined critically himself, with a view to its bearing on these questions; but he would do so the coming summer.

New Rays of Calcium.

Mr. Lockyer, in a letter to M. Domas, says: I have recently carried out a series of experiments upon calcium, employing at first a small battery and a small coil, and afterwards a large battery and a larger coil, and to avoid all doubts I photographed the results. I found that with the small coil I was able to obtain a photograph which only contained the ray in the blue, without any trace of the ray in the violet; and with the largest battery and the largest coil I obtained a photograph containing the rays of the violet without any trace of the ray in the blue, and that by varying the surface of the battery I was able to get a spectrum resembling the absorption-spectrum of calcium in the sun.

These results agree so completely with those of the dissociation of a salt of calcium that I have asked myself the question if we have not here before us a dissociation of the calcium itself. Naturally we are unable to determine, for the present, whether we have a lower molecular group of calcium, or whether the calcium itself is a compound of two distinct subelements, if the expression may be used. It seems that we can only undertake to solve this question by photographing the rays of the calcium (H_1 H_2) in different stars. If we find that they present always the same relative breadth and intensity there will be a strong presumption that we have met with a decomposition of calcium, or, in other terms, we shall have shown that a spectrum of rays is a spectrum due to different orders of molecular groping. If, on the other hand, we find that these lines vary in breadth and in intensity, it will be difficult to explain this phenomenon except we admit that calcium, instead of being an element, is really composed of two substances.—*Comptes Rendus.*

Science in Schools.

A few weeks ago Professor Huxley delivered a lecture on the method of teaching science in schools to the Edinburgh local branch of the Educational Institute of Scotland, in the Watt Institution, Chambers street, Edinburgh. Mr. Manrice Patterson presided, and there was a large audience. Professor Huxley commenced by showing how teaching of science was carried out when the object of the teacher was simply to teach science, and when he was embarrassed by no other consideration. The system of teaching science, like all wholesome things, had grown out of practical necessities. In almost all cases science was an outcome of all art. People had begun to feel the necessity of systematizing the rules of the art, and for developing them to their farthest extent, and those rules had become what we now termed science. This was eminently the case with the science the teaching of which first became properly organized—the science of anatomy. They must not trust to the teaching merely, and to the advantage gained from its being supplemented by books or aided by diagrams. In order to have the kind of knowledge which was real, and could he depended upon, it must be acquired by the person taught going over the matter which he had to know for himself, and learning it at first hand. To this end were dissecting-rooms established, where the student himself verified what he had been told. Scientific teaching was in a great measure the acquainting the man with the laws which govern the phenomena of nature; but, in addition to this, there was about it the value of educational discipline. The first importance of its value in this sense was the fact that it cultivated the faculty of observation. He knew of no pursuit which was so competent to conduce to culture as science. The tide in favor of the introduction of science into schools was flowing as fast as it could, and if those who opposed themselves to it did not get out of the way they would be swept away. The extent to which they might carry this teaching of science would, of course, depend entirely upon the time allowed. He would be quite content with an hour. In conclusion, he observed it was most necessary that the person who teaches should know what he was teaching.

A New Tanning Process.

A joint stock company was formed in Detroit in March last, with a capital of $100,000, for the purpose of manufacturing leather by a new process invented by a tanner named Richter, and already about 3,000 hides have been turned out. The leather is represented to be soft and flexible, and when manufactured into shoes one upper wears out two or three soles. The process does in two to six weeks what the old process requires six months to one year to accomplish. Under the old process the hide lies in the vat with the bark for many months, the longer the better, gaining firmness and strength with the lapse of time. By this process the tanning is done in an hour, and all the time spent is that required for carrying and dressing. The process is a chemical one, performed by the action of certain inexpressive chemical materials, the composing of which in the right proportions is a secret. Hides, tanned with the hair on, are soft as the finest wool; hides of the deer, horse, dog, etc., are smooth and soft, while calf and kip show the texture and grain which good shoemakers most admire. Another great advantage is the economy of the process, no bark being required, except a little to give the proper color to the leather. Bark is worth eight to nine dollars a cord, and about 200 cords are required to tan 1,000 hides by the common method. Two cords would be sufficient to give the proper color to the same number of hides, and the saving in this item will be enormous. The Detroit works, with a force of 15 men are turning out from two to three thousand hides per month.—*American Manufacturer.*

PHOTOGRAPHIC MAPS.—At a meeting of the Edinburgh Photographic Society, Mr R. H. Bow read a paper on "Small-scale Maps for Tourists." The reader remarked that the tourist whom he had in view was one who judiciously combined pedestrianism with the use of the abundant means of rapid conveyance from one district to another. To such a one, well informed of what he should see, and when and where to look for it, a good map was indispensable. His difficulties and discomforts in using a folding map were often so many that rather than open it he would allow himself to pass unheeded places of interest along his route. This could be changed, as by means of photography all that a map contained could be put into the compass of one or two pages of a guide book. It did not appear to him unreasonable to expect that the ordnance survey maps might be reduced to a scale of four or five inches to the mile, so as to comprise in one page of portable size the sheet measuring in its original form 24 by 18 inches for the real map work. Mr. Bow mentioned that the Typographic Etching company had been endeavoring to carry out his notions in this respect. He showed specimens of the work done for him by that company, and also a copy of No. 25 of the ordnance survey maps, in which the scale was reduced to nine and one-half miles to the inch. In this latter the word "station," near Melrose, was only one-fortieth of an inch, and the hight of the letters one three hundred and fiftieth of an inch or less, and judging from the distinctness it was evident that lettering one five hundredth of an inch in high could be legible under a cheap lens.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to June 22.		1 W'k to June 29.		1 W'k to July 6.		1 W'k to July 13.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	.....	.....	.....	.....	.....	.....	.....	.....
Advance	.....	.....	.....	.....	.....	.....	.....	.....
Alpha	52	44	47½	46	48½	47½	47	38½
Alta	3	.....	.....	.....	.....	.....	.....	.....
Amer'n Flag	.....	.....	.....	.....	.....	.....	.....	.....
Amer'n Flat	.....	.....	.....	.....	.....	.....	.....	.....
Andes	2½	2½	2½	2½	2½	.....	2½	2½
Alpa	1⅜	1½	1⅜	1⅜	1⅞	1⅜	1⅜	1½
Amazon	55c	50c	.....	.....	.....	.....	.....	.....
Balt'm'e Con	1½	1	1½	1¼	.....	.....	1½	1½
Belcher	17	16	17½	15½	18	17½	18¾	17½
Belmont	2⅞	2⅜	2⅝	2⅜	2½	.....	2⅝	2⅜
Best & Bel	49	46	48¾	45½	47½	43½	44¾	39½
Buckeye	.....	.....	.....	.....	.....	.....	.....	.....
Bullion	42	37½	46	43	44	.....	44	40
Caledonia	8½	7½	8½	8	.....	.....	7⅞	7
California	76	70	75½	72¾	74	68½	70¾	64¾
Challenge	4½	.....	.....	.....	.....	.....	4¾	4
Chollar-P'tsi	.....	.....	81	74	80	72	.....	.....
Confidence	18	17	18¼	17	18¼	.....	17	16¾
Con Imperial	6¾	5½	6⅝	6	6⅝	5¾	6	5¼
Con Virginia	64½	56¾	67	60	66½	50½	52	46
Crown Point	10¾	9¾	10½	9¾	10½	9⅞	10	8½
Coso Con	20c	15c	35c	25c	.....	.....	65c	50c
Davey	.....	.....	.....	.....	.....	.....	.....	.....
Dayton	5	.....	5	.....	.....	.....	4¾	4½
Eclipse	.....	.....	.....	.....	.....	.....	.....	.....
Empire (Id)	.....	.....	.....	.....	.....	.....	.....	.....
Eureka(G V)	.....	.....	.....	.....	.....	.....	.....	.....
Eureka Con	11¾	11	16¼	10¼	13¼	.....	12¾	10¾
Exchequer	17	15	16½	16	18½	16½	16½	14½
Europa	.....	.....	.....	.....	.....	.....	.....	.....
Gila	75c	.....	.....	75c	.....	.....	87½c	50c
Globe Con	.....	.....	.....	.....	.....	.....	.....	.....
Golden Char	2¾	2½	2¾	2½	1½	.....	1	37½c
Gould & Cur	16¾	14	16¾	15	15¾	15½	15	13¾
Hale & Nor	10¾	8¾	10¾	9	9¾	9	9¼	9
Ida Elimore	.....	.....	.....	.....	.....	.....	.....	.....
Jefferson	1	75c	1⅛	1	.....	.....	1	.....
Julia	9	7½	8¾	7¾	8¼	.....	8	5½
Justice	23	21	25¾	22	23	22½	23¾	20¾
Jackson	4	3½	4	4	4½	.....	4	3
K K Con	.....	.....	.....	.....	.....	.....	.....	.....
Kentuck	13½	12¾	12⅞	12¼	13	.....	13	10
Kinkerh'k'r	.....	.....	.....	.....	.....	.....	25c	.....
Kossuth	90c	75c	87½c	50c	1⅛	.....	1½	1¼
Lady Bryan	40c	20c	80c	10c	75c	62½c	75c	70c
Lady Wash	2½	2¼	2¾	2½	.....	.....	2½	2¼
Leo	.....	.....	.....	.....	.....	.....	.....	.....
Leopard	7¼	6¾	7¼	6¾	7¼	.....	8¼	7¼
Leviathan	60c	10c	.....	.....	75c	.....	73c	70c
Mahogany	.....	.....	.....	.....	.....	.....	.....	.....
Mansfield	37½c	25c	30c	.....	.....	.....	.....	.....
Meadow V'y	1¾	1¾	.....	.....	1¾	.....	1¾	1
Mexican	20¾	24	29¾	27¾	30¾	28¾	30	25
Midas	.....	.....	.....	.....	.....	.....	.....	.....
Mint	.....	.....	.....	20c	.....	.....	.....	.....
Monitor-Bel	.....	.....	.....	.....	.....	.....	.....	.....
Newark	.....	.....	.....	.....	.....	.....	.....	.....
New York	75c	50c	87½c	75c	87½c	75c	87½c	75c
Niagara	.....	.....	.....	.....	.....	.....	.....	.....
Northn Belle	45	40	42	37	37	36	37	32
New Coso	1¼	1⅛	2	1¼	2¼	2	2¼	2¼
Occidental	4½	2½	3¼	.....	.....	.....	3¾	3½
Ophir	52½	46	51⅝	48	52	47¾	48¾	45
Or Gold Hill	.....	.....	.....	.....	.....	.....	.....	.....
Overman	65¾	53½	64	57	66	63½	65	60
Pacific	.....	.....	.....	.....	.....	.....	.....	.....
Phil Sheridn	1¼	1	1¼	1	.....	.....	1¼	.....
Phoebe	.....	.....	.....	.....	.....	.....	.....	.....
Poorman	60c	10c	65c	60c	60c	.....	30c	25c
Prospect	7¼	7	7	6¾	6	.....	6	5¾
Prussian	.....	.....	.....	.....	.....	.....	1	75c
Ray & Ely	9½	8	9	8	9	.....	10	8½
Rock Island	1½	.....	1½	.....	.....	.....	1	1¼
Rye Patch	.....	.....	.....	.....	.....	.....	.....	.....
Sevave	19¾	16¾	23	18¾	21	19	20¾	17
Seg Belcher	71	70	75	74	72½	.....	70	67
Sierra Nev'da	12½	9¾	14¼	13	14¾	14	14	13¾
Silver Hill	3	6⅝	.....	.....	.....	.....	7½	7
8th Chariot	2½	.....	40c	.....	37½c	.....	82½c	.....
Succor	50c	45c	62½c	40c	50c	.....	.....	.....
Union Con	11¾	9¾	11⅝	10¼	11¾	10¾	11⅞	10¼
Utah	19½	10	17	9⅜	.....	.....	15	15¾
Wells-Fargo	20c	15c	20c	19c	20c	.....	15c	.....
Woodville	1¼	1	1¼	1	.....	.....	1¼	.....
Yel'w Jacket	31¼	29	32½	29½	31¼	29½	30	27¼

Sales at S. F. Stock Exchange.

FRIDAY, A. M., JULY 7.

100 Andes.....2¾
275 Alpha.....4¼
1045 Best & Belcher.....44@44½
230 Belcher.....18@18¾
4645 Con Imperial.....5¾@5⅞
2110 Con Virginie.....51¾@52
1535 California.....70@70⅝
75 O Point.....8
15 Chollar.....75
25 Confidence.....17½
10 Challenge.....4¼
600 Colombia.....50c
305 Exchequer.....16½@16¾
1035 Hale & Nor.....9¼@9⅜
310 Justice.....23¾@23¾
600 Julia.....8
2535 Kentuck.....7@7⅝
145 Lady Bryan.....7@75c
350 Lady Wash.....2½
50 Leviathan.....75c
200 Morning Star.....8
200 Mexican.....28@28½
305 New York.....87½@87½c
615 Ophir.....47@48¼
310 Overman.....61½@66
110 Occidental.....3¾@3¾
50 Savage.....20¾@20¾
175 Sierra Nevada.....14¼@14¾
300 Union.....11@11¾
50 Utah.....18
100 Wells-Fargo.....14c
50 Woodville.....1¼
800 Yellow Jacket.....29¾@30

AFTERNOON SESSION.

115 Belcher.....18¼@18¾
170 Best & Bel.....44¾@44½
300 Con Imperial.....6@5⅞
1260 California.....70¾@71
1710 Coso Con.....60@85c
1230 Chollar.....73
260 Eureka Con.....12½
475 Gila.....87½@91
450 Gen Thomas.....3¾@3¼
1000 Gen Cheriot.....3¾
30 Hale & Nor.....9¼@9¾
100 Hussey.....75c
100 Jackson.....4
50 Justice.....22½@22¾
65 Julia.....8
215 Leopard.....8
150 Mexican.....2½@24⅝
400 Meadow Valley.....1¾
50 New Coso.....22c
95 Northern Belle.....35½@37
20 Overman.....65
200 Panther.....1¾
200 Poorman.....20c
20 Ray & Ely.....10
110 Savage.....20¾@20½
600 Tyho.....12½
130 Un Con.....11@11½
225 Woodville.....1¼@1
210 Yellow Jacket.....30@30¾

SATURDAY, A. M., JULY 8.

510 Alpha.....45@43½
30 Andes.....2¾@2¾
465 Best & Belcher.....43¾@43
145 Belcher.....18½@19½
50 Baltimore Con.....1¾
2005 California.....68@68½
70 Chollar.....75
15 Champollion.....35c
2585 Con Imperial.....5¾
140 Crown Point.....9¾@9¾
3455 Con Virginia.....49½@48
440 Exchequer.....15¾@16
255 Eureka Con.....13@12¾
1015 Gould & Curry.....14½@15
305 Hale & Norcross.....9¾@9
605 Justice.....21¾@22
35 Julia.....8@8⅞
385 Kentuck.....12¾@12½
590 Lady Bryan.....70c
270 Savage.....18½@18¾
100 Tyho.....12
320 Union.....10¾@10⅝
130 Woodville.....1⅛@1¼
100 Wells-Fargo.....15c
115 Ward.....1½
1015 Yellow Jacket.....28@27½

TUESDAY, A. M., JULY 11.

425 Alpha.....42@43
25 Best & Belcher.....42¾@43¼
890 Baltimore Con.....1½
610 Belcher.....18¼@18
20 Bullion.....44
125 Choller.....7½@7⅝
1200 Con Virginia.....47¾@47⅝
310 Caledonia.....7¼@7½
2455 Con Imperial.....5½@5⅝
225 Challenge.....4
20 Confidence.....18
509 Crown Point.....9¾@9⅝
975 California.....68¾@67¾
610 Exchequer.....15¼@15½
640 Gould & Curry.....14¾@14⅝
100 Globe.....1
520 Hale & Nor.....9¼@9½
765 Justice.....21¾@21½
1440 Julia.....7@7½
10 Kentuck.....11½
355 Kinkerbocker.....50c
250 Levia than.....70c
260 Lady Wash.....2¼@2⅜
1700 Mexican.....27¾@28⅜
100 Morning Star.....8
100 North Carson.....75c
540 Overman.....62@63
310 Ophir.....46@47
50 Prospect.....5¾@6
320 Rock Island.....1⅝
265 Savage.....19¼@19¾
630 Sierra Nevada.....13¾@14
10 Seg Belcher.....68
350 Silver Hill.....7¾
80 Succor.....75c
140 Union.....11¾@10⅞
225 Virginia.....2¾
150 Ward.....1½@1⅝
100 Woodville.....1
680 Yellow Jacket.....28¾@28½

AFTERNOON SESSION.

285 Alpha.....42@43
60 Belmont.....2¾
100 Best & Belcher.....42¾@43
560 Con Virginie.....49@48¾
340 California.....67¾@63
200 Con Imperial.....5¾@5⅝
100 Crown Point.....10
1350 Coso Con.....62½@55c
30 Exchequer.....15¼
610 Eureka Con.....12½@12¾
400 Gen Thomas.....3¼
565 Gould & Curry.....14¾@14⅝
200 Gould & Curry.....14¾@14¾
650 Gila.....37½@62½c
60 Hale & Norcross.....9¼
490 Julia.....8
305 Justice.....21½
50 Jefferson.....1
290 Leopard.....7¼@7½
7.0 Mexican.....28@27¾
420 Modoc.....1
100 Mansfield.....30c
300 Meadow Valley.....1
330 Northn Belle.....36@34
190 New Coso.....21½@22
1 0 Ophir.....48¾@48½
369 Justice.....22¾@23
210 Julia.....7⅞@7¾
50 Kentuck.....12
50 Kossuth.....1¼
515 Lady Bryan.....62½@75c
890 Mexican.....28¾@28⅝
30 New York.....75c
385 Ophir.....48¾@48½
465 Overman.....66@65
230 Savage.....20½@21
75 Succor.....60c
55 Sierra Nevada.....14
20 Seg Belcher.....71
50 Utah.....20
185 Union.....10¾@10⅝
775 Yellow Jacket...30@29¾

AFTERNOON SESSION.

225 Alps.....1⅞@1⅝
125 Alpha.....47@48½
50 Belmont.....2¾
315 Best & Belcher.....43½@45
2.20 Con Virginia.....50½@51
1130 California.....68¾@68¾
550 Coso Con.....55@60c
100 Crown Point.....10
230 Con Imperial.....5¾@5¾
75 Eureka Con.....13
260 Exchequer.....17@16¾
300 Gen Thomas.....3¾
165 Gould & Curry.....15½@15¾
160 G Chariot.....10½
400 Bussey.....75@80c
610 Hale & Norcross.....9¼@9¾
50 Jackson.....4
175 Justice.....22½@22¾
50 Meadow Valley.....1¾
135 Mexican.....28¾@29
60 Northern Belle.....38@37
110 Leopard.....7¾@7¾
100 Metallic.....1
160 Modoc.....1¾
300 New Coso.....2@1¾
9 Ophir.....50¾@50
100 Panther.....1¾
50 Poorman.....60c
50 Ray & Ely.....8¾
70 Savage.....19¾
145 Sierra Nevada.....13¾@13¾
330 Yellow Jacket..31¼@31½
65 Sierra Nevada.....13¾
180 Savage.....19¾
180 Union.....11¼
5 Utah.....19
370 Yellow Jacket.....28½

WED'SDAY, A.M., JULY 12.

940 Alpha.....40@39¼
355 Belcher.....18@17½
555 Best & Belcher.....46¾@40
125 Bullion.....44@41
95 Chollar.....72@75
10 Confidence.....16½
2295 Con Virginia.....46@46½
650 Crown Point.....9
155 California.....66¾@66
8135 Con Imperial.....6¼@5⅝
270 Exchequer.....11¾
330 G & Curry.....14@13⅝
810 Hale & Nor.....9½@9¾
240 Julia.....7¾@8
365 Justice.....21¾@21
145 Kentuck.....11@10
500 Lady Bryan.....70c
1090 Mexican.....27¾@28
495 Overman.....45@45¾
495 Gverman.....62@63
425 Savage.....18@18¾
240 Sierra Nevada..13¾@13¾
30 Succor.....60c
10 Seg Belcher.....63
210 Utah.....16¾@16
680 Union Con.....10¾@11¼
920 Yellow Jecket.....27½@27¾

AFTERNOON SESSION.

5 Alpha.....3⅜
60 Alta.....2
15 Andes.....2¾
300 Alps.....1½@1⅝
15 Belmont.....2¾
35 Best & Bel.....41@40½
450 Belcher.....17¾@17¾
1000 Baltimore Con.....1¾
390 Cosmopolitan.....35c
105 Con Imperial.....5½@5¾
650 Con Virginia.....46¾@46¾
2050 Coso Con.....62½@55c
15 Chollar.....73@74
165 Eureka Con.....12½@12
625 Gen Thomas.....3¼@3⅜
50 Gould & Curry.....14¾@14¾
100 Julia.....8¼
100 Jefferson.....1
150 Jackson.....3¾@3¾
100 Justice.....20¾@20¾
250 Kossuth.....1½@1¾
325 Leopard.....7½@8¼
250 Leviathan.....70c
750 Mansfield.....32½@31c
1000 Meadow Valley.....1¾
325 Northern Belle.....33@32
400 North Carson.....25c
1150 Nth Con Va.....75c
20 Occidental.....3¾
100 Ophir.....45¾
75 Prnssian.....75c
160 Prospect.....5¾
30 Raymond & Ely.....8½
500 Rock Island.....1⅝
100 Silver Hill.....7¾
275 Savage.....18½@18
100 Union Con.....11¾@11¼
200 Virginia.....1¾
150 Woodville.....1¼
220 Ward.....1¾
340 Yellow Jacket.....27¾

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., JULY 6.

165 Alpha.....46¾@47½
930 Best & Belcher.....45@45¾
70 Belcher.....17¾@18
245 Crown Point.....10@9¾
3635 Con Imperial.....5¾@6¾
150 Cosmopolitan.....30c
55 Choller.....7@16½
3450 Con Virginia.....54½@52¾
2250 California.....71½@70
170 Gould & Curry.....15¾@15½
1095 Hale & Norcross...9@9¾
369 Justice.....22¾@23
210 Julia.....7⅞@7¾
50 Kentuck.....12
50 Kossuth.....1¼
515 Lady Bryan.....62½@75c
890 Mexican.....28¾@28⅝
30 New York.....75c
385 Ophir.....48¾@48½
465 Overman.....66@65
230 Savage.....20½@21
75 Succor.....60c
55 Sierra Nevada.....14
20 Seg Belcher.....71
50 Utah.....20
185 Union.....10¾@10⅝
775 Yellow Jacket...30@29¾

THURSDAY A. M., JULY 18.

170 Alpha.....37
95 Andes.....2½
100 Baltimore Con.....1½@1⅝
280 Best & Bel.....41½
170 Belcher.....17@17½
15 Bullion.....42
130 Chollar.....73@74
980 California.....64¾@65
160 Crown Point.....8¾@8¾
330 Con Virginia.....47¾@48
403 Con Imperial.....5¾
340 Confidence.....16½
125 Caledonia.....7½@7¾
100 Columbia.....50c
100 Dardanelles.....1
360 Exchequer.....15@15½
130 Gould & Curry...14@14¾
725 Hale & Norcross...9@9¾
100 Julia.....8¼@8½
180 Justice.....21@21¾
100 Kossuth.....1¾
270 Lady Bryan.....75c
170 Lady Wash.....2½
795 Mexican.....27½@28
395 Ophir.....45@46
199 Overman.....62@63½
20 Prospect.....5¾
180 Savage.....19¾@20
270 Sierra Nevada..13¾@13
50 Silver Hill.....7
265 Utah.....15¾@16¾
1225 Union Con.....11½@11¾
100 Virginia.....2
15 Ward.....1¾
185 Y Jacket.....27½@27¾

AFTERNOON SESSION.

90 Alps.....1½
10 Alpha.....35½
110 Best & Belcher..42@41¾
1270 Belmont.....2¾@2¾
50 Belcher.....17¾
240 Con Virginia.....48@47¾
1205 California.....64¾@62¾
35 Crown Point.....9@8¾
350 Caledonia.....7¾
100 Cosmopolitan.....30c
882 Gila.....75@62½c
380 Gen Thomas.....2½@2¾
250 Golden Chariot.....37½
25 Hale & Norcross...9@9¼
50 Imperial.....5¾
50 Jackson.....3
675 Julia.....6¾@5¾
100 Justice.....21¾
650 Leopard.....8¾@8¾
100 Meadow Valley.....90c
1090 Mansfield.....52½c
175 Mexican.....28¾@28½
755 Northern Belle.....30@31
100 New Coso.....2¾@2¾
130 Ophir.....45½
410 Overman.....63¾
250 Prussian.....
1140 Panther.....1¾
31 Raymond & Ely.....8½
50 Seg Belcher.....69@70
155 Sierra Nevada..13¾@13¾
355 Union Con.....11¾@11¾
260 Yellow Jacket.....27½

California Board—Latest Sales.

WED'SDAY, A. M., JULY 12.

300 Baltic.....40@37½c
5 Bel & Bel.....40
25 Caledonia.....65@64½
100 Crown Point R.....35¾
80 Con Virgin a.....45@45¾
160 Crown Point.....9¾@9
1005 Con Imperial.....5¾@5¾
10 Hale & Norcross.....9¾
100 Emigrant.....43½
300 International.....1¾@1¾
10 Justice.....21
200 Julia.....7½@8
175 Kossuth.....1¾@1¾
250 Leo.....50c
100 Leviathan.....60c
1 S Lady Bryan.....65@75c
15 Mexican Belle.....36
100 N Carson.....23c
154 Niagara.....10c
200 Nevada.....35@37½c
1100 North Mon.....50@40c
100 Phoenix.....
10 S Hill.....7¾
70 Savage.....18½@19
700 S Ophir.....1.10@1
100 Union.....10½@11¾
1250 Union Flag.....15¾@15
100 Wells-Fargo.....13c
100 Wm Penn.....

AFTERNOON SESSION.

25 Alps.....1⅝
100 Belcher.....18
250 Con Bacchelous.....3¾
90 Con Imperial.....5¾@5¾
50 Con Virginia.....46½@47
300 Ely.....2¾@2¾
10 Ophir.....48¾
40 Phil Sheridan.....1¾
3000 Rising Star.....12½c
50 Shasta.....37½c
300 Sate Deposit.....1¾
30 Savage.....18¾
50 Union.....11¾
200 Wells-Fargo.....13@13½c
240 Ward.....1¾@1¾
10 Y Jacket.....27¾

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Delinq'nt. Sale.	Secretary. Place of Business
Cole S M Co	Washoe	28 5 00	June 14 July 19 Aug 9	J F Lightner 309 Montgomery st
Crown Point G & S M Co	Nev	26 1 00	June 13 July 18 Aug 8	Chas E Elliott 419 California st
Chollar Potosi M Co	Washoe	10 5	June 26 July 28 Aug 18	W E Dean 419 California st
Eureka Con M Co	Nev	2 1 00	May 26 June 30 July 20	W W Traylor 309 Montgomery st
Europa M Co	Washoe	6 25	June 19 July 25 Aug 15	R B Noyes 419 California st
Florida S M Co	Washoe	5 25	June 19 July 27 Aug 22	L Hermann 220 Sansome st
Gila S M Co	Nev	1 25	July 10 Aug 19 Sept 14	W A Knapp 309 Montgomery st
Golden Chariot M Co	Idaho	17 50	July 11 Aug 18 Sept 8	L Kaolan Merchants Ex
Gould & Curry S M Co	Nev	26 1 50	May 18 June 23 July 13	A K Durbrow 309 Montgomery st
Ida Elmore M Co	Idaho	20 1 00	June 26 July 31 Aug 21	W Willis 309 Montgomery st
Kossuth M Co	Washoe	6 50	May 29 June 23 July 19	E F Stone 419 California st
Lady Bryan M Co	Washoe	12 75	May 26 June 28 July 19	W H McClintock 419 California st
N Con Virginia M Co	Nev	3 25	June 3 July 7 July 29	J Maguire 419 California st
Niagara G & S M Co	Nev	2 15	June 12 July 13 Aug 1	W R Townsend Nevada Block
North Davton M Co	Nev	2 10	June 21 July 31 Aug 18	R S Culverwell 330 Pine st
Overman S M Co	Washoe	35 3 00	June 26 July 31 Aug 21	O D Edwards 414 California st
Picton M Co	Washoe	10 25	May 24 June 27 July 15	S Phillips 408 California st
Rock Island G & S M Co	Washoe	11 50	June 26 July 31 Aug 22	J W Clark 418 California st
Savage M Co	Washoe	24 2 00	May 31 July 6 July 25	E B Holmes 309 Montgomery st
South Chariot M Co	Idaho	17 30	May 26 July 5 July 27	W H McClintock 419 California st
Sevage M & M Co	Washoe	15 50	July 1 Aug 14 Sept 1	W F Watson 302 Montgomery st
Trojan M Co	Washoe	2 30	June 14 July 20 Aug 10	D Wilder 328 Montgomery st
Utah S M Co	Washoe	13 2 00	July 11 Aug 16 Sept 4	G C Pratt 309 Montgomery st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Albany Q M Co	Cal	2	3	July 7	Aug 11 Aug 28	W H Widman 414 California st
Anreola G & S M Co	Nev	1	10	June 17	July 20 Aug 5	T S Fitch 240 Montgomery st
Beaver M Co	Nev	1	10	May 20	June 24 July 15	W G Hughes 314 Montgomery st
Brooks G & S M Co	Nev	2	1 00	July 10	Aug 16 Sept 5	E T Allen 535 California st
Big Bar M & M Co	Cal	1	5	May 29	July 3 July 22	J M Pennington 211 California st
Cherokee Flat Blue Gravel Co	Cal	36	5	June 8	July 18 Aug 5	O H Bogart 328 Montgomery st
Coos Bay Coal M Co	Oregon	4	40	June 20	July 27 Aug 15	T P Beech 424 Montgomery st
Coquille Black Sand M Co	Oregon	3	20	June 24	Aug 8 Sept 21	F P Reynolds 111½ Leidesdorff st
Eagle S M Co	Nev	4	25	May 16	June 26 July 24	H L Byrne 533 Kearny st
Eclipse & Lee M Co	Cal		25	June 22	July 22 Aug 8	D Buck 309 Montgomery st
Enterprise Con M Co	Cal	8	15	June 2	July 15 Aug 8	F J Hermann 418 Kearny st
Glencoe Con G M Co	Cal	1	5	June 12	July 14 Aug 9	L Leavitt 309 Montgomery st
Hurricane M Co	Cal		25	July 7	Aug 8 Aug 26	W O M Berry 240 Montgomery st
Kelsey G & S Co	Cal		10	June 6	July 31 Aug 31	H Sayre 330 Pine st
Mariposa L & M Co	Cal	6	1 00	July 5	Aug 7 Sept 2	L Leavitt 309 Montgomery st
Montezume M Co	Cal		25	July 7	Aug 8 Aug 26	W O M Berry 240 Montgomery st
New England T & S Co	Cal	2	10	June 10	July 20 Aug 10	C C Tripp 401 California st
Omega Table Mt M Co	Cal	11	5	June 23	July 31 Aug 21	David Wilder 328 Montgomery st
San Carlos M Co	Nev	12	5 00	June 15	July 17 Aug 7	A Cowper 301 Front st
Oro Fino M Co	Idaho	2	75	June 6	July 12 Aug 8	W H McClintock 419 California st
Renton Coal M Co	Washington Ter	2	1 00	June 5	July 20 Aug 24	T H Honderson 24 Sacramento st
Rising Star G M Co	Cal	1	10	May 16	June 17 July 15	J W Coppage 330 Pine st
Silver We-t Con M Co	Nev	6	10	May 24	July 8 Aug 5	F R Bunker 606 Montgomery st
South St Louis M Co	Nev	10	10	June 6	July 13 July 30	R B Hopes 419 California st
Umpire Tunnel & M Co	Utah	5	5	June 23	July 24 Aug 14	W W Davis 605 Montgomery st
Wall Street Q M Co	Cal	2	20	July 11	Aug 14 Sept 4	D K Tripp 401 California st
Washington Blue Gravel Co	Cal	1	60 00	June 1	July 15 Aug 15	H Steinegger Britton & Rey
Woodside M & M Co	Cal	5	25	June 16	July 17 Aug 17	S M Cutler 226 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date
Eagle S M Co	Nev	H L Byrne	533 Kearny st	Annual	Aug 1
Emigrant S M Co	Nev	W H Chickering	426 California st	Annual	Jul 25
Lady Franklin M Co	Nev	Called by Trustees	507 Montgomery st	Special	July 26
Newarks M Co	Nev	W Willis	309 Montgomery st	Annual	July 17
Overman S M Co	Washoe	Called by Trustees	414 California st	Special	July 25
Plotou M Co	Nev	S Phillips	408 California st	Annual	July 22
Rock Island M Co	Washoe	J W Clark	418 California st	Annual	July 18
Seg Europa M Co	Nev	R B Noyes	419 Califo nia st	Annual	July 27
Sevage M Co	Washoe	E B Holmes	309 Montgomery st	Annual	July 20

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	O D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H O Kibbe	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	June 19
California M Co	Washoe	C P Gordon	309 Montgomery st	2 00	July 11
Consolidated Amador	Cal	F B Latham	426 California st	25	July 8
Con Gold Hill Quartz M Co	Washoe	R Wegener	414 California st	25	April 17
Coso Virginia M Co	Washoe	Chas H Fish	491 California st	2 00	July 11
Comenche M & M Co	Nev	W W Treylor	Nevada Block	25	June 19
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	2 00	April 1
Empire M Co	Sierra Co Cal	Chas Collishonn		5 00	Mar 15
Empire M & M Co	Washoe	W E Dean	414 California st	25	April 17
Imperial S M Co	Washoe	W E Dean	414 California st	25	April 17
Northern Belle M & M Co		W Willis	309 Montgomery st	1 00	July 15
S Patrick M Co	Cal	D F Verdenal	109 California st	30	Mar 10
West Comstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Feb 24

Pacific Board—Latest Sales.

WED'NSDAY, A. M., JULY 12.

115 Andes.....2½
20 Alpha.....40@39¾
235 Best & Bel.....41@41¾
95 Belcher.....18¼
40 Chollar.....71
9 Crown Point.....9
3585 Con Imperial.....5.40@5¾
1175 Con Virginia.....46¾@46
555 California.....65¾@66
400 Cosmopolitan.....20c
610 Gila.....62½@57c
100 Dayton.....5@4¾
150 Erie Con.....1.05
425 Hale & Nor.....9@8¾
90 Julia.....8
260 Justice.....21@20¾
100 Kossuth.....1¾
270 Lady Bryan.....75c
170 Lady Wash.....2½
795 Mexican.....27½@28
395 Ophir.....45@46
199 Overman.....62@63½
20 Prospect.....5¾
180 Savage.....19¾@20
270 Sierra Nevada..13¾@13
50 Silver Hill.....7
265 Utah.....15¾@16¾
1225 Union Con.....11½@11¾
100 Virginia.....2
15 Ward.....1¾
185 Y Jacket.....27½@27¾

AFTERNOON SESSION.

25 Belcher.....18¾@18½
1075 Coso Con.....83@.50c
1490 Con Virginia.....46@46¾
1460 California.....67½@65¾
90 Crown Point.....9
1460 Con Imperial.....5½@5.30
50 Eureka Con.....12
150 Gila.....62½@
400 Cosmopolitan.....13½@13¾
540 Golden Char..62½@57½c
15 Jefferson.....1
6605 Julia.....5⅞@6¾
630 Leopard.....7¾@7¾
40 Lady Wash.....2½
360 Mansfield.....32½c
1370 Mexican.....27½@27¾
110 Meadow Valley.....
1325 New Coso.....2¾@2¾
20 Prospect.....6
1000 Rock Island.....37½c
110 S Nevada.....13¾@13¾
250 Savage.....18¾@18¾
480 Union.....11¾@11¾
50 Ward.....6½@c

LEATHER.

[WHOLESALE.

WEDNESDAY M., July 12, 1876.

City Tanned Leather, ₱ lb.....22@29
Santa Cruz Leather, ₱ lb.....22@28
Country Leather, ₱ lb.....22@29
Stockton Leather, ₱ lb.....22@28
Jodot, 8 Kil., per doz.....$50 00
Jodot, 11 to 13 Kil., per doz.....80 00@ 79 00
Jodot 14 to 19 Kil., per doz.....82 00@ 94 00
Jodot, second choice, 11 to 16 Kil. ₱ doz.....57 00@ 74 00
Cornellian, 12 to 16 Ko.....57 00@ 74 00
Cornellian Females, 12 to 13.....63 00@ 67 00
Cornellian Females, 14 to 16 Kil.....71 00@ 76 50
Simon Ulmo Females, 12 to 13, Kil.....58 00@ 62 00
Simon Ulmo Females, 14 to 15, Kil.....63 00@ 70 00
Simon Ulmo Females, 16 to 17, Kil.....74 00@ 74 00
Simon, 18 Kil., ₱ doz.....61 00@ 63 00
Simon, 20 Kil. ₱ doz.....65 00@ 67 00
Simon, 24 Kil. ₱ doz.....72 00@ 74 00
Robert Calf, 7 and 9 Kil.....35 00@ 40 00
French Kips, ₱ lb.....1 00@ 1 15
California Kip, ₱ doz.....49 00@ 60 00
French Sheep, all colors, ₱ doz.....8 00@ 15 00
Eastern Calf for Backs, ₱ lb.....1 00@ 1 25
Sheep Roans for Topping, all colors, ₱ doz.....9 00@ 13 00
Sheep Roans for Linings, ₱ doz.....5 50@ 10 50
California Russett Sheep Linings.....1 75@ 4 50
Best Jodot Calf Boot Legs, ₱ pair.....5 00@ 5 25
Good French Calf Boot Legs, ₱ pair.....4 00@ 4 75
French Calf Boot Legs, ₱ pair.....4 00@ —
Hemess Leather, ₱ lb.....24@ 32½
Fair Bridle Leather, ₱ doz.....48 00@ 72 —
Skirting Leather, ₱ lb.....33@ 37½
Welt Leather, ₱ doz.....30 00@ 50 00
Calf Leather, ₱ foot.....17@ 25
Wax Side Leather, ₱ foot.....17@ —

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, July 12, 3 P. M.

LEGAL TENDERS in S

The Mining Share Market.

The downward movement in stocks has continued with little variation, and nearly everything is lower than it was a week since. A great many persons who are supposed to be heavy operators have been compelled to sell out in order to save themselves, and, of course, small dealers have suffered as well. As is always the case when there is such a sharp decline, rumors of the failure of several merchants and capitalists are circulated, but as yet they lack confirmation. The action of the market too plainly indicates that there is a great struggle going on for the supremacy, and in the fight many a supposed strong one will go under before the contest is decided. The great points of attack are Consolidated Virginia and California—the bonanza group—and every device is resorted to by the "bears" to weaken the confidence of the public in them. How and when this contest is to end is at present impossible to tell, but it is hardly probable that others than the bonanza group will be much affected, even if the market should not take a change. Large sales of Consolidated Virginia and California have been made, and it is naturally thought that some of the large operators have been forced to sell.

The Comstock mines are all looking and yielding about as usual. From the bonanza mines there were shipped on the 6th, 136 bars of bullion, weighing seven tons and 1,810 pounds, and worth $522,655.75. This is the largest single shipment ever made from the Comstock. The mines were all shut down on the Fourth, except the pumps, in order to allow the men to celebrate the Centennial Fourth. The majority of the mills also shut down. Only enough men remained at the mines and mills to guard them. Much new machinery will go into operation next month, more than in any one month in the history of the Comstock, and all will be of the finest and most powerful description.

The Mining Law Amendment.

The following is the full text of the amendment to section 2324, of the United States revised statutes, passed by the House, and to which we made reference last week:

The miners of each mining district may make regulations not in conflict with the laws of the United States or with the laws of the State or Territory in which the district is situated, governing the location, manner of recording, amount of work necessary to hold possession of a mining claim, subject to the following requirements: The location must be distinctly marked upon the ground so that its boundaries can be readily traced; all records of mining claims hereafter made shall contain the name or names of the locators, the date of the location, and such a description of the claim or claims located by reference to some natural object or permanent monument as will identify the claim. On each claim located after the 10th day of May, 1872, and until an application for a patent therefor and final proofs and payment for the claim have been made, as required by the terms of this chapter, not less than $100 worth of labor shall be performed or improvements made during each year. On all claims located prior to the 10th of May, 1872, $10 worth of labor shall be performed or improvements made by the 10th day of June, 1874, and each year thereafter for each 100 feet in length along the vein, until an application for a patent therefor and final proofs and payment for the claim have been made, as required by the terms of this chapter: Provided, That where an application for a patent has been filed in the manner prescribed by this chapter, and an adverse claim asserted against the same, and suit commenced thereon, the annual expenditure for labor or improvements herein before prescribed shall not be required until the right and title to such claim shall have been finally determined by a court of competent jurisdiction; but where such claims are held in common such expenditure may be made upon any one claim; and upon a failure to comply with these conditions the claim or mine upon which such failure occurred shall be opened to relocation in the same manner as if no location of the same had ever been made: Provided, That the original locators, their heirs, assigns or legal representatives have not resumed work upon the claim after failure and before such location. Upon the failure of any one of several co-owners to contribute his proportion of the expenditures required hereby, the co-owners who have performed the labor or made the improvements, in writing, or notice by publication in the newspaper published nearest the claim, for at least once a week for 90 days, and if, at the expiration of 90 days after such notice in writing or by publication, such delinquent should fail or refuse to contribute his proportion of the expenditure required by this section, his interest in the claim shall become the property of his co-owners who have made the required expenditures.

It should be stated that this bill has not yet reached the Senate, as far as we know, and may not even be considered by that body this session. In the House, Mr. Page opposed the bill on the grounds that the present mining law was substantially correct; that under this new bill the law could be evaded by inducing others to file counter claims; that different methods might be adopted to avoid labor and expense, awaiting the development of other adjacent mines, and in the meantime the general development of the country would be retarded. Mr. Maginnis, of Montana, agreed substantially with Mr. Page, but argued that this bill in no way interfered with local mining laws. That it was simply a proposition to amend section 2324 so as to clear up and make explicit some of its provisions. That the object of the bill was to give equal protection to the miner who has fairly represented his ground, paid his thousand dollars and made his final proof and payment at the local land office; that the certificate he then receives shall be as good to him as to the farmer who makes entry of agricultural land, and shall not be compelled to further work his ground on account of the delays in the land office over his patent. In other words, it relieves the applicant of the yearly payment of $100 after he has proved up and paid for his mine, and during litigation, until he knows whether it is his claim or not. There is considerable difference of opinion among miners as to the merits of the bill, and we would be glad to see it discussed by different parties. Our columns are open to those who desire to express their sentiments on the subject.

Mining Accidents.

Four mining accidents have come to our notice the past week, by which as many men lost their lives. The first one was at the Rock Island mine on the Comstock.

John H. Parkinson, chief engineer, accompanied by a miner named John Prout, started to come up on the north tank, Prout standing on the west side of the tank and Parkinson on the east side. Three bells were sounded, so that the engineer knew that there were men aboard. Just before the cage reached the head of the shaft the engineer shut off his steam and attempted to put on the brake, and all at once discovered that the brake-bar had been thrown out of its guides by the under-bar which comes up to set the brake. He stooped down to fix it, and at that moment the cage with the two men appeared above the top of the shaft. Parkinson saw that something was the matter and called out to Henry H. Clarke, the engineer, to reverse the engine. This excited Clarke to such a degree that he was unable to do anything at all, so the cage, with the tank and the two men, passed on up out of the guides, and Prout's head was crushed between the cable and the pulley-wheel on which it works, more commonly known among miners as the "sheave." Parkinson's arm was around the cable and was caught between Prout's head and the pulley-wheel, where it was held for more than half an hour. Prout was instantly killed. Parkinson's arm was terribly bruised and mashed, but no bones were broken. The reason the cage continued to ascend after steam had been shut off was that the north and south cages were connected, and that the weight of the descending cages forced the one carrying the men up, beyond its proper place.

On the 2d inst. a miner, named Elisha Cocking, met his death in the Savage mine. He was working in the pump shaft on a platform, and gave the signal to hoist, when he had attached the steel rope to a heavy iron pump rod. The rope was new and caught, knocking the platform from beneath him and precipitating him down the shaft about 200 feet, killing him instantly.

Frederick Renz, a partner in the hydraulic claim of Clark & Co., Railroad flat, Calaveras county, was instantly killed by the bank falling on him.

John Le Blonde, a miner, working in the Imperial mine, on the Comstock, was killed on the 8th instant, by striking his head against the timbers while coming up on the giraffe.

WASHINGTON TERRITORY COAL FIELDS.—A line of the Northern Pacific railroad is contemplated from Tacoma, on Puget sound, up the Puyallup river a distance of 30 miles. General George Stark, General Manager of the North Pacific road, is now on his way to Tacoma to examine the route of the proposed road and report to the directors of the company. Should this road be built it will penetrate the coal fields owned by the company, and enable consumers on this coast to procure fuel at a great discount from the prices now charged. The company has sent experts, who are thoroughly conversant with all qualities and kinds of coal, into Washington Territory, to make a thorough examination of the deposits, and they report that the quality of the coal to be obtained from these fields is far superior to any now produced on this coast. To give an idea of the scarcity of good coal on the Pacific slope, it is only necessary to state that during the year 1875, as much as 140,000 tons were received in San Francisco from Australia alone. As the Pacific Mail steamship company's steamers penetrate Puget sound and touch at Tacoma, the facilities for transportation to this port will be excellent.

A CONTEMPORARY estimates that there is about $20,000,000 of gold coin in this State in circulation at the present time, and that there was only some $10,000,000 at the time of the bank panic, last August.

THERE are 2,005 children of school age in Virginia City. In Storey county there are 3,002 children. There are no deaf, dumb or blind children in the county.

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE.

NEW ENGINE.—Alpine *Chronicle*, July 8: Manager Chalmers, of the Exchequer mine and mill, is preparing for a vigorous campaign in mining operations, now that the stability of the mine is assured. He has sent the 40-horse power engine that has been doing duty at the mill to the mine to take the place of the one now in use, which will be transferred to a new claim, upon which work will soon be started. The cylinder having been sent to San Francisco for repairs, several days will elapse before the new works will be in running order. With this engine the loaded cage can be raised from the 400-ft level in one minute. Mr. Chalmers has contracted with the Vulcan iron works, of San Francisco, for a new engine for the mill. It is intended to be about 120-horse power, with a cylinder 18x22 inches, and to be shipped in 30 days from signing of the contract. With the new engine additional stamps, soon to be put in, and the new O'Harra furnace, the Exchequer mill will be one of the best appointed reduction works of its size on the Pacific slope. The mill and furnace will be in successful operation by the 1st of September, and there will be no lack of ore to keep it running steadily.

THE ADVANCE.—This shaft is down 275 feet, and the seams are pitching east with the ledge. We visited the mine on Thursday and found men engaged in grading a site for an addition to the hoisting works, to accommodate the new machinery.

THE FURNACE.—Brick is being hauled to the site for the O'Harra furnace, to be erected at the Exchequer mill. It is expected that the furnace will be getting out bullion on or before the 1st of September. It is a consolation to know that this is not another Alpine experiment. The success of this style of furnace at Peavine has dispelled all doubts as to its ability to work our ores.

AMADOR.

POSEY HILL MINE.—Amador *Ledger*, July 8: This mine is located on Dry creek, in the northeastern part of the county, about ten miles from Volcano. It is owned by Mitchell & Campbell, and was discovered only a few months ago. A shaft has been run down to a depth of 95 feet, the ledge in the bottom showing two and a half feet in width. There is a small quartz mill close to the property, at which some of the rock has been crushed, yielding, we are told, over $20 per ton. They are now engaged in fixing up the mill to run by steam power. It is the opinion of experienced miners who have inspected the property, that the owners of the Posey Hill have alighted on a spot that will put them in circumstances of affluence in a short time. That these golden anticipations may be more than realized is our earnest wish, as both men deserve such a stroke of good fortune as much as any men in the county.

CALAVERAS.

GWIN MINE.—Calaveras *Chronicle*, July 8: The Gwin mine continues to produce largely. The last clean-up, after a few days' run, amounted to over $10,000. A hundred tons of rock are daily put under the stamps; all operations connected with the mine being prosecuted with ceaseless activity. The sinking for the 1200-ft level has reached a depth of 80 feet, and will be completed in about a month. The Gwin is now the best paying gold quartz mine on the coast, and its future prospects are as flattering as its present is propitious.

QUAKER CITY.—We are glad to be able to state that fair grade ore has been struck in the Quaker City quartz mine, located at the Junction. The 200-ft level has been run a little over 20 feet from the shaft, at which point good rock was struck. Work in the level has been delayed somewhat by foul air, but that difficulty is now obviated and labor is progressing actively. The mine is under the supervision of J. H. Reed, Esq., a thoroughly practical man, and we have an abiding faith in its future.

UPPER COUNTRY MINING JOTS.—At West Point times continue lively, mining operations being briskly pushed. Champion, sinking. The richest ore ever found in the mine is now being taken out, and the ledge is wider than at any point above. Sinking continues at the Josephine. We hear favorable reports regarding the quality of ore being extracted. A mill is being put on the mine, which it is expected to have in running order within two or three weeks. Fields & Co. are hauling rock to Carlton's mill. We learn that they have something like 50 tons of high grade ore.

GLENCOE DISTRICT.—Sinking is being vigorously pushed at the Hadlock mine. The shaft is down about 90 feet, the ledge showing three and a half feet wide. A lot of rock from Needhan & Co.'s mine, crushed in Garland's mill, paid upwards of $22 per ton. Hauling rock from the Herryhausen mine to Garland's mill either has been commenced or will be next Monday morning. The rock is good, and we expect to be able to chronicle a good clean-up as the result of its crushing.

INYO.

DEFIANCE MINE.—Coso *Mining News*, July 8: The most work is now being done on ledge No. 3. The north stope on the vein is improving every hour. The ore on the back vein is seven feet in width without a particle of waste and of the highest grade of carbonate, chloride and galena mixed. The south drift on this vein is also in splendid ore. This vein is a total terror, or, as an enthusiastic miner declared to us in confidence, "She's a hird entirely, partner." We are informed, just as we are going to press, that the ledge has been struck in the main incline, where the hoisting works are erected, and that the ore is a superior grade, resembling the ore in ledge No. 2. The strike was made yesterday morning. The assay value of ore in the main incline is $124 silver, and 60 per cent lead. That is the splendid body struck in the main tunnel, third ledge, assays in silver $205 and 75 per cent lead.

DEFIANCE FURNACES.—The furnaces have been running extremely well the past week, as the following figures will show: Shipped during the week ending last night, 687 large bars and 143 small bars—total, 730. Remaining on hand, 40 large and 229 small bars. The bullion is of high grade, and is likely to still increase in value as depth is reached in the mine, although the percentage of galena is quite sufficient for successful smelting.

LEE DISTRICT.—The news from this district is quite cheering. The developments on the Emigrant company's claims prove that the predictions we have made in former issues will be more than realized. The mill is running smoothly. The ore taken from the mines without assorting, pulps $150 per ton. No clean-up has yet been made, but from assays made from tailings they are working up to 80 per cent. of the pulp assay. Mr. I. M. Taylor informs us that they have recently secured a water right in some springs that are at such an elevation that a pressure of 400 to 600 feet can be obtained. It is his intention of laying pipes at once to bring this right to the mines, which will do away with the necessity at present existing of hauling water.

NEVADA.

MINING ITEMS.—Nevada *Transcript*, July 9: The Providence mine never looked better than it does to-day. The ledge is large and is filled with gold bearing sulphurets. There is an ore body opened up that will require years to work out. It is expected to have one of the Fryer processes put up on it as soon as the machinery can be completed. The old Soggs mine, which is on the north of the Providence, and a part of the same ledge, is looking first rate now. A rich pay chute was struck some time since and has no signs of giving out. The rock is taken out by contract, and the men have been making double wages for months. The California and Gold tunnel also have a large ledge, and rock that pays well. The two mines, which are owned by one company, have increased in value every day as they are further developed. The gravel mines hereabouts are all running with full heads of water, and we understand big clean-ups will be made at the end of the season in those that are not cleaned up monthly. Prospecting is going on in several places with good indications of opening up paying mines. Up in Washington township there are several splendid developments being made. The mine owned by the Coleman brothers and others, is thought by the best judges to be one of the best mines in the county. There is a good deal of prospecting going on up in that section since the new road affords opportunities to get into the district with teams. Those who have recently visited the place assure us that Washington township will soon rank as one of the best quartz mining districts in the county. The ledges are all very large and prospect well. In all parts of the county everything looks encouragingly, and bids fair to be one of the most prosperous seasons for years.

THE Yerba Buena mining company who own claims on the range above the Cold Spring ground, have commenced running an incline for the purpose of opening out the channel supposed to run through there, or, in fact known to do so. If some more of the companies that own on the line of the channel would commence work, it would not be long before times would be lively on the ridge.

NEW YORK HILL.—*Foothill Tidings*, July 8: The rich pay chute in this mine is said to be pitching towards the old works and it has been decided best to move the machinery to that point for future operations. The stoppage of work for this purpose throws over 100 men out of employment and is therefore to be deplored, but from all we can learn it is pre-eminently the best course to be pursued and will likely be the making of the mine.

SAN BERNARDINO.

BEAR VALLEY.—Cor. San Bernardino *Times*, July 2: The 40-stamp mill is running day and night, and crushing about 60 ton of rock every 24 hours. The present owners of the mill, Messrs. Holmes & Parson, seems to be well satisfied with the result of the two clean-ups, and if the next month's run should be as satisfactory as the past they intend to put up 20 more stamps. They have the timbers all ready and ten more stamps already on the ground. They expect to make a good profit on $8 rock, although they have not worked on any of so low a grade as yet. The water to supply the mill is brought about seven miles in a flume; and the ore is taken from the mine directly to the mill in tramway care. The town contains about 40 buildings—some very good and substantial.

SIERRA.

CLAIM ROBBED.—*Mountain Messenger*, July 8: We are sorry to learn that the mining claim of Jas Alexander, near Deadwood, was robbed a few days since of nearly all the gold washed out this season. He was washing through a ground sluice, and left it all right Saturday night, but when he returned on Monday morning he found that he was out and injured. The robbers had over 30 hours in which to do their work, and they improved their time. We do not know the extent of the loss, nor do we know whether the robbery was committed by white men or Chinamen, but it was probably by Celestials from Poker Flat, as there is a bad lot of heathen thereabouts.

TUOLUMNE.

BLACK HAWK.—Tuolumne *Independent*, July 8: George Morgan, of Columbia, the owner of this fine plumbago mine, after two years work, has finished the tunnel to the shaft, were it strikes the lead 50 feet from the surface. The tunnel and open cut is 700 feet in length. The lode at this point is over 200 feet wide; and increases in value as depth is attained. About 300 feet further, the tunnel will strike a point on the vein from 700 to 1,000 feet from the surface. There are thousands of tons in sight, and Mr. M. is making shipments all the time at good prices, there being a good demand for it. Several parties have been trying to purchase the mine for the past two years, but as yet they have not agreed to reach the price fixed for a sale of the property.

THE Soulsby mine yielded for the month of June, $23,000.

Nevada.

ELY DISTRICT.

LOCAL MATTERS.—Pioche *Record*, July 2: During the past week there was shipped by Wells, Fargo & Co., $7,510 in bullion, it being about the amount shipped during the previous week. Nothing has been stirring in mining circles with the exception of the starting of subscriptions for a smelting furnace, and the proposed building of another furnace by Mr. Smith, of Shaunticleer. This will have a tendency to induce miners to prospect considerable, besides giving employment to a large number of men, such as coal burners, wood-choppers, teamsters, etc. This business will be pushed forward to completion rapidly. The pump of the Raymond & Ely mine has again got to work steadily, going at the usual stroke. Some of the pumping gear for the Meadow Valley pump is commencing to arrive. The work on the hoisting works is progressing with satisfaction and rapidity. Sinking on the main shaft of the American Flag continues steadily, the contractors making seven feet during the past week. In the Alps a fine body of ore is being exposed to view in the prospect work, and the usual work is going on in the mine. The Pioche shaft is having the work of sinking on the main shaft pushed, the indications as they progress being flattering. The usual work is going on in the Antelope. The owners of the Euhn & Hunt started up steam at the hoisting works during the week and are pressing forward the work of extracting ore with success. The Washington & Oreole ore is being sent to the Alps mill for reduction as fast as extracted. There have been no changes of note in mining matters, and the bullion shipments are light, but as the Raymond & Ely mill is again at work they will commence to increase.

WARD DISTRICT.

IMPROVING.—Eureka *Sentinel*, July 9: We met a friend last evening from Ward district, in White Pine county. He has a very exalted opinion of the merits of the mines of that section, and says Ward will yet turn out to be the largest camp in Eastern Nevada. The town is improving fast, there being four stores, restaurants and several saloons in full blast. The Paymaster and other leading mines of the district are developing remarkably well, none of the ore going below $40 per ton and much of it as high as $1,000. The ledges are unusually large and well defined.

WASHOE DISTRICT.

JULIA.—Gold Hill *News*, July 6: The face of the west drift on the 1600-ft level is still in soft porphyry. The main south drift on the 1600-ft level is steadily advancing, the face still in very favorable quartz and porphyry, mixed. On the 1800-ft level the main south drift is showing better and better as the drift advances. The flow of hot water on this level still continues quite strong, and considerably retards work.

OVERMAN.—Daily yield, 25 tons of ore. The ore breasts on the 900-ft level show no material change. The boh pit at the 1200-ft station is completed, and sinking the shaft will be resumed in good earnest in a day or two more.

KOSSUTH.—The main south drift on the 360-ft level is being steadily pushed ahead to the southward, following the west wall of the ledge, the face still in quartz and ore of a very favorable description. The main south drift on the 600-ft level is steadily advancing

along the east wall of the ore vein, the face in porphyry mixed with spots of quartz and clay of a very encouraging character.

SAVAGE.—The huge pumping engine is in place, and the other machinery is being placed as rapidly as such massive work can be accomplished. The old pumps and columns are being rapidly taken out of the shaft and the stations prepared to receive the new. The work is being forwarded with great energy, and if no unforseen accident prevents will probably start into full operation by the first of August.

BEST AND BELCHER.—The new exhaust fan at the mouth of the old Gould & Curry tunnel is gradually drawing off the heated air on the lower levels and cooling the mine. The temperature of the air has gradually decreased since Saturday last from 122 to 92 degrees, showing a steady and almost invaluable improvement.

AMAZON CONSOLIDATED.—Sinking the main shaft is making good progress, three shifts of men being employed. The rock in the bottom of the shaft is hard but blasts out well. The shaft is now down 342 feet.

EUROPA.—The north drift on the 600-ft level is being steadily pushed forward, following a vein of soft ledge matter enconntered in the course of the progress of the drift a few days since.

WARN.—All energy possible is displayed in sinking the shaft, which is being crowded downward at the very rapid rate of five feet per day.

DANDY.—Sinking the shaft is making good progress, the rock in the bottom being much softer, and the flow of water gradually decreasing.

BROOKS.—All work in the shaft is suspended for the present, awaiting the arrival of more powerful machinery recently ordered from San Francisco.

OPHIR.—Daily yield, 300 tons of ore, keeping the mills steadily running up to their full capacity. The ore breasts both north and south on the 1500-ft level are showing finely as usual. The north drift on the 1500-ft level is steadily advancing toward the Mexican line. About 200 tons of ore is being hoisted daily for the California mine. Everything in and about the works is in good condition and the development of the lower levels of the mine is making as rapid progress as the nature of such work will permit.

CALIFORNIA.—Daily yield, 550 tons of ore, keeping the mills running up to their full crushing capacity. The ore breasts are all looking well and yielding splendidly. The yield of bullion for the past month was better than it has ever been before and promises to be still better in the future. Sinking the C. & C. shaft is going ahead as rapidly as the strong flow of water will permit. The flow yesterday amounted to 45 inches, miners' measurement, keeping the pump running at the rate of 10½ strokes per minute, and hoisting a perfect river of water. The pumping machinery works with as much smoothness and ease at that rate of speed as when running at five strokes per minute.

SIERRA NEVADA.—Sinking the main shaft is going rapidly ahead, the bottom still in porphyry mixed with clay.

CONSOLIDATED VIRGINIA.—Daily yield, 300 tons of ore. The mine is looking well and the ore breasts are yielding good ore. The north prospecting drift on the 1700 ft level is steadily advancing, running about 50 feet east of the ledge. The drift is still intensely hot, so that but slow progress is being made. The erection of the new stamp mill is going steadily forward. The erection of the new amalgamating mill is also being pushed steadily toward completion.

JUSTICE.—The extraction of ores from the stopes between the 400 and 600-ft levels is going ahead as usual, the ore continuing of a first-class milling quality. The prospecting drifts both north and south on the 800-ft level are making good progress and are showing every appearance of opening up very handsomely. The Woodville mill is now being put in good running order and will be started upon ore from the mine in a very few days more.

BULLION.—Owing to the great heat engendered by the stoppage of the northeast drift, on the 2000-ft level of the Imperial mine, but little progress was made during the week. Sinking the main incline is making excellent progress. No change in the north drift on the 1400-ft level.

CHOLLAR-POTOSI.—Daily yield, 120 tons of ore, the assay value of which is $32 per ton. Sinking the main incline is going ahead at the rate of two and a half feet per day. Sinking the combination shaft is being pushed steadily forward. The erection of the new powerful pumping and hoisting machinery is going steadily forward.

IMPERIAL CONSOLIDATED.—Owing to the great heat, and the delay occasioned by the celebration of the Fourth of July, the progress made in sinking the north winze on the 2000 ft level has been very slow. The ore in the bottom is still very good, although not so rich as for some time past.

NORTH CONSOLIDATED VIRGINIA.—Two of the pump bobs for the shaft are about completed, ready to put in. The stations for these pumps are also about finished. The third pump station in the shaft is getting well under way. The foundations for the engine and pump bob on the surface is also steadily approaching completion.

BELCHER.—Daily yield, 400 tons of ore. The erection of the new pumping machinery is going steadily forward.

DATTON.—Day before yesterday, owing to an accident to the pumping machinery, the water rose 25 feet in the shaft, necessarily stopping all work in the bottom for the time. Yesterday afternoon, however, the damage was repaired and the water drained from the shaft ready to resume sinking.

BALE & NORCROSS.—Placing the huge coping stone, ready for the reception of the heavy pumping machinery is going rapidly forward. The old pump columns and pumps have been taken from the shaft, ready to put in the new as soon as the extraction of the other is completed.

GLASGOW.—The combination shaft has about 58 feet to yet sink to reach the 400-ft level, the point at which it is intended to open a station and start a drift to cut the ledge and tap the ore body found on the third level above. It will probably take until the first of August to accomplish this.

MEXICAN.—The north drift on the 1455-ft level is steadily advancing along the east wall of the ledge, the face in very favorable ledge matter.

YELLOW JACKET.—Sinking the east winze on the 1900-ft level is going steadily ahead, the bottom still in ledge matter, mixed with streaks of quartz and ore.

SILVER HILL.—Sinking the main incline is going ahead at the rate of 2½ feet per day.

WEST BELCHER.—The prospecting drifts on the 300-ft level are all steadily advancing, with excellent indications of soon opening up some fine pay ore.

NEVADA.—The new cross-cut from the main south drift is now in 35 feet, with quartz the whole distance, which improves, both in quality and quantity, as it is advanced upon.

CROWN POINT.—The face of the main south drift, on the 1700-ft level, is still in quartz and low grade ore.

PIOTOU.—Good progress continues to be made in sinking the winze below the main north drift. Bottom of winze in good sinking ground, with streaks and bunches of good quartz met with continually.

LADY BRYAN.—Laying the stone work for the reception of the new pumping machinery is going rapidly forward.

NIAGARA.—The last 100 feet of the main incline has been thoroughly timbered, and put in the best possible working condition. The shaft is now down 370 feet.

CALEDONIA.—The flow of water at the bottom of the shaft is still too great to permit of a resumption of work there.

TWIN PEAKS.—Grading for the large new working shaft is about completed, and sinking will be commenced to-morrow.

BALTIC CONSOLIDATED.—The ground has entirely changed since our last report. The drift is now in clay and porphyry of a very encouraging character, showing good indication of a near approach to the main ledge.

NORTH CARSON.—The new works are in the full tide of successful operation, and active development of this valuable mine is being proceeded with.

LADY WASHINGTON.—The pump arrangements are all completed and working in good style, the shaft freed from water and sinking deeper was resumed yesterday under the most favorable auspices.

CALCUTTA.—The machinery is all in place and the diamond drills are being adjusted for the purpose of commencing drilling this afternoon.

PHIL SHERIDAN.—Sinking the main shaft is going steadily forward. The flow of water is considerable.

ALTA.—The new machinery is now nearly all on the ground, and much of it already in place.

MINT.—Sinking the main shaft is making splendid progress, the rock in the bottom working well.

ROCK ISLAND.—The full force of the pumping machinery and water tanks is still employed in trying to reduce the flow of water on the 850 ft level. The flow is still quite strong.

TAHOE.—Sinking the joint combination shaft is progressing at the rate of three feet per day.

SOUTH CON. VIRGINIA.—Some fine stringers of ore are met with, and a valuable development in that line may be looked for at any time.

COSMOPOLITAN.—Ore extraction from the main tunnel drift goes ahead satisfactorily.

(Continued on Page 52.)

Darwin and its Mines.

Occasionally we discover in the San Francisco journals, says the Coso *Mining News*, some amusing descriptions of Darwin and the locality of its mines, some geographers placing us on the bordera of Death valley, while others insist that we are perched like our eagle bird on the almost inaccessible sides of the Sierras.

The Coso mining district, of which Darwin is the centre—is situated on the southwestern portion of Inyo county, in a renge of mountains called the Inyo mountains, being the southwestern extension of the White mountains. The district is bounded on the north by Lee district, on the south by Old Coso and Shepard districts, on the west by Lookout district and on the east by Cerro Gordo district—being the centre of a quadrilateral—Darwin being in the southwestern end of the Inyo renge, at an elevation of about 6,000 feet above the sea. Darwin is located about 20 miles southeast of Cerro Gordo, 15 miles south of Lee district, 12 miles west of Lookout, and 10 miles north of Old Coso. The spur of mountain on which it is located resembles Pioche in its topography and general direction. The town lies on the southern slope of the range, on an almost level plain, and contains about 300 houses with a population of 1,000 inhabitants. It is well supplied with water by pipes from a spring six miles distant. The mountains are almost barren of vegetation, but about 10 miles south the hills are well covered with timber, while the Sierras at Owens lake, 25 miles east of Darwin, there is an inexhaustible supply of splendid timber. Good wagon roads lead to the railroad, Independence, Long Pine, Lookout, Lee and Panamint, centering at Darwin.

That portion of Inyo mountains in which Darwin is situated consists of a single chain, having a general northwestern and southwestern course. It is not exactly detached from the Inyo range, but a depression of about 1,000 feet to the northward separates it appereutly, while south and west it falls gradually toward the Argus range, from which it is separated by Darwin Wash. The main bulk of this range is composed of metamorphic rocks, which contain heavy belts of crystaline and compact limestone, intersected by porphyries of various character. The lines of contact are readily discernible. The plateaus to the north and the plains to the south are composed in part of granite and lava.

In the metalliferous belt, which comprises Cerro Gordo, Lee, Lookout and Darwin, limestone is predominant. The veins occur either altogether in it, or as contact veins. The outcrops of many of the veins are bold and massive. The course of the veins is northwest and southeest, with a southweeterly dip. There are some few exceptions. Most of the veins dip from 45 to 60 degrees, except neer the surface, where irregularities are occasionally met with, which are natural to true fissure veins. The veins are of two classes: those which carry argentiferous galena ores, such as the Defiance, Cuervo, Grand, Promentorio, Bella Union, Lucky Jim, Christmas Gift, situated in Darwin, and the Union, San Felipe and others at Cerro Gordo, as also the Modoc and Minietta companies' mines at Lookout, and the mines at Lee, which, although in the same belt, are principally free milling silver lodes. Gold mostly occurrs in the southern and adjoining district of Old Coso, but traces of it exist in many of the main mines of the district. Local circumstances have been the cause that, up to the present time, but a limited amount of work has been done on the veins, hardly sufficient to realize the actual merits of many of them. Producing to develop at the same time may be judicious, but it is a slow way of developing large mines in a new district. Yet, we can truthfully assert that the mines of Darwin are a grand success, and that the future of the camp is full of hope and promise.

CHARCOAL KILNS AT WARD.—The White Pine *News* says: The Martin White company have contracted for the erection of six charcoal kilns of a capacity of 800 bushels of coal each deily. The construction of the kilns is under the immediate superintendency of Mr. Morrison, late of Wyoming Territory, who has had a life long experience in the coal business. Mr. Morrison has entered into a contract to supply the company, as soon as the kilns are completed, which will be within a month, all the charcoal that may be required to run the two furnaces, at 13 cents per bushel, at the kilne. The hauling of the coal from the kilns to the furnaces has been contracted for at two cents per bushel, thus costing the company only 15 cents per bushel for coal, delivered at the furnaces. It is said by those who have hed experience in such matters that charcoal burnt in kilns is superior for smelting purposes to thet burnt in pits or heaps, and it is certainly much freer of stones or dirt.

THE ENGINEER.

A Century of American Engineering.

The American Society of Engineers held its convention this year on the Centennial grounds, June 13th. Appropriate to the occasion Theodore G. Ellis of Hartford, Conn., vice-president of the society, read a paper giving a history of engineering in this country. The following is an abstract of the points made:

Washington was the first civil engineer of which the speaker had found any record. He gave some attention to canals, and was afterwards on a commission for improving the navigation of the Potomac. The year 1787 was a date of great interest to the profession. In that year, John Fitch, a Philadelphian, built the first steamboat, and there is every reason to believe that when he built it he was ignorant of Watt's improvements. He built the first propeller ever constructed in 1796; in 1798 he built the first steamboat for carrying passengers, and in 1799 ran it on the Delaware, between Philadelphia and Burlington. In 1804 Oliver Evans, of Philadelphia, constructed the first machine for building docks—a heavy, flat-bottom boat, with a chain and buckles to clear out the mud. It had wheels for land and a stern-wheel to propel it in the water. It seems to have been the archetype of stern-wheel boats. At this time stage coaches had not come into use. In 1807 Robert Fulton built his steamboat, and in 1811 he and Mr. Stephenson built a stern-wheel boat at Pittsburg, with which a voyage was made to New Orleans in 14 days. This was the first steamboat on Western waters.

The introduction of stage-coaches produced a demand for bridges across the larger streams, and here was a fine field for engineering talent. Among these early structures was the magnificent 340 feet span over the Schuylkill, built in 1812 and burned in 1838. Travel between New York and Philadelphia a century ago can be estimated from the advertisements in the daily prints of that day, naming the time at which a stage coach would leave for New York twice a week. On the celebration of the semi-centennial anniversary it was recorded as a matter of great wonderment that as many as 300 New Yorkers were in Philadelphia. In 1823 Champlain canal was finished and several others were in progress. About this time the evidences of progress in civil engineering began to multiply, railroads were first talked of, and there were few to prophecy what should result from their introduction. In fact, it was authoritatively stated that the claim that locomotives would some day travel 12 an hour was bringing ridicule and harm to the whole project.

The first locomotive run in this country was built in England, and was called the Lion. The first built in this country was constructed on West street, New York, in 1829. It was a four-wheeler with upright boiler, and was built for the South Carolina road. Baldwin commenced to build engines in 1833. The first iron railroad bridge consisted of three spans 55 feet long, for the Baltimore and Susquehanna railroad company, in 1846, built by James Mulholland. Iron suspension bridges were previously used in 1796, over Jacob's creek, Virginia, built by Mr. Finley. Iron bridges, however, did not come into general use until just before the civil war.

In fact, in the short space of a century American engineering has sprung from obscurity to be equal to any in the world. We have the longest bridges, with the greatest span and deepest foundations, and the only railway suspension bridge in the world; the longest railways, the best equipped, and supplied with the most comfortable conveniences. It is idle to prophecy where another century's progress may find it. The day will come when men will smile at iron bridges, when a lighter, stronger and more abundant metal will supplant iron. In aluminum is found lightness combined with strength, the only drawback to its use being the expense of extracting it from its combinations. It is not too much to expect to see bridges of a mile span made out of this metal.

Mining Engineering.

At a later session of the convention Hon. Abram S. Hewett gave a history of the progress of mining engineering and the development of the metals during the last hundred years. The first pig iron made from American ore was smelted in England in 1698. In 1702 the first furnace was built at Pembroke, Massachusetts. The total export of iron in 1717 was three tons; in 1771 it had increased to 7,525 tons. The production of coal in the year 1874, in Great Britain, amounted to 46.4 of the whole product of the world; in the United States 18.4. In the same year the production of iron in Great Britain was 45.2, and in the United States 18.1 of the whole product. This shows that the production of coal and iron in any country generally bear the same relations to each other.

The leading facts in the mining history of the country may be enumerated as follows: First, the erection in Center square, Philadelphia, of the first steam engine ever built in America. In a hundred years steam has transformed the face of the earth. Second, gold mining in the South in the early part of the century; third, the opening of the anthracite coal fields and the use of anthracite in blast furnaces; fourth, the use of raw bituminous coal in the blast furnace; fifth, the development of the copper mines in Lake Superior; sixth, the discovery of gold in California in 1848, or rather its rediscovery; seventh, the commencement of quicksilver mining in 1851; eighth, the introduction of the Bessemer steel process; ninth, the commencement of hydraulic gold mining; tenth, the commencement of iron mining in the Lake Superior region; and eleventh, the discovery of silver in the Comstock lode, which opened an era of speculation which has hardly cessed since that time.

Progress in the English Channel Tunnel.

The experimental boring at Sangatte, near near Calais, is being rapidly proceeded with, and had reached, in the beginning of the week, a depth of about 300 feet. Its object is to ascertain the thickness and condition of the cretaceous strata through which it is proposed to carry the channel tunnel. The soundings taken across the straits in autumn last, over a belt of from one to five miles wide, a little to the west of the line where the tunnel is proposed to be made, showed that no break exists in the strata, and that the dip nowhere exceeds 10 per cent. This year it is intended to make a series of soundings in English waters to settle whether an observed divergence of the chalk towards the north is due to a break or owing to dip, and another over the line of tunnel to ascertain whether a particular stratum of chalk comes there to the surface, and to take additional soundings in the portion of the chennel already examined. The general opinion among geologists is that no important flaw exists in the chalk, and that opinion Sir John Hawkshaw considers to be confirmed by the explorations of the bottom already made. There is a narrow level belt in mid-channel, whence the bottom gradually slopes upwards to either shore. It is intended to sink the boring at Sangatte, about two fathoms below the gault, and when all these preliminery operations are completed, a well will be sunk and a heading driven under the channel. With modern science and appliances, and the large experience which many similar and some almost as extensive works have given, the completion of the tunnel will involve no extraordinary difficulty. It is interesting to know that the execution of this project was seriously discussed by Napoleon and Fox, and that even then it was an old scheme.

In anticipation of this important engineering work of piercing the chalk formation under the channel, the ingenuity of the English inventor seems to have found full scope. As the Mount Cenis tunnel originated novel drills and the use of compressed air as a motor, so will very probably the channel tunnel call into play new apparatus. If the theory of the geologists is correct, the mechanical difficulties will not be anything as great as for either the Mount Cenis or St. Gothard tunnels. At present a machine has been working in an experimental way in England, applied to the face of the chalk, which seems to do its work quite effectively. The machine works like an auger, cutting off the chalk in slices, which, when broken up, are removed by means of endless bands. This machine makes a drift of seven feet in diameter, and its advance is at the rate of a yard in 15 minutes. If, then, this rate of speed could be made constant, by having two machines working from opposite ends, the channel drift would meet in about two years. It is estimated that the cost of making this seven-foot tunnel would be $2,000,000, and to increase it to the proper working size, $20,000,000 more would be required.

A NEW ENGLISH SWING BRIDGE.—The new swing-bridge over the Tyne at Newcastle, which has occupied eight years in construction, has just been completed, at a cost of about a quarter of a million, and was opened for traffic on Tuesday. The bridge is of extraordinary strength, both in the masonry and in the immense iron superstructure, has an imposing appearance and is the largest work of the kind in England. The center pier, which supports the massive swing girder, weighs 1,500 tons, and said to be unequaled. The site of the new structure is exactly that of the wooden bridge built by the Romans under Hadrian, and the old Tyne bridge, whose place it takes, was erected in 1775-79, and was removed nine years ago. The gigantic fabric which has just been finished has a total length between abutments of 530 feet, and a total width of 48 feet, the width of the roadway being 22 feet, while that of the footpaths is eight and nine feet. The bridge has six spans, resting on three piers, which have their foundations in solid rock 45 feet below the water, and correspond with those of the high level bridge; the weight of the swing girder, the length of which is 278 feet, is concentrated upon the hydraulic center press within the central pier, which contains, besides the hydraulic machinery, the boilers and engines, all of which are in duplicate.

A NEW ALPINE TUNNEL.—A company has recently been formed at Lausanne, Switzerland, to undertake the tunneling of the Simplon. It is proposed to start at Brigue, on Swiss territory, at a hight of 1,920 feet above sea level, and cut a tunnel 11.4 miles long through to Pelle, in Italy. The grade of the excavation will be on a slope of two feet in 1,000.

Oil Region of California.

A few day ago ws had an invitation from Mr. R. Paga, of the Star oil works, to visit their wells in Pico canon. They are situated about 15 milea from the San Fsrnsndo tsunel, iu ons of the wildsst and rockiest passes of the mountains, ths road for three or four miles being so crooked that ons can hardly aee 100 feet ahead, the partially dry creek winding in and out like a snake, the whole way up the gorge. The Star oil works have lately commenced to hore new wells with fine prospects, while at the sams time thsy are gradually sinking the othera to a greater depth; one well which they are now deepsning waa originally hored to a dspth of 125 feet, and there a flow of oil was struck which yielded about 10 to 20 barrels a day. Thera ars also two more wells which maks ths total amount of oil got out about 40 barrels per day. Ths company are steadily getting the wells to a lowsr strata of rock nnd expect soon to he ahls to suply the whols State with as fine illuminating oil as ths best petroleum of Pennsylvania, and lu a short time will doubtlsss bo running fully 100 barrels of refined oil a day. Day bsfors yesterday the company completed their new still fur refining, and ars already ahle to take cars of 40 harrsls of cruds oil every day. Mr. Page has lately put about $12,000 lnto ths business and they are rapidly pushing the work along. Thsre is already about a mile and a half of pips laid from ths wells dowu ths canon, and thsrs is 4,000 fest mora of pips on ths way, which will be laid as soon as it arrives. The company intend to lay ths pips all the way from ths well to the refinery, which is about nine soiles. This is a nsw thing in California and it won't he long befors the oil sxcitement will as grsat in Southsrn California as it ever was iu ths East.—*Los Angeles Republican.*

Dull Times.

W. R. Chambsrlain, who has just rsturnsd from a trip to ths sastern portion of the State, having sxtended his journey as far as Elko, informs ns that sxcessively dull timss prsvail along ths line of the road—*Reno Journal.*

Ths sama conditiou of affairs also extends to Eursks. Thsrs never was a time in ths history of the town whsu monsy was hnlf so scarce as now. The mining troubles which prsvailed here last wintsr, ths cause of which is well understood, put the ssason back at lsast 60 days. Ws all hope for bstter times during ths fall months, hut wbsthsr our hopes ars to he rsalizsd of course remains to he sesn. Ths mining interests of the district were nevsr more promising, hut for aoms unaccountahls rsason ths K. K., with an abundauos of ore in sight, is doing nothing, and ths Eureka Consolidated fails to employ its usual complemsnt of msn. Until thsss two leading mines are again in full blast, it would seem like folly to prsdiot any material changs for the bettsr in ths businsss prospects of the town. Some valuable mines ars opsning up ou Prospect mountain, hut it will be sometims yet bsfore thsy begin to tell perceptihly on the prospsrity of ths district. The truth compels us to admit, all things considsrsd, that ths outlook is anything but flattering for a livsly season. Howsvsr, if ths Eureka Con. aud K. K. ahould resums opsrations in old fashioned styls at an sarly day we might, in that douhtful svsnt, anticipate a general hrightening up of mattsrs and thiugs in this, sstion at an equally sarly period.—*Eureka Sentinel.*

Parting.—Men ssldom appsar so humans, or in a position so advantagsous to their humanity, as when thsy part. How fsw friends are there who endure a protracted separation without some abatement of warmth, or meet, hy appointment, without some precautionary anxieties, or continue together long without some accidental discontents; hut none, in any degree entitled to that character, ever part without much regret! Even the chesrful nnd social are not always exempt from those momentary perturbations with which selfishness ohills ths pulse, or oontroversy overheats it. The needls will oscillate a little from the just point of its affections, and though its polarity is never lost, it is seldom steady. Yet even ths pstulent, the irritahle, and the more generous of the resentful lose all unfriendliness as they pass away from esch other—sighing at a conversation which, perhaps, they may have mutually desired. The last ahake of the hand is sufficient to dissipate a hundred grievauces. There are then no raproaches which we oan recall beside those against ourselves.

The Richest Man in Germany.—The Bremer *Handelsblatt* has lately give to the world a most interesting piece of information. Who is the richest man in Germany? Most persons would say in reply—Rothschild, or soms long descended German Baron. In both cases the searcher for truth would he wrong. The rich man in Russia is naither bankar nor nohle, hut plain Krupp, the maker of cannon. Krupp, the gunmaker, pays more income tax than any other man in Prussia. He pays nearly 110,000 marka, whioh rsprsasnts a ysarly scale of profits exceeding 5,000,000 marks, or about $1,250,000. It is true that it is whispered in non-offioial ciroles that Krupp, the gunsmith, has a partner who shares his gains, and likswiss contributes his quota towards the paymsnt of the income tax. This mysterious individual is known unto men as the German Government, impersonated hy prince Bismarck and the Emparor William. Ths rioh man, thersfore, may not ha as wealthy as he appsars to be.

Useful Information.

Weights and Measures.

Questions are always arisiog concerning various points in weights and measures, and we print the following scale, recognized by the laws of the Unitsd States, that our rsaders may preserve it for oouvenisnt rsfersnce.

Bushel.	Pounds.	Bushel.	Pounds.
Wheat	60	Blue Grass Seed	44
Shelled Corn	56	Buckwheat	52
Corn in the ear	70	Dried Peaches	33
Rye	56	Dried Apples	24
Oats	32	Onions	57
Barley	48	Salt	65
White Beans	60	Stone Coal	80
Irish Potatoes	60	Malt	38
Sweet Potatoes	55	Bran	20
Castor Beans	46	Plastering Hair	8
Clover Seed	60	Turnips	55
Timothy Seed	45	Unslacked Lime	30
Flax Seed	56	Cornmeal	48
Hemp Seed	44	Fine Salt	55
Millet Seed	50	Hungarian Grass Seed	54
Peas	60	Ground Peas	20

Peanuts, per hushel, Africsn, 32 pounds; Tennessse, 28 pounds; Virginia, 22 pounds.

A hox 24x16 inohes, 22 inohss deep, contaius one barrsl; 16x16½ inchss, eight inches deep, contains one bushsl; 8x8½ inches, sight inohes deep, oontains one peok; 4x4 inches, four and a half inohes deep, contaius one-half peck; 4x4 inches, four-tenths of au inch deep, contains one quart.

Ths standsrd hushel of the United States contsins 2,150 4 cubic inches. "The Impsrial bushel" is about 68 cubic inches. Any box or msasurs, ths contents of which ars equal to 2,150.4 ouhic inohss, will hold a hushel of grain. In msasuring fruit, vsgetables, ooal and other suhstancss, one-fourth must he added. In othsr words, a peck msasurs five timss evsn fnll makss one hushel. The usual practics is to hsnp ths measure.

Ths standard adopted hy the United Statss is the Winohsstsr hushel, 18½ inches in diameter insids, sight inches deep, and contains 2,150 42-100 cuhic inches. It is ths legal hushsl of sach State, having no spscial statuts bushel of its own. A half hushel measars should contain 1,075 21-100 cuhic inchss.

Ths Unitsd Statss standard gallon msasures 231 cuhic inchss.

A harrel contains 40 gallons or 9,240 cuhic iuchss.

Five yards wide by 968 long contains one acrs; 10 yards wide hy 484 long oontains one acrs; 20 yards wids hy 242 loug contains ons acrs; 40 yards wids by 121 long contains one acrs; 60 feet wide by 726 long cbntains one acre; 110 fset wids by 396 long contains one acrs; 220 fsst wide hy 198 long oontaius ons acrs.

The Price of Pearls.

Of all ths suhstanoes smployed in jewslry the psarl is ths ons whose valus it is ths most difficult to determins, becauss it depsnds on so many variable conditions of size, form and color. A psarl of ths first quality should possass a fine *orient* or water. By this sxpression is meant a purs whitsnsss joiusd to a livsly luster that sparkles in the light. Thsrs are pearls, too, which, with a whits color, show a delicate rsflectiou of azurs. Thsss are ths most highly sstoemed. The second quality of a fins psarl is that it should hs perfectly sphsrical or regularly psar-shaped. There ars a great numhsr of pearls whose oolor has a ysllowish tinge. This alone is a mark of inferior quality. Ths following tahls was made hy a celehratsd Wsst End jeweler to compars the prios of pearls of the first ohoice in 1865 and '67:

	£ s.d.	£ s.d.
A pearl of 3 grains	0 17 0 to	0 19 0
" 4 "	1 5 0 "	1 12 0
" 5 "	1 17 0 "	2 7 0
" 5 "	3 5 0 "	3 15 0
" 8 "	4 12 0 "	5 14 0
" 10 "	10 2 0 "	11 2 0
" 12 "	14 2 0 "	15 1 0
" 14 "	18 2 0 "	20 8 0
" 15 "	20 3 0 "	30 5 0
" 18 "	30 5 0 "	40 4 0
" 20 "	40 5 0 "	50 8 0
" 24 "	50 10 0 "	72 12 0
" 30 "	85 18 0 "	100 17 0

Besides the individual value whioh pearls possess in common with all other procious stones, which is expressed in ths preceding tabls, thsy have anothsr very important one, which we may call *associative value*. Thus it happens that two pearls of the same form, ths same size, the same color, etc., are worth a much highsr price if sold togsther thau when sold apart. A necklace in which the pearls have heen ohosen from a great numbsr will he held at douhle the value of a neoklacs where the psarls have been picked from a smallsr numher, even when the individual value of the psarls is identical in hoth. In the first case ths harmony will he oomplets, while in the esoond oase the eye will deteot a hreak in the shadss in passing from one pearl to anothsr—*British Trade Journal.*

Cleaning Silk.—The following mode of oleaning silk garments has besn aucossfully tsstsd. The garmsnt must first be ripped and dusted. Have a lsrge fist hoard; over it sprsad an old shsst. Take half a oup ox gall, half a oup ammonia and half a pint tspid aoft water. Sponge the silk with this ou hoth sides, especially the soiled spots. Having finished aponging, roll it on a round stick liks a broom handle, hsing caraful not to have any wrinkles, Silk thus washsd and thoroughly dried, nseds no ironing and has a luster like new silk. Not only silk, hut merino, harege, or any woolsn goods, may thus he trsated with the hest resulta.

Cool Water.

A writer in the California *Agriculturist* gives the following useful hints about securing a constant supply of cool water for homs nse:

Our nights ars so cool that a small stream of water running slowly a few rods will hscome cool enough to be very refreshing all through the day.

The arrangement may he very simpls and cheap. Two ayrup barrels and forty fest of trough will do it. The barrels will cost about two dollars, and should he thoroughly scalded and washsd to take out the syrup taste. Set ons near ths watsr supply, and fill it. Set the other in the hest cool place within reach. Hop vines will grow and cover sn arbor for the barrsl very quickly. Leave ths shelter open on ths north side. Befors going to bed at night turn ths faucet at barrel No. 1, so a smnll stream will run to No. 2, at the same time draw off ths water lsft over in No. 2 to moisten the surrounding shelter.

The plan can hs modified to suit oircumstances. The water msy he located in ths milk house, but should be so arranged as to leave no permanent dampnsss about the floor. Whers there is a tank rnised from the ground a small pips can he inserted and the watsr run any desired distance, and ths larger the hody of water thoroughly cooled hy the night air the cooler it will keep through the day.

I havs practiced for ysars drawing a harrel of water out of my irrigating ditch, taking care to fill the harrsl in ths morning befors ths sun shines on ths ditch. If we evsr doubt its paying for the hother ws havs only to neglsct to fill the harrsl one day and we have no douht ahout it afterwards.

In ths citiss where ics is plsnty psrhaps a tank of cool watsr is not so nsosssary, yet I think there ars many places where its cool waters and surroundings would be welcoms. Whsre ths city water comss into ths chambers it would hs sasy to pass a small pips through ths wall and around ths house into a lowsr room provided with a tank that would havs a cooling iuflusnoe on the whols houss, and hy passing the water through a filtsr befors it sntersd ths tank it would bs improved in every respect.

Preservation of Paste with Salicylio Acid.—The souring and molding of pasts ussd by hook-hindsrs and workmsn in other trades, which, according to circumstancss, occurs in about two or three days, may he sntirsly avoided, according to ths statsmsnt of Herr P. Lang, hy the addition aud thorough mixture with ths freshly preparsd psats, of a few drops of salicylic acid. Whsn thus treated, a paste may be kept for wssks in a heated room without losing its freshness, and sven whsn it has by long standing hscome dry and tough, msy bs at oncs rendered fluid and serviceahls by trsatment with hot water. The addition of ths acid doss not, according to this author, affect the stickinsss of ths paste to any sansihls degree. The ahove itsm will, doubtlsss, prove serviceahle likswiss to all who have only occasionally to make nse of paste.—*Gewerbeblatt aus Wurttemberg.*

Good Health.

Fruits.

A writsr in the Nsw York *Tribune* constructs an essay on ths subject of fruits, from which ws oompils the following timely information. There is nothing very novel in the statements, but they will bs useful and interesting to many:

Fruits may be distinguished from vegetsbles hy the circumstauce that they oontain hardly any nitrogen or plastio matsrial, while vegotables are valuable mainly ou account of the staroh and albumsn which they yisld, and also hy the fact that, wheu ripe, trnits require no cooking to reuder them palatahle and digestible, while vegetables do. Fruits may be rsgsrded uot so much nntrisnts as agresable luxuries, for nowhers are thsy a food on which ths life of man dspends, though they are eagerly sought after in all olimats. In hot olimates thsy oocupy a higher position as foods than in temperate regions, since they do not grsatly produce heat, and yet furnish juices of an agreeshle flavor which stimulats the senss of tasts and oool the hlood. Fruits consist ssseutially of two parts, ths juices and the oellular parts in whioh ths juices are contained; the juices ars easily digsstible, hut the oells are not, and are, therefore, when possible, thrown away. All fruits contain much more fluid than solid matter, aud supply sugar, aoids, salts, and the various volatile essencss on which their flavor depends.

The grape was doubtless one of the sarliest fruits eaten by mau. It was cultivated by ths oldest oivilized Eastern nations, whence probably it was carried into Europe, as it does not grow thsre wild. It ahounded in Syria and Persia. The Romans plantsd it on tho banks of ths Rhine, and toward the close of the Roman powsr in England we find it oultivated in ssveral parts of that country by the Anglo-Saxons; aftsrward, while monastsries existed, fsw of them wsre without their vineyard. In Switzerland and other parts of Europs, ripe grapes are considsred a specific for dyspspsia, consumption and aome other complaints. Their medicinal effect is suppossd hy soms to he due to ths hi-tartrate of potash they contain. Grapes contain sugar, gum, glutinous matter, malic, citric and tartaric acids, potash and lime in proportions varying with the kind of grape and ths different conditions of soil and climate in which it is grown.

Applee contain sugar, malic acid, gum, woody fiber and watsr, together with aoms aroms on which thsir peculiar flavor depends. Though chemical analysis may show much less nutriment in apples thau in many other foods, there is much availshls nutrimsnt in them, and the vital analysis in the digestive apparatus uses thsm up closely. Peare were brought from ths Esst hy the Romans, who cultivated them with cars. Ths psar is a hardy tree, and longsr lived than even the apple. The hest varieties of the psar rank dsservedly among the most delicious of fruits. In composition ths psar does not differ very grsatly from the appls. Ths psach is a native of Persia, and was called by ths Romans Persioa. Both in ths fresh and preserved state it is a very favorite dessert. It contains sugar, gum, pectine, malio acid and water.

The orange has heen called the universal fruit of commercs, and, though the product of tropical and semi-tropical climatss, it may he had fresh in svsry region of ths world, and at almost every sesson of the year. The agreeahle sub-acid of the orange rsnders it ons of the most agreeable, cooling and wholesome of fruits, and the essential oil in ths rind is serviceable to the cook in giving flavor to msny dishss. Orange flower water, mads from the hlossoms, is a delicious anti-fehrile hevsrage, and a tea made of the lsaves of the tree is highly valued as a drink for yellow fsvsr patients. The orange pulp contains oitrio acid, malio aoid, mucilags, alhumen, sugar, citrate of lime, and watsr. The proportions of thess constituents vary with the dsgrse of ripeness of the fruit. Ths lemon hslongs to ths sams family as the oranga, and is highly valuahls for its refrigerant and anti-scorbntic propsrtiss. Its constitnents ars citrio and malic acid, gum, bitter extraction and water.

Immediate Cure for Cold in the Head.

Dr. D. Ferrisr, in the *Lancet*, suggssts a hismuth snuff for cold in tha head. Hs says: I do not know whether ths plan is absolutely original, but I am not aware of its having hssn adopted prsviously. This, howsver, is of no importance compared with the question of its efficacy.

On tne svening in question, I began to suffsr with the symptoms of cold in the hsad: irritation of ths nostrils, sneezing, watsring of the eyss, and oommencing flow of ths mucous ssorstion. Having some trisnitrate of bismuth at hand, I took repsated pinchss of it in the form of snuff, inhaling it strongly, so as to carry it well iuto ths intsrior of the nostrils. In a short time the tickling in ths nostrils and saeszing ceased, and the nsxt morning all traces of cold had complstsly disappeared.

Bismuth, alone, thersfore, proved quite succsssful, hut it is hstter in oombination with the ingrsdients in ths following formula. Bismuth hy itssif is rsthsr hsavy, and not sasily inhaled, and it is, moreover, neossary that it shonld form a coating on the mucous membraus. It is, thsrefore, advisihls to combine it with pulv. acaciæ, which rendsrs the hulk larger and ths powder more easily inhaled, while ths secrstion of ths nostrils causes the formation of an adhsrsnt mucilaginous coating, of itself a great sedatives of an irritatsd surfaces. Tue sedative sffect is grsatly strengthsned hy the addition of a small quantity of hydrochlorats of morphia, which speedily allays the fesling of irritation, and aids in putting a stop to the reflex secration of tsars.

The formula whioh I find on the whole the most suitable oombination of ths iugrsdients of the snuff is as follows: Hydroohlorate of morphia, two grains; acaoia powder, two drachms; trisnitrate of hismuth, six draohms. Of this powdsr one-quarter to one-half may be taksn as anuff in the courss of 24 hours. The inhalations ought to he commenced as soon as the symptoms of cold hegin to show thsmselvea, and should be used frequently at first, so as to kssp the interior of the nostrils constantly well coated. Esoh time the nostrils are olesrsd, auother pinoh should he taken. It may be taken in the ordinary manner from hstwesn ths thumb and forefinger, but a much more efficacious and lsss wastsful method is to use a small gutter of paper, or a "snuff spoon," placing it just withiu ths uostril and aniffing it up foroibly, so as to oarry it well within. Some of the snuff usually finds its way into the pharynx, and acts as a good topioal application thsre, should there he also pharyngeal catarrh. The powdsr csusss scarcely any perceptihls sensation. A slight smarting may occur if the mucous membrana is much irritated and inflamsd, hut it rapidly disappsars. After a few suiffs of the powdsr, a perosptible amslioration of the symptoms ensues, and in the course of a few hours, the powder hsing inhalad from time to time, all ths symptoms may hava entirely disappeared.

Toughened Glass.—This manufacturs is at present being carried ou on a small scals in Pennsylvania. By this process lamps and tumblers oau he toughened so as not to hreak. The glass, after heing run from the furnace and moldsd, instead of bsing put into the annsaling pots, is immersed in a hot bath, oonsisting of linseed oil and tallow. The hath is kspt up to about 320 deg. Ths ware after dipping is removed to a sscond bath with a temperature of 200 deg. Lsstly, tha glass goes into a water bath.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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THE ORIGINAL ARTICLES in this paper are mostly se in solid type, giving in our columns one-third mor reading than is contained in ordinary leaded matter.

Our latest forms go to press on Thursday evening.

San Francisco:

Saturday Morning, July 15, 1876.

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Underground Pumping Engines.

The largest underground pumping engines extant are probably those in the Erin colliery, Westphalia. The system in use was originated by Mr. Henry Davey, and he described it at length at a recent meeting of the London society of engineers, illustrating his remarks with drawings of the steam and hydraulic engines, and also of the separate condenser as well as by working models of the machinery. The system may be thus briefly described:

In the mine (which is 1,200 feet deep), 920 feet from the surface is placed a pair of compound differential pumping engines, capable of raising 1,400 gallons per minute to the surface, at the same time supplying power through the medium of the rising column to two differential hydraulic pumping engines placed at the bottom of the mine, and employed in lifting 1,000 gallons per minute to the main engines. Steam is carried down to the main engines, from the surface, at a pressure of 70 pounds per square inch. After passing through the engines it is condensed, and a vacuum of from 24 to 26 inches of mercury is obtained by means of a separate condenser which produces at once the vacuum on the engine, and enables it to start to work against the full column. The methods of actuating the valves in the steam and hydraulic engines are peculiar. In the latter case the valves are worked without any metallic connections, by means of modification of the differential gear.

Ventilation of Mines by Fans.

The subject of ventilation of mines has attracted much more attention in Europe then in this country, and exhaustive experiments with all the different systems have been made. In England, where coal mining is so extensively carried on, the question of safety is so closely connected with that of ventilation in the mines, that no efforts have been spared to make the most perfect ventilating arrangements possible. The result of these experiments are of great interest to us here, now that our mining operations are gradually being carried on so much deeper than formerly. On the Comstock, for instance, in the opinion of many, it is only a question when they will have to stop as they go deeper, from the heat alone. This is, then, closely allied to the question of ventilation, to which, until lately, comparatively little attention has been paid. Now, however, expensive air sheets are sunk and appliances perfected to ventilate and cool the lower levels, showing that heat, ventilation and profit are intimately connected.

As regards the ventilation of mines by means of fans, some details were lately communicated to an English society of mining engineers, by Mr. John Williamson, of the Cannock and Rugely collieries, Heanerford, which are of value to us here. In the district in which the collieries are situated the furnace system of ventilation has been in vogue until recently. By experimenting on the duty effected by furnace ventilation it was found that the consumption of coal for fourteen days was seventy tons, giving 467 pounds of coal per hour, equal to nearly eighteen and a half pounds of coal per horse-power per hour. Considering the large consumption of coal and other objectionable circumstances, the Cannock and Rugely company decided to fix a Guiboldt fan and sink an air shaft of sixteen feet in diameter for an upcast. The fan has been in use since July, 1874, so that the experiments made cover an extended period of time.

There are now in the mine two downcast shafts, each twelve feet in diameter, and one upcast shaft sixteen feet in diameter. The fan is forty feet in diameter by twelve feet wide, and is fixed on the surface at a distance of fifty yards from the top of the shaft. An engine, thirty six-inch cylinder, three feet stroke, attached direct, works the fan, and there is a duplicate engine of the same size, to prevent accident. A drift was turned out of the upcast shaft at eighteen yards from the shaft top, and was continued to the fan of the same area as the shaft.

It has been found that to keep up a sufficient quantity of air circulating in the mines the fan had to make thirty-five revolutions per minute, and gave 190,000 cubic feet, with 1.5 inch water gauge, and there was 66½ effective horse-power from the engine. Then, taking the quantity of air and the water gauge, they got about 44 horse-power, or 66 per cent. of useful effect, the consumption of coal being 11 lbs per horse power per hour, and 7½ lbs less than the furnace. The fan had made 50 revolutions per minute with three and one-tenth inch water gauge. At the bottom of each downcast shaft the air was split into four sections and carried into the workings for some distance before any more splits were made, and each main split had its own return to the bottom of the upcast shaft. They got the greatest quantity of air with a low barometer pressure, and the least on a thick foggy day. But, by having a good counter and water gauge, the engineman, by slightly varying the speed, could keep a uniform quantity of air passing through the mine.

A fan of this pattern has just been started upon the Gould & Curry mine, on the Comstock, and is reported as gradually cooling the mine so as to soon permit of an entirely new departure in the ways of working lower levels on this coast. The heat on the 1700-foot level was gradually decreased from 122 to 90 degrees, on the first four days the fan was used. In view of the fact that this fan has just been introduced here, the details of its operation given herewith, will be of interest to our mining friends on the Comstock.

It is considered essential that every fan should be supplied with a duplicate engine always ready for work in case the working engine should become disabled, by accident or otherwise, because it must be borne in mind that the quantity of air passing through the mine was greatly diminished soon after the fan stopped. From experiments, it was found that an hour after the fan had been stopped the quantity of air was 71 per cent. below the quantity got while the fan was at work, and giving 86,000 cubic feet per minute at the end of two hours after the stoppage of the fan, the quantity of air was reduced 81 per cent., and at the end of three, four, five and six hours after the fan had been stopped the loss of air remained at 81 per cent., the thermometer in the intake reading 58 degrees, and in the return 68 degrees, the depth of downcast and upcast shafts being 347 yards. The quantity of air circulating in the mine after the stoppage of the fan would depend on the difference of temperature between the intake and the return airways. It should be contrived that when fans are used there should always be a large surplus of power ready for any emergency which might arise. Where that was provided, control would be obtained over the ventilation of mines, and where steam pipes were used in the upcast shaft a steam jet could be easily applied during any unforseen stoppage of the fan.

There is little doubt that if there were more fans with good reliable engines, good shafts and airways, and the air properly distributed through the mines and more attention paid to ventilation, the gases not being allowed to accumulate in large quantities, there would be fewer explosions caused by shot firing in coal mines. Mr. Williamson, who made the experiments and collected the data, questions whether there is any more effective than a properly constructed fan for sweeping the underground working and cleaning the pits of foul air. With carefully revised data these appliances can be erected at a minimum of cost, proving, in every respect, economical, and still having such a reserve of ventilating power as to meet any contingency of falls in the airways, sudden outbreaks of gas, etc. The question being raised whether the fan should be at the top or bottom of the mine, it was pointed out that it would be quite impracticable, and quite unnecessary to put it at the bottom of the shaft.

The Coming Industrial Fair.

From present indications it would seem as if the coming industrial exhibition, under the auspices of the Mechanics' Institute, would be the best ever given, and in keeping with the Centennial year. Those who are unable to go to the great international exhibition at Philadelphia, can see one proportionately as large for the territory represented. The fair will open the 8th of August. The Locating Committee are at work locating exhibitors who have applied for space. The managers inform us that more space has been applied for than at any previous exhibition.

Mr. Henry Edwards has accepted the invitation to deliver the opening oration at the opening exercises. As we stated in a previous article, preparations are being made to have more music than formerly. In addition to the two bands, a large organ has been built for exhibition, and will be placed in the art gallery.

The privilege of printing a newspaper in the pavilion has been awarded to Dewey & Co., proprietors of this journal. This will make the seventh volume of the *Daily Fair Press* printed by Dewey & Co. The experience thus gained renders them able to publish an unusually interesting and valuable journal, which forms a complete history of the industrial exhibition.

We are willing, for the convenience of those at a distance, to take charge of any ores, minerals, etc., which may be sent pre-paid to our care for exhibition. The miners of this State are able to make a very creditable exhibit in this line, with very little trouble, and we hope they will do so. We will do all in our power to further this end, and will see that which is entrusted to us is creditably displayed. The exhibition will, without doubt, be a very successful one, as the Board of Managers have had great experience in the arrangements of details, and exhibitors have come forward freely.

The plan of the main floor has been modified and some different arrangements have been made in various departments. Messrs. Gilmore and Culver occupy the respective positions which they held last year, as manager and secretary of the board, and they have been for some time laboring diligently in arranging details. Mr. Culver has been on to the Centennial exposition, and states that many exhibitors are coming on with goods. Our home industries will as usual be well represented, and no doubt the fair will be as well patronized by the public as heretofore. A spirit of emulation seems to have been inspired among exhibitors, incited perhaps by the same motives which resulted in such a magnificent display at the Centennial exposition. We shall give in the PRESS everything which will be of interest to our special class of readers in connection with the exhibition, taking particular care to describe in detail those matters of value to them.

HISTORY OF THE COMSTOCK MINES.—Next week we expect to give No. 1 of a series of articles embracing the early history of the Comstock mines, by an able and well-known writer on mining subjects. The facts have been collated with a good degree of careful and successful research. The series will prove not only of particular interest to residents of Nevada, but will contain much of information interesting to the general reader, concerning this world renowned mining district.

A DISASTROUS FIRE.—The fire in the Sierras near the upper mill of Mackey & Fair, on the 6th inst., destroyed 8,000 cords of wood, several millions of feet of lumber in the log, 2,000 acres of pine forest, etc. Neither the mill or lumber flume were burned, but the damages done will foot up not less than $100,000. It was supposed to be the work of an incendiary.

LIST OF PATENTS.—For some unaccountable reason our usual list of patents did not come to hand from the Patent Office this week. We shall publish both lists next week.

MR. HENRY G. HANKS, the well known assayer and mineralogist of this city, delivered an interesting lecture on the "Metric System" before the Photographic Society this week.

Foundry Work.

The Risdon Iron Works.

These works are one of the three largest foundries of the city, employing from 250 to 350 men according to requirements. The works cover a space about 300x300 feet. They have all the necessary appliances for turning out any style or size of machinery, but make a specialty of mining and marine work. They are able to take a contract for building steamers, etc., and turn them out ready for sea. Among some of the work of this character may be mentioned the revenue cutter *Oliver Wolcott*, the *Newport*, *Arcata*, etc., with surface condensing engines. The *Los Angeles* and *Ventura*, were fitted with compound engines. Of hydraulic machinery also a specialty is made, for pumping, hoisting, etc. The hoists in the Palace hotel were made on this principle by these works, and are fine examples of hydraulic engineering. Mr. Moore the superintendent of the Risdon, is owner of the patent for this coast of the direct acting engines with the Davy differential valve gear, now so largely in use. All of the large engines lately built for the Comstock are made on this principle.

The largest machinery in the mining line made at these works is that of the Belcher pumping works, which are now being put up at the mine. They are capable of pumping 750 gallons per minute from a depth of 3,000 feet. When it was found that the old pumping machinery would not drain the shaft it was proposed that the new air shaft, completed to the 1000-foot level should be made a drain shaft as well. The mine was already drained to the depth of the 1600-foot level so very powerful pumps were required as at that point the shaft when sunk further must drain not only the Belcher but the Crown Point mine, which latter was to pay a proportion of the cost. The plans were devised by Mr. W. H. Patton. The engine is known as the Imperial beam compound direct acting pumping engine, and has an initial cylinder 30 inches in diameter and a 10-foot six-inch stroke. The expansion cylinder is 62 inches in diameter and the piston an eight-foot stroke. The expansion is set on a solid sole-plate, secured to the foundations immediately over the rear end of the pumping beam. This beam is of cast-iron trussed with wrought-iron. It is 32 feet six inches in length and 11 feet deep, between centers. The main center is 20 inches in diameter in the middle and 16 inches in the journal. The piston connects direct with the beam by a 10 inch pin, avoiding all superfluous and extra gearing. The connecting pin with the pump rod is 11 inches in diameter, and the engine is controlled by the Davy differential valve gear. The condenser and air pump are entirely segregated from the pumping engine, work independent and are also controlled by the Davy gear.

The boilers are six in number, each 54 inches in diameter, 16 feet in length and of the tubular make. The stone foundations upon which the whole is placed are built in pits blasted from the bed-rock, and will contain over 2,000 perch of solid stone. The plunger pumps will be placed at distances of 200 feet apart in the shaft. A single line of 14-inch pumps will extend from the surface to the bottom of the shaft, capable of throwing, with the engine running at a rate of 10 strokes per minute, 30,000 gallons of water per hour. When the engine starts up it will probably begin pumping from the 1700-foot level. It will begin running about the 1st of August.

THE BONANZA.—A street rumor has been in circulation that Robert Barton, the well known mining engineer, had stated that the 1700-foot drift of the Consolidated Virginia mine was as barren as Mount Davidson. The reporter of a city cotemporary interviewed Mr. Barton on the subject, who said: "As to the correctness of these reports, I simply say that they are false from beginning to end, for I had free access to all parts of both the Consolidated Virginia and California mines, the 1700-foot level inclnded. And as to the correctness of anything I may have said about the 1700-foot drift, I refer to the official reports at the office, where anyone can learn that this drift is not within 50 feet of the ore vein, and of course is as barren as any drift which would be run into Mount Davidson. With regard to the future prospects of the 1700-foot level drift of the Consolidated Virginia, I do not hesitate to renew my former assertion, and am more positive now than ever that the 1700-foot level of the Consolidated Virginia, when fully developed, will show more wealth than the whole Comstock can show to-day; but it will take a little time to prove this—perhaps a few months.

IN NEVADA.—"Our own correspondent," Mr. A. C. Knox, who has been associated with the business department of this paper since 1865, will soon visit Virginia City and other parts of Nevada.

ALPINE COUNTY MINES.—We shall commence next week a series of articles on the mines and resources of Alpine county, from the pen of one who is well qualified to write about them.

IT IS reported that the strike of an ore body has been made in the Sutro tunnel, but nothing authentic has yet been made known.

American Forestry.

We printed not long ago a note of the organization of a national society for the promotion of forestry. The objects of the society, as announced, were the collection of accurate statistics concerning forest planting and growth, and the promotion of every effort to encourage the planting and preservation of the forests. The society is apparently in full sympathy with the movement in progress in this State and which we trust will not weary until our hills are crowned and our valleys shaded with thrifty forests.

We print on this page a map of the United States drawn with especial reference to the forest areas. The regions in which the different classes of forest trees grow are marked according to the explanation on the margin of the engraving.

As one looks at the immense areas in which trees flourish, it appears clearly that there is no lack of natural adaptation to the growth of trees. More than this, one must take into consideration the wide stretches of prairie lands on which the trees should flourish to the comfort and profit of the husbandman. We trust the National association of forestry will accomplish much good in developing the timber and shade producing resources.

As we call this subject to mind and show how wide a timber lot pertains to Uncle Sam's farm, we should also call attention to the

Rapid Destruction

Which is being made of the valuable possession.

Some of the figures given to show the enormous annual consumption of wood are startling. For example: The locomotives on the railroads of the United States annually consume as fuel as much wood as would represent 25 years' growth on 350,000 acres. In order to supply the railroad ties used annually upon the roads now in operation, the timber of 30 years' growth must be removed from 68,000 acres of the best natural wood land. The telegraph lines now in operation require for repairs that at least 250,000 trees be cut annually. Even the manufacture of such insignificant things as shoe pegs and matches requires in the aggregate a great deal of lumber, amounting in the former case to 100,000 cords of white birch, and in the latter to 230,000 cubic feet of the best pine. An estimate has been made that "during the 10 years between 1850 and 1860, 30,000,000 of acres of forest covered land were cleared in the United States for agricultural purposes, or 10,000 acres a day for each working day during that time." These are some of the least thought-of drains upon our timber supply, and yet how large they are. If we but bring to the estimate the enormous consumption of wood for fuel and timber for building it will be difficult for the mind to grasp the annual reduction of the tree census of the country.

THE FOREST AND PRAIRIE LANDS OF THE UNITED STATES.

The Beneficent Effects of Forests.

Forest culture has progressed so far in some parts of the world that we are able in some degree to appreciate the influence of the forests upon the climate and productiveness of the regions in which they prevail. We desire to present a few facts in this connection. Let us instance first the value of the shelter against injurious winds. According to M. Becquerel, the physicist, who had investigated this subject, perhaps more than any other, in the valley of the Rhone, it is found that a simple hedge, six feet high, is sufficient protection for a distance of about 50 feet. The clearing of the Appennines is thought to have considerably affected the climate of the river Po, in Italy. Mr. Geo. P. Marsh, quoting from an Italian publication, says: "In consequence of the felling of the woods on the Appennines, the Sirocco prevails greatly on the right bank of the Po; in the Parmesan territory, and in Lombardy, it injures the harvests and the vineyards; sometimes even ruining the crops of the season. To the same cause we may ascribe the meteorological changes in the precincts of Modena and Reggio. In the communes of the districts where formerly straw roofs resisted the force of the wind, tiles are now hardly sufficient; in others, where tiles formerly answered for roofs, large slabs of stone are now insufficient; and in many neighboring communes the grapes and the grain are often swept off by the blasts of the south and southwest winds." There are other instances on record where the planting of numerous shelter-belts has relieved the inhabitants of southern Europe from the ravages of the dreaded Sirocco. Mr. Marsh gives several instances much in point. He says: "The following well attested instance of a local change of climate is probably to be referred to the influence of the forest as a shelter from the cold winds. To supply the extraordinary demand for Italian iron occasioned by the explosion of English iron during the time of Napoleon I, the furnaces of the valley of Bergamo were stimulated to greater activity. The ordinary production of charcoal not sufficing to feed the furnaces and forges, the woods were felled, the copses cut before their time and the whole economy of the forest deranged. At Piazzatore there was such a devastation of the woods and consequently such an increased severity of the climate that maize no longer ripened. An association, formed for the purpose, effected the restoration of the forests and maize flourishes again in the fields of Piazzatore." Similar effects have resulted from plantations made in Belgium.

In an article published in the *Revue des Deux Mondes*, quoted by the same authority as before, it is said: "A spectator placed on the famous bell-tower of the cathedral of Antwerp saw, not long since, on the opposite side of the Scheldt only a vast desert plain; now he sees a forest the limits of which are confounded with the horizon. Let him enter within its shade. The supposed forest is but a system of regular rows of trees, the oldest of which is not 40 years of age. These plantations have ameliorated the climate which had doomed to sterility the soil where they are planted. While the tempest is violently agitating their tree-tops, the air a little below is still, and barren sands have been transformed under their protection into the most fertile fields."

In certain districts of Sweden where the woods have been cut away the spring comes about two week later than formerly. There are numerous instances on record where the climate of a place has been materially changed by clearing it of trees. Spring is thus retarded and earlier frosts appear in autumn.

Trees in California.

We expect to see, when the National society compiles its statistics, that California stands foremost among the States which deserve praise for tree planting. During the last few years there has been a widespread spirit of tree planting, and seedlings have been put in by the million. We are introducing new trees and have found many which are admirably suited to our climate and soils. We have experienced also the beneficial effects of shelter. In some of our southern counties rows of trees hold back the ocean winds and render the protected orchards doubly fruitful. Our market gardeners work behind a wind-break of their own planting and secure very early growths of vegetation. By the beauty of trees many a barren waste has been transformed into a grove and many a hot highway has been made an avenue of grateful shade. But still there is room for wider planting and we look with real favor upon any movement which will promote the good work. According to the census of 1870 the amount of woodland in the United States was about 380,000,000 acres, and the whole area of the country, improved and unimproved, was 2,311,544,959 acres. Of all the States, shown in our map, California has the smallest proportion of woodland to her whole acreage; while some States have a percentage as high as 50 and 60, California has but five. Thus it appears that there is good call for our activity in tree planting, and we trust that each recurring year will see more and more of our waste land turned to profit by the planting of a salutary and valuable growth of trees.

Operations of the Chollar-Potosi Mine.

The annual meeting of the Chollar-Potosi mining company was held on the 10th inst., and all the old officers were re-elected. The reports of officers for the fiscal year were submitted. The following is a synopsis of the report of Isaac L. Regna, Superintendent of the mine, which is among the prominent ones on the Comstock.

At beginning of fiscal year, June 1, 1875, there was on hand 1,415 tons of ore; extracted during the year ending June 1, 1876, 19,817 tons. Of this amount 17,728 tons was milled, leaving a balance of 3,504 tons on hand. This ore yielded on an average $18.03 per ton. Milling the ore cost $11.83, and cost of extraction was $4.20, which left a profit of $2.00 a ton on all crushed. The ore was taken exclusively from the "old mine." During the year prospecting has been carried on in that particular section which has developed several ore bodies, a part of the ore of which only has been taken out; and there remains in sight in the several stopes more ore than has been exposed at any time during three years past, and indications point that more ore of greater value will be found by further prospecting. In the "new mine" operations have been conducted on an extensive scale. Three hundred feet have been added to the depth of the main incline; the 1300-foot level has been opened, and this, as also the sixth and seventh stations, has been thoroughly prospected—to do which some 3,360 feet of drifting was done. At date of report the main incline was being carried down, the sinking to be continued till a sufficient depth for another station should be reached, indications on the sixth, seventh and eighth stations indicating that ore bodies may lie deeper. The machinery was in good order and of a capacity to work the mine 700 feet deeper than present workings.

The report of W. E. Deau may be summarized as follows: The total receipts in the year were $744,556 04 of which $312,415.36 was from bullion, $280,315 from assessments 8 and 9, and $2,062.50 from rents, $2,000 from real estate, and $3,795 76 from the superintendent. At the beginning of the year there was $68,036-85 cash on hand, but at the close there was an overdraft of $75,881.57 against the company. The disbursements absorbed all the receipts; but excepting the overdraft, the company is out of debt. The main items of expenditures were $164,353.75 for labor, $24,095.88 for wood, $210,186 for working ore, and $232,947.96 for for the company's proportion of expenditure on the joint Chollar-Norcross-Savage shaft.

Gold leaf is cut by placing it on a flat, clean leather pad, pressing it very gently and sawing with a perfectly straight-edged knife or split cane. Dutch metal may be cut between paper by close shearing scissors, with such long blades that each cut is made with one motion.

Centennial District, Wyoming.

Some weeks since a dispatch appeared in a number of newspapers, setting forth the wonderful richness of the lately discovered Centennial mine, in Wyoming Territory. The statements were so evidently exaggerated that few mining men gave any credence to it, and it did not even raise any excitement among that class of peripatetic prospectors who are always on the lookout for new districts or discoveries. There is, however, such a mine as the Centennial, and it is situated in Centennial district, Carihou county, Wyoming. The dispatch was originated by a newspaper in that part of the country, the editor of which was endeavoring to turn aside the rush for the Black hills, and get some of the miners to prospect the mountains of Centennial district.

We had an opportunity this week of conversing with Mr. J. P. Lambing, the superintendent of the Centennial mining company, who was in this city for the purpose of purchasing drills and concentrating and crushing machinery for the company. He is an old miner, but does not appear to be at all an excitable man, and gave us some facts about his part of the country which will be found of interest. Centennial district is a new one, the discovery having been made about a year ago last December. It is about 30 miles from Laramie City, to which there is a good road and a daily stage. There is plenty of wood and water in the district, and every facility for working that could be desired. The altitude is about 8,270 feet above sea level. The snow does not give much trouble in the winter, but the winds are very heavy. The mill belonging to the company is in a sheltered position at the foot of a mountain, but as a general thing the country is very windy indeed.

Labor is low, and facilities for mining, as far as expense is concerned, are very favorable. At present wood is delivered at the mill for $1.75 per cord. Miners' wages are from $2 to $2.50 per day in greenbacks. There are now from 300 to 500 men in the district, and quite a little town has sprung up. A sawmill has just been started, and lumber sells for $20 per thousand. Nearly all the miners there now are prospecting. The country is hard to prospect, as the ledges are all "blind." The usual method of digging trenches or "cuts" is resorted to to find the ledges. The country is in a micaceous slate formation, and the ledges generally run north and south, although the Centennial — the representative lode — runs northwest and southeast. The mineral belt runs through the head of the Douglas creek, where placer diggings have been long known, but where it is too high and cold for a long mining season.

Since the discovery of the district it has developed slowly. The Centennial company have a ten stamp mill which is crushing about eight tons a day. Since work was commenced the rock has yielded an average of $19 per ton. The gold runs from 906 to 913 fine. Our informant tells us that since last May, thirteen other ledges have been discovered. The gold is extremely fine but the ore is perfectly free. The mill is now run by steam, but water power will soon be used. Either of the three forks of the Laramie river will furnish an abundance of water for that purpose. It is thought that for $3,000 will bring in 700 horse power, including the covering for this ditch to keep it from freezing in winter. The mill could have been run all last winter, but the small creek beside which it is situated froze up. The ledge of the Centennial mine is about three feet wide, which is as large as any in the camp. At the time the dispatches were published, which we refer to above, a small stringer ran into the main lead from which assays as high as $47,000 per ton were obtained. There was very little of this class of ore, however, as any miner may suppose.

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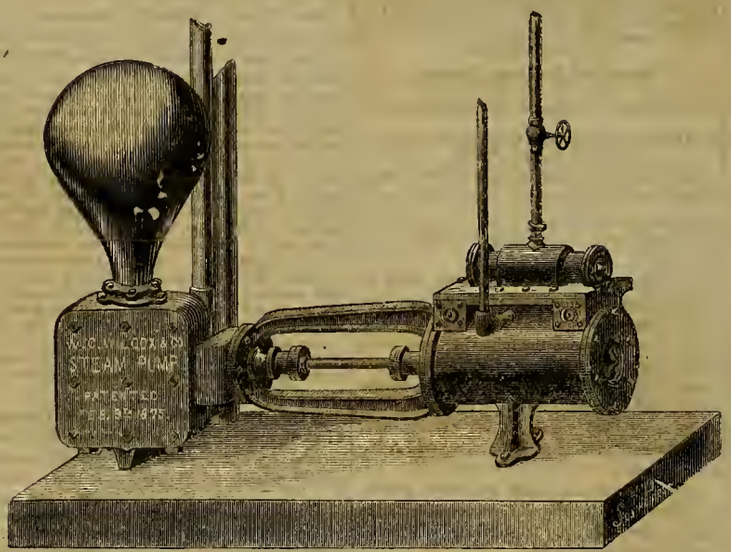

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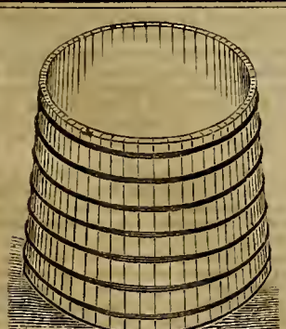

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No AGENTS are authorized to receive subscriptions for this paper at less than our advertised rates.

(Continued from Page 46.)

WHTE PINE DISTRICT.

THE FURNACE. — White Pine *News*, June 29: The greatest ornament Hamilton has is the Panther furnace, which has so long stood idle, but is now in full blast, under the management of Harry Strout, who has everything in perfect running order. James Montgomery is chief engineer. The furnace produces an average of six bars per hour—this from a 20 ton furnace. Mr. Paul, who does the assaying, finds that the slag contains but $1.21 per ton and one and a half per cent in lead. Mr. Strout expects to continue this run from 40 to 60 days. When it is taken into consideration that there are hundreds in and around Hamton who are indirectly benefited by the running of this furnace, the pleasure of its being successfully started is great with all. This universal benefit that would accrue to all grades of business was the cause of the organization of the smelting company last summer, and if the furnace successfully runs for three or four months, no subscriber to the Hamilton smelting company will have cause to rue it, for the furnace, in all probability, would not have been running to-day had not the merits of our base mines been brought to light by the operations last summer.

Arizona.

CEDAR VALLEY DISTRICT ITEMS.—Wallapai *Enterprise*, June 27: From Cedar Valley district we learn that P. H. Tompkins has just finished working, at the steam arastra in Echo canon, a lot of seven tons of ore from the Gunsight mine, of which he owns the control. The ore pulped $300 silver per ton, and the clean-up gave him 1,798 ounces of bullion, valued at $1,900. This is really an excellent yield. The Messrs. Buhle are running a tunnel to tap the Brooks mine. The tunnel is now in about 60 feet, and in 100 feet more they will tap their mine about 150 feet below the surface.

CERBAT.—Messrs. Barry & Williscraft have for some time past been hunting for water in sufficient quantity to run a mill in Cerbat, and we are glad to learn that they have succeeded and that a five or ten-stamp mill will soon be on the way out.

MAYNARD DISTRICT.—S. Shoultes, of the American Flag mine, in Maynard district, was in town during the fore part of the week. This mine has a shaft 125 feet deep, and shows a body of exceedingly rich ore four feet in width. The last lot of ore from this mine, worked in the Mineral Park mill, yielded $1,032 per ton in silver. It is one of the richest mines in the county.

WALLAPAI DISTRICT.—The Metallic Accident, in Wallapai district, is looking better than ever. The shaft is now down about 70 feet. There are several men at work on the mine.

Colorado.

BULLION SHIPMENTS.—Colorado *Miner*, July 3: The shipments of bullion from the Judd & Crosby works, for the week ending June 30th, amounted to $6,426.34.

ZINC.—A series of experiments is now being conducted here and in the East with the object of ascertaining the best method of utilizing the zinc in a large class of our ores. When this is ascertained, capitalists now interested in works for the treatment of zinc ores, will at once erect works in the valley, and render useful and profitable a metal which has hitherto been only a detriment to mill men. A gentlemen of large experience in handling the ores of this district, has agreed to furnish 4,000 tons per annum, carrying over 40 per cent. zinc and from 20 to 200 ounces in silver.

PARK COUNTY.—A large and rich body of ore was struck in the lower tunnel of the London last week. The ore yields at the rate of six ounces per ton in gold, 50 in silver, and 25 per cent. of lead.

JEFFERSON COUNTY.—The Golden Works turned out between Monday morning and Saturday night of last week, $11,000 in bullion. Ore is coming into these works in large quantities from all the mining districts, especially from Georgetown district, and also from the Snake River district across the range.

Idaho.

TROUBLE IN OWYHEE.—Idaho *Statesman*, July 4: Mr. Charles S. Peck, of Owyhee, owner of the Bella Peck mine, arrived here last Saturday, and made us a pleasant call. Mr. Peck reports that his mine is paying well, and still sustains the reputation of being one of the best mines in that camp. He says the day he left a speck of trouble arose in the management of the Golden Chariot mine. The hands, about 150 in number, had not been paid for the months of May and June. Mr. Baldwin, the superintendent, had promised to pay on the close of June for the month of May, leaving the month of June unpaid. This would have been satisfactory had he done so. He had reported to his company in San Francisco that his proceeds for that month would amount to about $25,000, but instead, it amounted to only about $10,000. This amount Baldwin turned over to C. W. Moore, on an old indebtedness, and, of course, had nothing to pay the hands. The first of July and the glorious Centennial Fourth was just at hand, and the hoarding houses would be shut down and all hills cut off. This course excited the miners, and, after holding a meeting, they marched down in force and took Mr. Baldwin up to Fairview, where he is kept as a hostage to secure the payment of the money. The affair creates a little excitement, but they do not apprehend any violence to Baldwin. Mr. Peck says the Chariot mine is paying well and will meet all working expenses, and some more, but miners have had so many set-backs, and in many cases 10 and 12 months' pay is in arrears, that they will not allow the bullion to be paid on old debts or sent below without being paid for their labor. From Mr. Peck's version of this matter, we believe that public sympathy is and will be with the miners.

STONDARD LEDGE.—Owyhee *Avalanche*, July 8: The fortunate owners of this ledge have undoubtedly got a bonanza on their hands. They had some of the rock crushed recently and it turned out about $72 to the ton. Everybody acquainted with the mine knows that there is abundance of this kind of rock in sight, much of which will turn out still better. It is one of the best claims in the Wagontown district, and the boys who are interested in it have demonstrated their confidence in its paying capacity by pulling off their coats, going to work and developing the mine in a business like and practical manner. Messrs. T. Regan, Johnny Springer and the Stoddards left here this week well stocked with supplies, and will spend the balance of the season working on their ledge and taking out rock.

Montana.

MINING ITEMS.—Butte *Miner*, June 27: A full supply of water still enables the placer miners to continue work night and day upon the claims below town, and heavy returns from this year's work are expected by all engaged in this branch of mining. If in the other camps throughout the Territory as much success has been met with as in this one, there will be no scarcity of gold at the end of the season. On Davis' arastra they have commenced amalgamating the rock crushed, but as it was of an extremely low grade ore, intended simply to fill up interstices and test the working power of the machinery, not much in the shape of bullion is expected from this run. The ore secured by Mr. Davis, which is now being crushed, is a medium grade, and will probably average about $120 to the ton. At the Parrot mine no diminution in the quantity of ore daily raised is perceptible. A force is still at work and the quality of the ore is excellent. The last lot sacked—over 40 tons—sampled 52 per cent. copper. There is a large amount now on hand at the mine, the numerous shipments apparently making no difference in the looks of the several bins. Fourteen tons of ore were taken away to-day for a market at Baltimore. The progress made on Olin's concentrating works has been greatly retarded and work has gone forward quite slow, owing to unavoidable circumstances, but it is expected that before another week the dressing of ores will have commenced. There is now on the dumps at the various mines large quantities of ore averaging 20 per cent. copper, which will give the Olin works sufficient to do for the balance of the season, without taking any additional from the mines. At the Park mine the rich streak of ore found a short time since still holds out, and they are hoisting about a ton and a half per day. Some 30 tons are in the bins awaiting the arrival of sacks, and over 70 tons sacked and ready for shipment, which will be sent off as soon as transportation arrives.

CABLE CITY.—Cor. *New Northwest*, June 30: Messrs. Kohrs & Cameron got water into their ditch on the 21st inst., and started the Little Giant in the placer mine on Cable side on the 22d, nearly 20 days later than usual. They are working a breast of gravel over 20 feet high, and it looks splendidly; will work about seven men this summer. Wages this year only $4 per day. Messrs Cameron & Kelley are in about 100 feet on lower level on Pyrenees, and have about 20 feet to run to strike quartz. The road, on account of the late snow storms, is still impassible with heavy loads. Messrs. Lacaff & Brown made a good strike last week in quartz on the Georgetown side, near Pyrenees, and made a location. They have taken out some three tons of excellent rock and a few fine specimens.

Utah.

RUSH VALLEY.—Cor. Salt Lake *Tribune*, July 9: The past week has been one of unusual activity in and around Rush Valley mining district. A few fine strikes and discoveries have been made upon old locations. The most promising of which is to be seen on the Globe mining location, owned by Bennett & Tornetten, where they have opened a five-foot vein with two and a half feet of solid carbonate of lead ore, encased in a lime foot and quartzite hanging walls. It has the appearance of a big thing. Rush valley has got to rushing out ores faster. Messrs. Longmaid & Co. have found it necessary to extend and enlarge the capacity of their furnaces and machinery, and this week they will have upon the grounds at their present furnace, two large 40-horse power engines and boilers, to be set in position and at work immediately.

TINTIC DISTRICT.—This district is still right side up, and quietly adding its quota to the mineral productions of our Territory, but there is still plenty of room for enterprise and capital in the district. Around Diamond City things seem loudest, and quite a number of mines and good prospects are being worked. The Wendigo company are sinking a shaft on the Joe Bowers lode, calculating to run it down some 700 feet. Ore is occasionally taken from the mine, assaying from $2,000 to $3,000 per ton. We trust its enterprising proprietor may strike a big bonanza of that grade of ore. As a whole, the district is quiet; it needs and is worthy of more attention than it appears to at present receive, but for all that, it is producing largely and is shipping ores, silver bullion, copper matte, charcoal and very large quantities of iron ores for fluxing purposes. For the capital invested and the number of men working, the district is doing certainly as well and probably better than any other mining district in Utah in the production of hard facts in the shape of money-producing products.

Gems and Precious Stones.

[Written for the PRESS by HENRY G. HANKS.]

H. Almandine. Carbuncle Essonite, Precious or Oriental Garnet, Pyrope.

The above varieties belong to the garnet family, members of which take a variety of forms and composition. As other varieties do not rank as gems, no description of them will be given.

Garnets are silicates of different bases, as alumina, lime, magnesia, iron, manganese, etc.

The almandine or almandite is an iron-alumina garnet, of which the following analysis is from an average specimen. The composition varies: Silica=36.1; alumina=20.6; protoxide of iron=43.3. Total, 100.0. This is the precious or oriental garnet of the present day, and the carbuncnlus of Pliny, from which the common name of carbuncle is derived.

Pyrope, sometimes called Bohemian garnet, is a silicate of alumina with various protoxide bases. The following is an analysis selected from a number of others:

Silica, 42.08; alumina, 20.00; sesquioxide of iron, 1.51; sesqui oxide chromium, 3.01; protoxide of iron, 9.09; oxide manganese, .32; magnesia, 10.20; lime, 1.99.

This gem, a blood red, transparent conchoidal. Luster vitreous, streak white. Hardness, 6.5-7; specific gravity, 3.69—3.8. Found in Bohemia. Fine specimens are brought to this country from Arizona and New Mexico, where they occur in abundance. Until this discovery was made Bohemia alone furnished them to commerce. Quite a quantity of these beautiful stones were sent to M. E. Costa of Paris to be cut.

The pyrope, when fine, is often mistaken for the ruby, and when well cut is hard to distinguish from that rare gem; the test of hardness and specific gravity, however, will serve to distinguish the two.

The essonite is a lime garnet. Another name given to it is "cinnamon-stone," a cinnamon colored variety from Ceylon and India. The common varieties are called grossularite.

In composition it is a silicate, mainly of lime and alumina. When green it owes its color to the oxide of chromium. An amber colored variety, which occurs in Piedmont, is called from its color, succinite.

The general composition of this variety may be seen from the following average analysis: Silica 40.1, alumina 22.7, lime 37.2=100.

It is curious to trace out the origin of the names of the varieties of the gems.

Garnet is derived from the pomegranate, the seeds of which the garnets were thought to resemble.

Carbuncle is literally "incandescent coal."

Pyrope is named from two Greek words, signifying "fire color."

The almandine garnet takes its name, (*Almandic carbunculus*), from its having been cut and polished at Albanda, in Pliny's time. Albanda was a town in Caria, Asia Minor, named from a deity, Albandus, worshiped there.

Pliny writes of drinking cups of the capacity of a pint being cut from a single carbuncle.

The garnet is common in mica schist, gneiss granite, chlorite schist and other rocks. It is also found massive, forming rock masses of considerable magnitude. It is sometimes found in serpentine and lava.

There are numerous localities of the common varieties of the garnet, both in the United States and Europe. On the Pacific coast, besides the localities already mentioned the following are known: Very fine crystals of almandine are brought from British Columbia. Fine crystals of essonite occur in the Inyo mountains, near San Carlos, Inyo county, associated with dathotite. Grossularite is abundant in the southern counties of the State, some of the crystals resemble cassitrite, (oxide of tin), and have often been mistaken for that mineral by the Cornish miners.

The garnet crystalizes in the isometric system.

The pyrope is generally, if not always, found in rolled amorphous masses from the finest sand to pieces the size of a pigeon's egg.

The garnet can be positively electrified by friction; some varieties possess polarity.

Before the blowpipe almandine and common garnet fuses easily to a magnetic globule. Pyrope fuses with difficulty.

Although the garnet is considered as a gem, yet it never is much sought for in jewelry, being too common to demand a high price; yet garnet sets have at times been fashionable, at which times their value has greatly increased.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency the following are worthy of mention:

AUGER HANDLE.—Geo. L. Gibson, Reno, Nev. This invention relates to an improved handle for augers and boring bits, and provides a simple and effective arrangement, by which the handle is rendered capable of holding augers and bits of different sizes.

STEP LADDER.—Edward A. Stockton, S. F. In constructing this improved step ladder, the inventor uses three round bars or rods to form each upright side bar or step support. These rods are passed through holes properly arranged in the ends of the steps and when the ends of all three bars are drawn together at top and bottom and secured by suitable strong fastenings so as to form them into a triple truss. A side support for the steps of step ladders has heretofore been made of two straight bars which passed through holes in the ends of the steps, but they did not form a truss, and a triple truss has been formed by partially splitting a board in three parts and spreading the parts in the form of a truss, but this support was secured against the ends of the steps and was liable to be wrenched off by frequent strains upon the ladder. The inventor also provides an improved and convenient hinged bar for retaining the ladder brace at the proper spread and also an improved system of bracing the ladder brace.

BALING PRESS.—Jacob Price, San Leandro, Alameda county. In this patent are comprised certain improvements in that class of upright baling presses in which the follower moves from the bottom upwards, so as to compress the substance to be baled to the upper ends of the press. The first improvement relates to a novel manner of applying the toggle levers and an operating screw for raising the follower; also to improvements in the construction of the follower. The second relates to a very simple and effective locking device for fastening the side doors of the press in their closed position, so that they will sustain the inside pressure and yet be easily released when it is desired to open the doors to remove the bale. The third improvement comprises a fastening for retaining the hinged top of the press in its closed position.

GRAIN COOLER.—J. H. DeForce, H. H. Hurd and George Simpson, Redwood City, San Mateo county, Cal. This is an improved flour cooling attachment for grist mills. The improvement consists in forcing one or more currents of fresh air into the flour bolts or bolt chest, in which the flour is bolted, thus not only cooling the flour, but serving also to prevent the interstices of the bolt cloth from becoming clogged. By cooling the flour in the bolt or chest it is prevented from sweating and packing in the bolt, and is caused to bolt with much greater freedom than when it is not. The flour is cooled by this process without additional machinery, except the blower and air pipe or tube, which become a stationary part of the mill.

PAVEMENT.—John M. Snook, San Francisco. This is an improvement on that class of pavements, walks, etc., in which concrete, cement, etc., harden by exposure to the air so as to form an artificial stone surface. The object of the invention is to provide such a construction of the foundation, upon which the artificial stone is laid, that the material can be spread in a continuous body so as to present the appearance of being made in separate blocks or figures, and so that in case of contraction, upheaval or settling of the surface, any fractures will be in uniform straight or regular lines, thus preserving the appearance of the surface.

ARTIFICIAL STONE.—Leathers & Chappelet, Oakland. These gentlemen have received lately two patents. One of these for a novel combination of materials for producing an artificial stone of superior strength and durability. The other relates to a novel process and apparatus by which they are able to make artificial stone in imitation of mosaics without increasing the expenses of manufacture and with but little additional manipulation or handling, other than is required in the manufacture of the plain artificial stone.

CURRENT CHANGER FOR TELEGRAPHIC PURPOSES.—Stephen D. Field, S. F. Mr. Field's patent relates to a device for shifting the electric current from one telegraph line to another without disturbing the continuity of the current, thus enabling an operator to cut off his instrument from the lines without interfering with a passing message.

WINDMILL.—James and Wm. O. Swimmerton, Oakland. This invention is an improved windmill, consisting in mounting the windmill on a horizontal axis inside of a case or housing, which has openings in its sides suitably arranged to admit the wind to the wheel and in which the wind openings are regulated by slides, which can be adjusted to admit more or less wind as desired.

General News Items.

MR. WYMAN has qualified as United States Treasurer.

A PROCLAMATION has been issued calling to arms, all Christians throughout Turkey.

THE excessive heat in the Eastern States the past week has been the cause of many deaths.

SANTA ANNA, the famous Mexican general, died in the city of Mexico on the 21st ult. at the age of 84 years.

THERE was a light rainfall in this city on Friday last—an unusual occurrence at this time of the year.

THERE are rumors that Colonel Reno is to be court-martialed for blundering in the Indian campaign.

SURROGATE CALVIN has dismissed the petition of James Bayley and others to set aside the will of A. T. Stewart.

THE loss of property in central Iowa by the recent floods is estimated at over $1,000,000, over $300,000 of which is in Warren county.

AT the request of the President, the Commissioner of Internal Revenue tendered his resignation, to take effect on the 31st day of July.

THE tornado of last week in Iowa caused a terrible destruction and great loss of life. The village of Rockdale, was completely swept away.

THE North and Northwest Lancashire cotton spinners' and manufacturers' association has resolved to reduce wages 10 per cent. The reduction affects from 50,000 to 60,000 English operatives.

ON the 1st inst. Major General McDowell assumed command of the Military Division of the Pacific, vice Major General Schofield, who goes to West Point.

M. G. KELLOGG, M. D., has become an assistant in Dr. B. J. Smiths' Smithsonian medical and pneumo-physiological institute, No. 635 California street, S. F.

ON the 7th of July, 30 years ago, the American flag was hoisted at Monterey as a symbol that California had ceased to belong to Mexico and was a part of the United States.

AT the request of the President, Postmaster-General Jewell resigned on Monday. He will be succeeded by Judge J. N. Tyner, of Indiana, now Assistant Postmaster-General.

JAMES GORDON BENNETT gives $10,000, Clara Louise Kellogg offers $1,000 and several other subscriptions are mentioned toward erecting a monument to the gallant Custer.

THE NAVY DEPARTMENT has sent out official papers, suspending work at the various private yards in New York, Philadelphia, Chester, Boston, Providence, and elsewhere, on the iron-clads, owing to the absence of any appropriation for this kind of work in the newly-passed Navy bill.

THE Welsh citizens of Nortonville held their biennial Eisteddfod on Saturday, the 24th ult. The mines closed at noon and Welsh patriotism and enthusiasm were unmistakably manifested in favor of the national institution. The officers of the day were: W. P. Morgans, president; F. Howells, adjudicator of compositions in poetry and prose; F. Howells and Rev. W. Parry, adjudicators of addresses and recitations; Professor Meredith, adjudicator of musical compositions and singing; J. R. Davies and E. John, scribes.

Employment Wanted.

Wanted, some kind of employment in the country. Can run a small engine or do many kinds of light work in farming. Reference furnished. Address B., this office.

SCALD head and numerous other diseases of the scalp, for the cure of which so many forms of ointments and plaster have been invented by medical men, can be simply and effectually remedied by washing the head with GLENN'S SULPHUR SOAP. Sold everywhere.

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HENRY NELSON, Merced Falls, is requested to address this office.

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As has been announced in our columns, this company is prepared to do fine wood engraving on favorable terms. Mr. E. Schultze, managing partner, served a thorough tuition in his branch of art in Germany and New York, and has since had over seven years' experience in designing, drawing and engraving in California. Customers can place their orders in Mr. Schultze's hands with the full assurance of receiving satisfaction as to quality of work and fairness of price.

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Much Obliged, Etc.

PORTLAND, OGN., June 26th, 1876.

DEWEY & CO., Patent Solicitors, S. F.—*Gents:* I am much obliged to you for courtesy shown me, and am well pleased with the manner in which you have done my business, and assure you, will cheerfully recommend you to my acquaintances needing such services. Hope to have a case again before long, of my own. I have been an invantor all my life, but let others reap the benefit, or had work stolen from me. Please have the extra copies of my patent, etc., mailed to me direct, and oblige Yours truly, J. H. WOODBUM.

Our Agents.

OUR FRIENDS can do much in aid of our paper and the cause of practical knowledge and science, by assisting Agents in their labors of canvassing, by lending their influence and encouraging favors. We intend to send none but worthy men.

J. L. THARP—San Francisco.
B. W. CROWELL—California.
G. W. MCGREW—Santa Clara county.
J. M. MCARTHUR—Los Angeles, Santa Barbara, Ventura, San Bernardino and San Diego counties.
A. C. KNOX—El Dorado county.
F. A. SCOFIELD—Sonoma county.
C. N. WEST—Santa Cruz county.
CEAS. E. SAJOUS—Philadelphia.
A. O. CHAMPION—Tulare, Fresno and Kern counties.
RICHARD RULE—Nevada.

IMPROVED—Dewey & Co., publishers of the MINING AND SCIENTIFIC PRESS and the RURAL PRESS, now have the leaves of both these sixteen page sheets cut and stitched, which is an improvement that all readers of that otherwise inconvenient form of journal will appreciate very much. Every farmer would be a gainer were he to subscribe for the RURAL. It is decidedly a valuable paper, and the SCIENTIFIC PRESS is no less so to mining men.—Inyo Independent.

GOOD PRINTING INK.—We prefer Chas. Eneu Johnson's printing inks, having used them on this paper for the past four years. H. S. Crocker & Co., printers, stationers, blank book and paper dealers, are Johnson's S. F. agents.—DEWEY & CO., Publishers.

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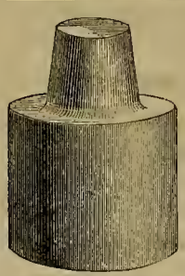
The Exhibition will Continue at least One Month.

THERE WILL BE NO CHARGE FOR EXHIBITING SPACE.

Application for space or for information should be addressed to the Secretary of the Board of Managers, Eleventh Exhibition, 27 Post street, San Francisco, or to J. H. Gilmore, Supt., at same address.

A. S. HALLIDIE, President.
J. H. CULVER, Secretary.

PATENTED

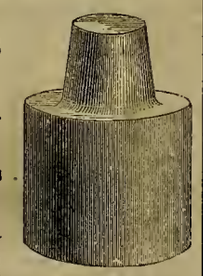


CAST STEEL SHOES AND DIES.

Guaranteed Cheaper than the Best Iron.

IMPORTANT NOTICE.

Reduction in Price from 16 Cents to 12 Cents Per Pound.

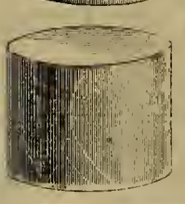


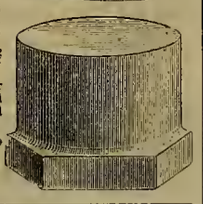
Owing to our largely increased business, the present low price of Iron from which our Steel is manufactured and the improved facilities for casting and forging, we take great pleasure in announcing that from and after this date we will supply our IMPROVED OAST AND FORGED STEEL SHOES AND DIES FOR QUARTZ MILLS at 12 cents per pound, delivered at San Francisco or Sacramento, instead of 16 cents, as heretofore.

We also furnish Steel Plates for Blake and other Ore Crushers, Steel Gnt Gearing, etc., for Mills and Hoisting Works, Steel Pan Shoes, Battery Cams and Tappets, etc.

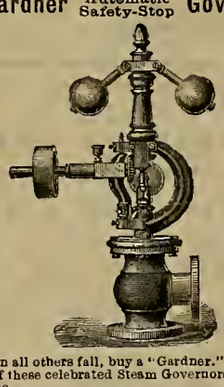
Address all orders, with dimensions or drawings, to

CAST STEEL SHOE & DIE CO.,
59 Nevada Block, S. F.





The Gardner Automatic Safety-Stop Governor.



MORE THAN TEN THOUSAND NOW IN USE. EVERY ONE WARRANTED. SEND FOR DESCRIPTIVE CIRCULAR AND PRICE LIST.

☞When all others fail, buy a "Gardner." We have all sizes of these celebrated Steam Governors on hand at all times

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Selling Agents for Pacific States,
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Newspaper Fileholders.

Dewey's new elastic fileholders (black walnut), size of the Press, *Harper's Weekly* and *Scientific American*, for 50 cts. Larger sizes, to suit any newspaper, 75 cts. By mail, postpaid, 10 cts. extra. Cash with all orders. Patent allowed. Address, DEWEY & CO., Publishers, San Francisco.

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MANUFACTURER AND IMPORTER OF
Church and Steamboat BELLS and GONGS,
BRASS CASTINGS of all kinds,
WATER GATES, GAS GATES,
FIRE HYDRANTS,
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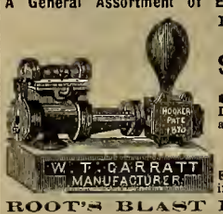
GARDEN HYDRANTS.

A General Assortment of Engineers' Finding.

Hooker's Patent Celebrated

STEAM PUMP



☞The Best and Most Durable in use. Also, a variety of other

PUMPS

For Mining and Farming Purposes.

ROOT'S BLAST BLOWERS,
For Ventilating Mines and for Smelting Works.
HYDRAULIC PIPES AND NOZZLES,
For Mining Purposes.
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IMPORTER OF
IRON PIPE AND MALLEABLE IRON FITTINGS.
ALL KINDS OF
WORK AND COMPOSITION NAILS,
AT LOWEST RATES.
16-tf

To Mining Secretaries.

An amendment to Section 336 of the California Code, taking effect **July 1st, 1874**, provides that in addition to the regular publication, daily or weekly, of the assessment and sale notices as heretofore,

PERSONAL NOTICE

Must be served as provided in the following quotation from the law:

"*The notice must be personally served upon each stockholder, or in lieu of personal service, must be sent through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where the principal office of the Corporation is situated.*"

The above refers to the ASSESSMENT NOTICE only. Advertisers in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assessment notices printed on slips suitable for serving personal notice under this law at short notice.

DEWEY & CO., Publishers.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Antilles Mining Company—Location of principal place of business, San Francisco, Cal.

Notice is hereby given, that at a meeting of the Directors, held the seventh day of July, 1876, an assessment of 20 cents per share was levied upon the capital stock of the corporation, payable immediately, in U. S. gold coin, to the Secretary, at his office, No. 207 Sansome street (third floor), San Francisco.

Any stock upon which this assessment shall remain unpaid on August 16th, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, September 8th, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

H. M. MORGAN, Secretary.
Office, 207 Sansome street, San Francisco, Cal.

Cherokee Flat Blue Gravel Company.—

Location of principal place of business, San Francisco, California. Location of works, Cherokee Flat, Butte county, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 8th day of June, 1876, an assessment, No. 36, of five cents per share, was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, Room 13, No. 328 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 15th day of July, 1876, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Saturday, the 5th day of August, 1876, to pay the delinquent assessment, together with the costs of advertising and expenses of sale. By order of the Board of Directors.

O. H. BOGART, Secretary.
Office, Room 13, No. 328 Montgomery street, Safe Deposit Building, San Francisco, California.

The Manhattan Marble Company of California.

Location of principal place of business, San Francisco, Cal. Location of works, Oakland, Alameda county, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, levied on the 23d day of May, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
C Beach	75	26	$ 75 00
C Beach	76	25	75 00
C Beach	77	25	75 00
C Beach	78	25	75 00
C Beach	79	19	57 00
D M Bokee, Trustee	269	7	21 00
D M Bokee, Trustee	260	3	9 00
E Tripp	302	5	15 00
E Tripp	303	5	15 00

And in accordance with law, and an order of the Board of Directors, made on the 23d day of May, 1876, so many shares of each parcel of said stock as may be necessary, will be sold at the office of the company, 13 and 15 Fremont street, San Francisco, on Monday, the 17th day of July, 1876, at 12 o'clock M., to pay the delinquent assessment thereon, together with the cost of advertising and expenses of sale.

L. L. ALEXANDER, Secretary.
Office, Nos. 13 and 15 Fremont St., San Francisco, Cal

Mariposa Land and Mining Company

of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the sixth day of July, 1876, an assessment (No. 6) of one dollar per share was levied upon the capital stock of the corporation, payable immediately, in United States currency, to the Secretary, at the office of the company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office, No. 9 Nassau street, New York.

Any stock upon which this assessment shall remain unpaid on the seventh day of August, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the second day of September, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

LEANDER LEAVITT, Secretary.
Office, Room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal.

Union Consolidated Silver Mining Co.,

San Francisco, June 15th, 1876.

The annual meeting of the stockholders of the Union Consolidated Silver Mining Company, for the election of trustees for the ensuing year, and for the transaction of such other business as may properly come before it, will be held at their office, 311 California street, rooms 3 and 4, second floor, over Ætna Insurance Office (entrance 309 California street), on Monday, July 17th, 1876, at 2 o'clock P. M. Transfer books will be closed July 12th, at 3 o'clock P. M.

J. M. BUFFINGTON, Sec'y.

Umpire Tunnel and Mining Company.

Of Utah. Principal place of business, San Francisco, Cal. Location of works, Big Cottonwood District, Utah.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 23d day of June, 1876, an assessment (No. 5) of five (5) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, 605 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 24th day of July, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 14th day of August, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. W. DAVIS, Secretary.
Office, 605 Montgomery street, San Francisco, Cal.

Iron and Machine Work.s.

WM. HAWKINS. T. G. CANTRELL.

HAWKINS & CANTRELL,

MACHINE WORKS,

210 & 212 Beale St.,

Near Howard. - - - SAN FRANCISOO.

MANUFACTURERS OF

Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horse Powar.

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Foundry and Iron Works.

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MANUFACTURERS OF

STEAM ENGINES,

Quartz. Flour and Saw Mills,

Hayes' Improved Steam Pump, Brodie's Improved Crueher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard, San Francisco.

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Iron and Locomotive Works,

NOORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

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Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

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JOSEPH MOORE..Vice-President and Superintendent
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IRON CASTINGS

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SHEET IRON PIPE.

THE

Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,

Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

☞ All kinds of Machinery made and repaired.

24v22-3m JOSEPH MOORE, Superintendent.

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Light and Heavy Castings of Every Description Manufactnred.

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The Only Illuminating Tile Manufactured for Lighting Cellars, Basements and Dark Rooms which provides proper ventilation for such places.

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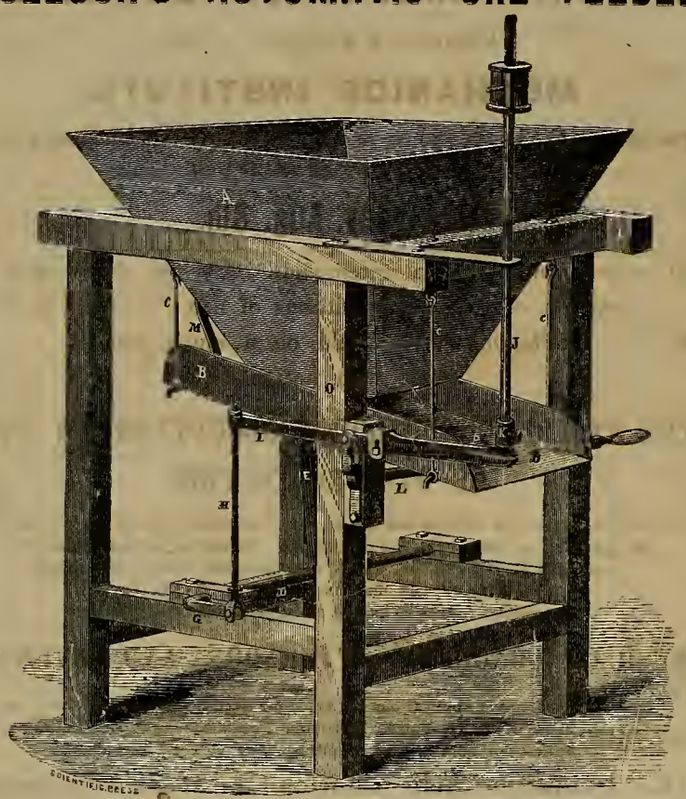
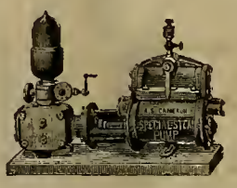


The **TULLOCH AUTOMATIC ORE FEEDERS** have been practically tested during the last year and a half in twenty-seven mills, of from five to eighty stamps each, and have, in every case, given perfect satisfaction. Refer to the following Mills: California, Con. Virginia, Northern Belle, Leopard, Trench, Humboldt, Douglas, Phœnix, Hite, Crescent, and others. Prices Reduced. Send for Circulars.

F. OGDEN, Sole Agent,
417 Market Street, San Francisco.

CAMERON'S STEAM MINING PUMPS.

For the Draining of Mines, Feeding Boilers or Elevating Water.



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BAND SAWS and WOOD WORKING MACHINERY.

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SUCCESSORS TO

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Machinists' Tools and Pickering Governors.

BIGELOW PORTABLE ENGINE AND BOILER, FROM 4 TO 15 HORSE POWER.
FOR SALE CHEAP.

STODDARD'S PATENT CONDENSER, for All Kinds of Steam Pumps.

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Rolling Mill Company,

SAN FRANCISCO, CAL.

Established for the Manufacture of

RAILROAD AND OTHER IRON

—AND—

Every Variety of Shafting,

Embracing ALL SIZES f

Steamboat Shafts, Cranks, Piston and Connecting Rods, Oar and Locomotive Axles and Frames,

—ALSO—

HAMMERED IRON

Of every description and size.

☞ Orders addressed to PACIFIO ROLLING MILL COMPANY, P. O. box 2032, San Francisco, Cal., will receive prompt attention

☞ The highest price paid for Scrap Iron.

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STEIGER & KERR,

IRON FOUNDERS.

Quicksilver Condensers and Furnace Castings.

Sole manufacturers of the Hepburn Roller Pan and Callahan Grate Bars, suitable for Burning Screenings.

NOTICE.—Particnlar attention paid to making Superior Shoes and Dies.

Miners' Foundry and Machine Works,

CO-OPERATIVE,

First Street, bet. Howard and Folsom, San Francisco

Machinery and Castings of all kinds.

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Manufacturing Company,

MANUFACTURERS OF ALL KINDS OF

Wharf and Bridge Bolts, Railroad Trestle Work, Car Frames and Bolts, Machine Bolts, Set Screws and Tap Bolts, Lag or Coach Screws.

ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGON AND SQUARE NUTS, WASHERS, BOLT ENDS, TURN-BUCKLES, ETC., ETC.

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MANUFACTURERS OF

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CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston

PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets.

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BOILER MAKERS

AND GENERAL MACHINISTS,

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A. J. SMITH, Plumber.

Sole Proprietor and Manufacturer of the

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☞ Special attention paid to Brewers', Distillers', Beer and Hot Liquor Pumps, and Wine Pumps. Particular attention paid to AIR PUMPS, also to

DIVERS' SUBMARINE PUMPS.

Artesian Well Pumps Made to Order.

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All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells, and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all size and patterns, furnished with dispatch

☞ PRICES MODERATE. ☜

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Builders of QUARTZ, SAW AND FLOUR MILLS

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STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

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Salamander Felting Company.

PACIFIC BRANCH,

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OFFICE, 317 California street, S. F.

FACTORY, Berry street, bet. 4th and 5th, S. F.

NEVADA AGENCY, 38 North C street, Virginia

INDESTRUCTIBLE NON-CONDUCTOR OF HEAT

Saves 15 to 30 per cent. in Fuel.

REFERENCES: U. S. Government buildings and principal manufacturing establishments in the East and on the Pacific slope; principal mines and mills in Nevada.

Agents for H. W. JOHNS' Patent

Asbestos Roofing and Paints

FIRE AND WEATHER PROOF;

Asbestos Steam Packing,

Made from Pure Long Fiber Asbestos,

INDESTRUCTIBLE! SELF-LUBRICATING!

Keefe's Boiler Compound,

Prevents the formation of Scale in Boilers and removes the same, without injuring the iron or causing the water to foam.

☞ Circulars, Descriptive Pamphlets, etc., Sent Free

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Pioneer Screen Works.

Removed to 32 Fremont Street, near Market

J. W. QUICK.

SCREENS

Manufacturer of perforated sheet metals of every description, at reduced rates. Mill owners using Battery Screens extensively, can contract for large supplies at favorable rates. This is the only establishment on the Coast devoted exclusively to the manufacture of screens

San Francisco Cordage Company.

Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes; Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.

TUBBS & CO.,

s20 611 and 613 Front street, an Francisco

The ALLEN ENGINE GOVERNOR.

Fig. 1. For Variable Cut-Off Engine.

Uniform Speed in the Working of Steam Engines.

THE SIMPLEST AND MOST EFFICIENT GOVERNOR YET CONSTRUCTED.

ECONOMY and SAFETY.

Especially Valuable with Adjustable Cut-Offs. Capacity of Machinery Increased by Accurate Regulation of Speed.

Direct Saving of Fuel—Great Increase in Power of Engines.

The high rate of speed used acts advantageously in making the Allen Governor very sensitive; and all parts being lubricated, it works with the smallest amount of friction.

The speed of the Engine is maintained equally, without reference to the variations in amount of work being done.

The peculiar action of the Governor, which allows the use of a valve of large area, thereby admitting to the Engine cylinder the greatest possible boiler pressure at each stroke of the piston, has produced astonishing results by being attached to old engines, greatly increasing their power or effecting a direct saving of fuel, and in hundreds of instances doing both. In running an engine with the Allen Governor with high or low pressure of steam and with all variations of power, the throttle is opened wide in the morning and remains so until closed at night, thus relieving the engineer from all labor and care except keeping the engine oiled, and giving him a great deal of time for other duties.

Allen's Patent Governor Valve is constructed with a double disc in a tubular frame, and is perfectly balanced, there being no spindle as in the ordinary throttle valve to interfere with its equilibrium. The valve is moved by means of a lever, and is opened and closed by a rocking motion of a steel spindle, which is covered with brass, insuring the greatest possible durability.

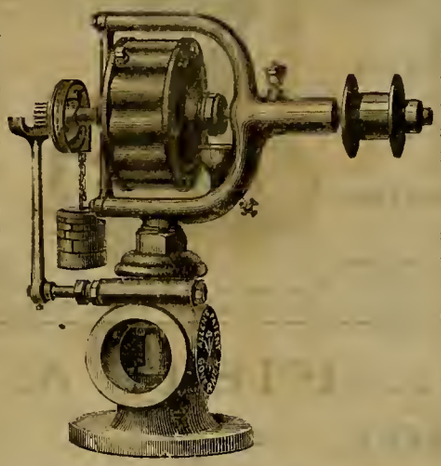

Fig. 2. Allen Governor and Valve.

We have Numerous testimonials from parties who have used this Governor, and watched its workings critically. In all cases the Governor has made the various engines to which it has been applied produce the most profitable results ever obtained.

Fig. 3. Section of Allen Governor.

PARTIES INTERESTED IN STEAM MACHINERY SHOULD EXAMINE THE ALLEN GOVERNOR, WHICH IS NOW INTRODUCED ON THIS COAST FOR THE FIRST TIME. FULL INFORMATION CONCERNING IT CAN BE OBTAINED FROM ILLUSTRATED DESCRIPTIVE CIRCULARS WHICH WILL BE SENT ON APPLICATION. Address,

PACIFIC IRON WORKS, First and Fremont Streets, near Howard, San Francisco,

MANUFACTURERS OF ALL CLASSES OF MACHINERY.

PACIFIC MACHINERY DEPOT,

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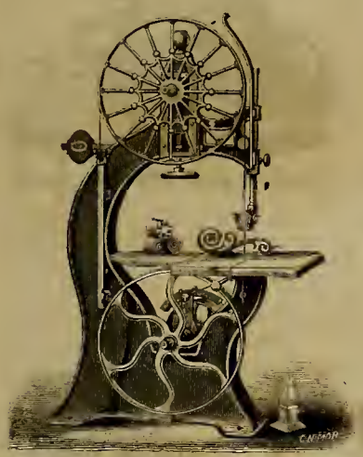
P. O. Box 168. **San Francisco, Cal.**



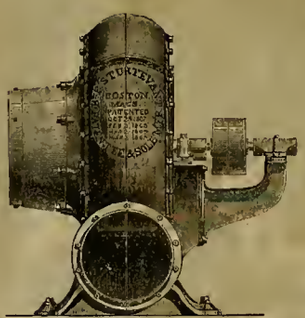
SOLE AGENT FOR THE PACIFIC COAST FOR

J. A. Fay & Co's Wood-working Machinery,

Blake's Patent Steam Pumps,

Tanite Co's Emery Wheels and Machinery,

Fitchburg Machine Co's Machinists' Tools,



Sturtevant Exhaust Fan for Removing Shavings and Sawdust from Machines.

Sturtevant's Blowers and Exhaust Fans,

J. A. Roebling's Sons Wire Rope,

Pure Oak Tanned Leather Belting,

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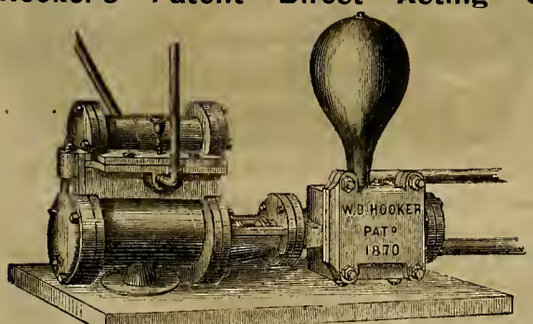
BLAKE'S PATENT STEAM PUMP.

Over 8,500 in Successful Use in the United States.

Hooker's Patent Direct Acting Steam Pump.



N. B.—Also manufacturer of Hooker's Deep Well and Double-Acting Force Pump. Received the Silver Medal awarded at the last Mechanics' Fair in San Francisco. 18v27-2sm3m

W. T. GARRATT,

Cor. Fremont & Natoma streets, S. F.,

Sole Proprietor & Manufacturer for the Pacific Coast.

SIMPLE, CHEAP AND DURABLE.

Adapted for all purposes for which Steam Pumps are used.

The Best Pump in Use.

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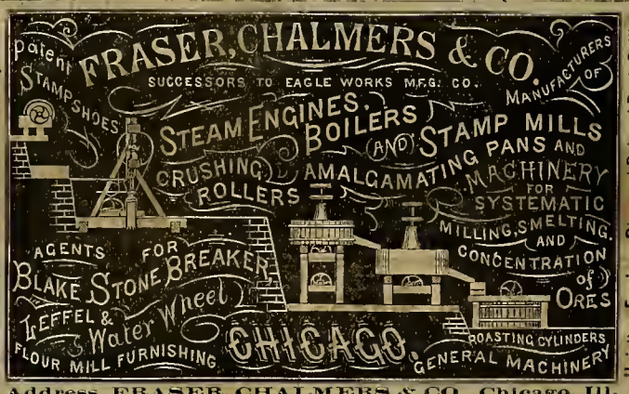
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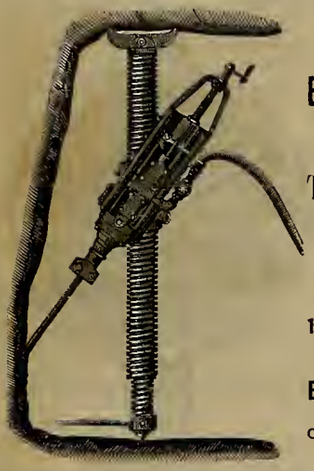

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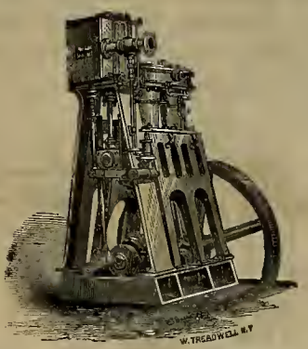

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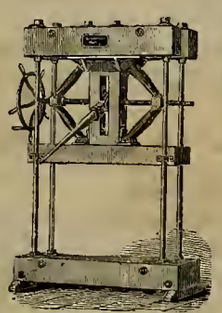

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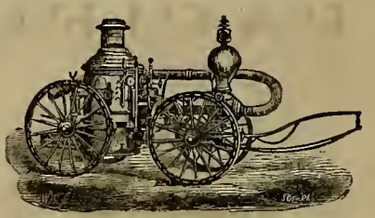

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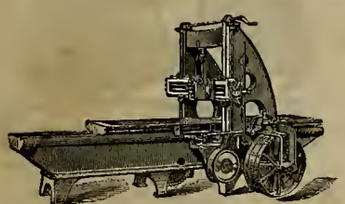

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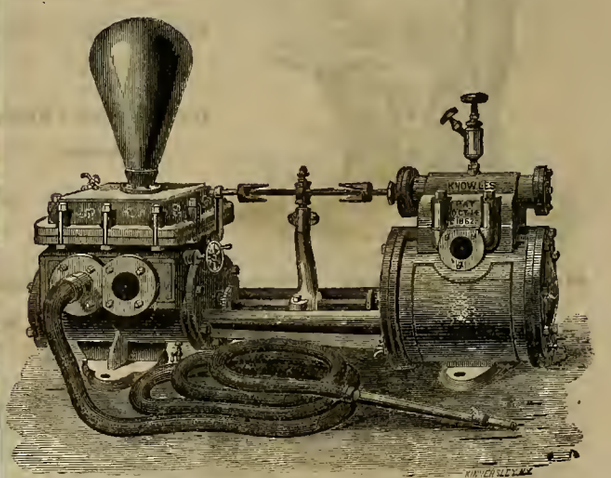

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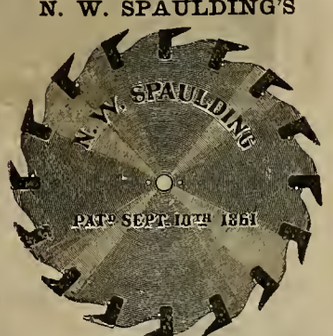

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SAN FRANCISCO, SATURDAY, JULY 22, 1876.

VOLUME XXXIII Number 4.

Fire Proof Buildings.

Jules Borie's Patent Hollow Bricks.

The innumerable cases of destruction by fire which desolate this country, and culminated a few years ago in the calamities of Chicago and Boston, seem to have made a lasting impression on the public of the East, and ought not to be overlooked by the people of the Pacific coast. We are all aware that of the dangers which hang over us inhabitants of cities, none is more serious than this. We can keep away epidemics by good drainage, police regulations, cleanliness and other means. The Eastern man has it in his power to order back to the clouds, so to speak, the thunder bolt which threatens his dwelling. But if our warehouses, stores and dwellings are made of wood, there is no safety for us whatever; our lives and properties are day and night the ready prey of a foe which knows no mercy. We pour immense sums of money in the hands of insurance companies without perceiving that when requested to help us they cannot cover all the losses which we have sustained. We do not realize to its full extent this well established fact that the extra cost of an approximately fire-proof building will be paid, within a few years, by the mere saving of the rate of insurance; moreover, that a tenant will always be glad to submit to a higher rent for a place where he feels that his family, merchandise, furniture, papers and other valuables shall be safe.

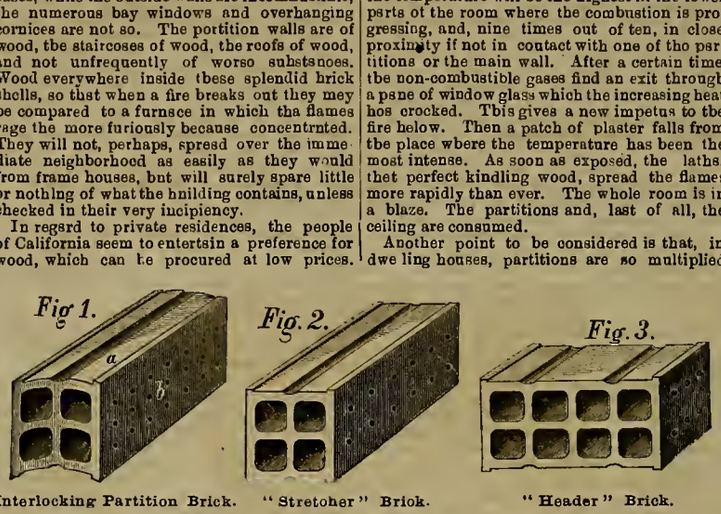
The movement towards fire-proof constructions began in Europe 25 years ago, and was promoted by the introduction to market of iron beams combined with Borie's hollow or, as they were called at that time, tubular bricks, which we purpose to describe in this article. Their consumption has been ever since on the increase in England, France, Germany, Belgium and other countries. In Paris, for instance, few substantial houses and no public buildings are erected without them. Notwithstanding the abundance and cheapness of stone, the partitions are not untrequently the main lateral walls are made of hollow bricks, the use of wood being limited to the floors, windows, doors and the like. As a general thing the cost of these improved structures does not figure 15 per cent. over that of houses in which formerly wood was lavished, and the rates of insurance are almost nominal, usually one-tenth of one per cent. of the valuation.

This wise policy has been highly remunerated, for to it the city of Paris is indebted for its preservation. Just after the German war the Communists, who, for three months had the control of the town, tried to burn it. Hundreds of them were seen every day forcing their way into private residences, business places and public buildings, pouring petroleum on the floors and furniture, setting matches to it, and thence proceeding again with their work of vandalism wherever they had a chance to accomplish it. They were not successful, and the destruction was confined to a few houses and palaces which were particularly combustible. When on a visit to that capital, the American citizen seldom fails to notice the absence of gorgeous fire engines, mounted hook and ladder companies, fire-alarm boxes, etc. He can only see a few hand pumps and ladders carried along the streets by the firemen on foot.

Of late years our large Eastern cities have determined to fight with energy and perseverance the common enemy. Many constructions made fire-proof, or nearly so, may be seen already in New York, Boston, Philadelphia, Chicago, St. Louis, etc. In Chicago rows of cheap houses of this kind have been lately built through the liberality of the Merchants', Farmers' and Mechanics' savings bank. The boards of underwriters are making, all over the land, incessant efforts in the same direction. The impulsion is given. All men of practical and philanthropic sense understand that a question in which every one has an interest is simply a national one, and there is no doubt that in time this great problem of public safety will be solved on a large scale east of the Rocky mountains.

In this State San Francisco and a few other cities are subject to fire limits. These include their main business streets, where numbers of brick structures stand which any town in the United States and Europe would be proud of. At first sight this seems to be a progress in the right line. Unfortunately there is in it more show than reality. In the great majority of cases, while the outside walls are incombustible, the numerous bay windows and overhanging cornices are not so. The partition walls are of wood, the staircases of wood, the roofs of wood, and not unfrequently of worse substances. Wood everywhere inside these splendid brick shells, so that when a fire breaks out they may be compared to a furnace in which the flames rage the more furiously because concentrated. They will not, perhaps, spread over the immediate neighborhood as easily as they would from frame houses, but will surely spare little or nothing of what the building contains, unless checked in their very incipiency.

In regard to private residences, the people of California seem to entertain a preference for wood, which can be procured at low prices.



Interlocking Partition Brick. "Stretcher" Brick. "Header" Brick.

Moreover, they contend that brick walls get damp during the long rainy season and are not as secure as could be wished against heavy earthquakes. For the cheapest class of houses, wood is undoubtedly, and will be for years to come, the main resource. For residences of a higher description, it is claimed hollow bricks will overcome easily the two latter objections.

It is not without some interest to briefly mention how a fire usually originates, and which are the parts of a building best situated to propagate it. Leaving aside the danger arising from the vicinity of an outhouse, a stable for instance, where straw, hay or chips may be ignited, reference is made especially to business places and dwelling houses, which are the most numerous in any city, and where consequently conflagrations are the most frequent. Let us take as an instance a room surrounded by wooden partitions and furred brick walls. In case of arson, the criminal will generally accumulate some inflammable compound in under a closet, a bed, or in the corner of the room, impregnate it with oil and run away. In the case of mere accident: a defective chimney flue; a match in the hands of a child; a lamp which will explode or be left near some piece of light furniture, cotton garments, a curtain or the like; reading while in bed; a heavy spark flying on a carpet after the inmates have retired; these are about the most common causes. The fire is started. Some people might think that hot air having a tendency to ascend, the part of the room to be likely destroyed first will be the ceiling. This is a mistake. In a chimney flue, for instance, the heat decreases in a greater ratio than the distances of any given point to the fire place, and if a damper is applied to this flue, some idea may be formed of what will occur in the burning room. The non-combustible gases generated by the first blaze will gather under the ceiling, which operates in this case as a kind of damper. They will, for a while, keep down the tongues of the flames or, perhaps, owing to some admixture of air, will allow them to faintly leap and blacken the ceiling without doing it any serious injury. On the contrary, the temperature will be the highest in the lower parts of the room where the combustion is progressing, and, nine times out of ten, in close proximity if not in contact with one of the partitions or the main wall. After a certain time the non-combustible gases find an exit through a pane of window glass which the increasing heat has cracked. This gives a new impetus to the fire below. Then a patch of plaster falls from the place where the temperature has been the most intense. As soon as exposed, the laths, that perfect kindling wood, spread the flames more rapidly than ever. The whole room is in a blaze. The partitions and, last of all, the ceiling are consumed.

Another point to be considered is that, in dwelling houses, partitions are so multiplied that their exposed surfaces are far more extensive than those of the main walls, which consequently, even when made of wood, cannot be as dangerous.

Insurance companies are well aware of this fact: that furniture, wooden floors, doors and windows are not liable to start destructive conflagrations. They do not object to wooden beams. When these are protected, just under the floors, by a layer of isolating material, the coat which forms the ceiling being supported by a non-combustible substance, instead of laths, they maintain that such buildings are as nearly fire-proof as can be desired for habitation, and reduce their rates accordingly. But they never fail to charge heavily when wooden partitions are used, even in connection with brick or stone walls.

CONSTRUCTION OF PARTITION AND WALLS.

Thus it will be seen that wooden partitions ought to be done away with wherever there is any regard for safety in buildings. They are at a disadvantage in other respects. The plaster which covers their laths is liable to crack, and gets defaced by the least touch of a piece of furniture, driving of nails, etc. They also conduct the sound so well that a conversation at low voice can be held through them from one apartment to another. But they are cheap and light on the supporting beams, two important items which explain why solid brick partitions are not patronized in this country though their use has been general in Europe from time immemorial, until superseded by hollow bricks, the most prominent features of which we are now going to describe.

As before stated, hollow bricks made their appearance a quarter of a century ago. They were the invention of Borie Brothers, of Paris, and in a great measure helped improving the modes of building of that metropolis. However, they were far from being perfect. Their faces were too smooth, which caused the plaster to peel off, unless of first quality and worked with care. Their shape was too complicated, and required the best raw material, by which the selling price was kept comparatively high. Again, no provision was made for them to interlock one another and thereby form a well bound construction, which is the main point in such thin walls as partitions are. These defects have been obviated by Jules Borie, one of the original inventors, and the improved hollow bricks, for which a United States patent has been issued to him lately through the Mining and Scientific Patent Agency, will be found to answer all the requirements desired in this important matter, as will be seen by the accompanying engravings.

Fig. 1 is a brick especially intended for partition purposes in ordinary dwellings. It contains four longitudinal cavities. Its transverse section is four by four inches, and length eight and one-half inches, thus being nearly double the size of a common brick. For stores, warehouses and public buildings it is made larger. Of its abutting ends one is concave the other convex, so that they interlock with the next bricks of the same course. Both its laying faces, one of which is seen in *a*, are grooved; consequently the mortar operates as a key between all the courses of bricks. A small quantity of mortar enters also from the vertical joints into the cavities and forms a new key. The studdings of the doors are each provided with a vertical groove which leaves a small space between them and the bricks. This space the mortar penetrates, making a third key. As for the lateral surfaces of the brick, one of which is represented in *b*, they are perforated with a certain number of small holes which allow the plaster to go through the shell and clinch on its inner surface, thus giving the coating a perfect adherence to the brick. By these means the whole partition forms a compact strong body, which will defy a commotion as successfully as any well built outside wall.

Fig. 2 is also a partition brick, which only differs from the former by its ends being cut square instead of curved.

Fig. 3 shows a brick containing eight transversal cavities, and is what builders call a "header," while the brick Fig. 2 is a "stretcher." By using both of them a wall of any thickness is built. When erecting the angles of walls of this kind, the bricklayer uses the few headers wanted for the purpose, with their cavities set vertically, instead of horizontally. He fills these cavities with sand within one-half an inch or so of the top, and then applies the mortar as usual. By this method none of the cavities are exposed, and the angles hold firmer than when made of solid bricks.

Fig. 4 represents an eight and a half inch wall, c, c, and a four inch partition, *d*, both in progress at one time. Each course of the partition crosses joints with the corresponding course of the wall, thus giving the structure the utmost stability. On the exposed faces may be seen the small perforations intended to hold the plaster, a few patches of which are shown in the engraving.

The above bricks, which are the best for common use, as well as those of any size and shape intended for ornamentation and other architectural purposes, are made of burnt clay, cement, plaster, or similar compounds. However, clay is the best and cheapest material. It is thoroughly worked and molded by a small machine, in which a high pressure is produced, which turns out these well shaped forms by thousands in a day.

Their weight is less by 55 to 60 per cent. than solid bricks of the same size would be. Consequently no large foundations are necessary for supporting the main walls, nor are heavy beams for bearing the partitions made of them, to say nothing of the safety which follows when lateral pressure has to be reduced, as, for instance, in vaults, arches, etc.

Their cavities keep the inside of the walls permanently ventilated and dry, which does away with the dangerous practice of furring and lathing.

Being bad conductors of heat, cold and noise, they make houses warmer in winter, cooler in summer; they are the healthiest building material yet found. On account of their difficulty of being penetrated by sound, places

(Continued on Page 68.)

CORRESPONDENCE.

Overland Chat.

[Written for the PRESS by MARY MOUNTAIN.]

When we first trudged through the streets of Chicago, we began to say, "Why it seems like San Francisco, don't it?" Only the air is so smoky and dirty and murky, it don't seem good to breathe, and how it shuts out the distance. Ten blocks away everything is dingy and obscure.

And how funny the street cars look, open at the sides, and some are entered at the sides, with seats arranged across instead of lengthwise. Many of the wagons, trucks and carriages look quite different from ours, and we notice that nearly everybody carries an umbrella, and needs it very often, too, in the course of the day, for the pelting showers come down almost without warning.

Passing through the burnt district, we found several vacant lots with ruins, almost as the fire had left them, and at the railroad station, so little has been rebuilt, that we found a waiting and ticket room much smaller and rougher than an ordinary farm kitchen. From Chicago to Titusville, Pa., we passed through the lake shore country, and had expected to find it "all alicked up" and reposing in a sort of elegant leisure. So we were disappointed, and especially with the first farming country eastward of Chicago, where stumps, swamps and the "ragged edge of despair" were most noticeable.

Through Ohio the farms look better and as if the owners take agricultural papers and save up egg money for paint and whitewash. We saw very little stock and none better than the average in California.

Titusville

Was our next stopping place, and if the man in the moon should drop down there with a human nose, he would need to ask no question about its leading industry, for the air is full of it, and the new comer will soon "take it in at the pores" and smell as good as anybody.

The relatives we came here to visit are old settlers, and years ago had told us of the oil that floated on the creek, and how it was sometimes soaked up in a blanket, wrung out and used as an excellent remedy for rheumatism, also as an occasional make-shift for light and for lubricating. There is evidence that some former race knew of this oil and collected it in pits dug along the river bank, and in many of these pits large trees have grown, perhaps generations of trees since.

The Unknown Race "Struck Ile."

Mr. Drake was the lucky and famous man who bored the first well and pumped the first oil in this region, and his old derrick, pump, etc., have been sent forward for the Centennial exhibition.

Much more remarkable wells were soon struck, some bursting out with terrific explosions that sent oil and gas high in the air, and catching fire from the engines immense damage was done before people learned how to control these dangerous elements.

Titusville is in three parts, the beautiful, clean and green, where oil princes live in big, handsome houses, and plenty of other people in commonlcottages; the business section, where merchandise and oil stocks are offered "cheap for cash;" and the oil soaked region by the river where you will find eight refineries; paraffine works, color works, acid works, machine shops and the most enormous tanks, holding 30,000 barrels of oil each.

Measuring one of these tanks, it was found to be 100 feet in diameter and 20 feet high, made of boiler-plate iron riveted together. And here are the iron pipes that bring oil in from the different districts; 12 or 15 of them cross one bridge, some of them 15 miles long, and the oil is forced through them by huge steam engines located at the wells.

The big kettles holding 3,500 barrels each are another curiosity, for the intense fires are kept up by the gas escaping from the oil, and the town is also lighted with gas from the wells in the hills.

It is always considered a good joke to talk of

Setting the River on Fire,

But the good folks of Titusville have reason to pray that no one will try that joke on their river, for they know already how well it will burn. The town has 13,000 inhabitants, and the daily product of oil is about 24,000 barrels.

At Pleasantville, six miles up in the hills, our friends took us to see the boring of a new well; also to see the best yielding well in the place, and we crept up on the greasy derricks to look at the steady black stream that would fill a three-fourth inch pipe, and is worth to its owner about $1,000 per week. The owner is a rough, crude looking man, and with the help of his Irish wife does all the work and keeps down the expenses, so they will soon have a fortune for those ragged little children we saw in the shanty close by the well.

Throughout the oil district the average yield is slowly diminishing, and hundreds of wells are abandoned. To bore a new one takes 20 days and costs some $2,000, and men are constantly hunting for new districts as the old give out. When a well goes dry the derrick is left standing, and in some districts there were more than I could count. A barrel factory turns out 1,000 barrels per day, made from oak wood cut in this vicinity.

The crude oil is now worth $2.18 per barrel—was once as low as 25 cents, and at that time the grocers of this vicinity were in the habit of giving to their regular customers all the oil they could use—and the best refined oil has been sold at five cents per gallon.

Our trip to Philadelphia through the

Lehigh Coal Region

Was full of interest, not only on account of the wonderful scenery, but the immense amount of business along the many iron roads was a rich surprise for us, and took away the very last rag and remnant of our California brag. We fairly turned pale as we whispered so that no one might hear—"Do you think California ever will show so many big towns that make no fuss over being big and doing such a perfectly awful rush of business?" Market street in San Francisco seems busy, but does not begin to give that tremendous impression of vast business operations which struck us so forcibly during one day's ride in the old Keystone State.

The Defiance Strike.

Being informed that another bonanza had been struck in the Defiance mine, the editor of the Coso *Mining News* has visited the mine and says:

From the mouth of the main tunnel we passed through a drift in the front vein, called ledge No. 1, southerly and on a level with the main tunnel a distance of 100 feet, all in fine galena ore. At the extremity of this drift or level, is sunk a shaft 40 feet deep in ore and connecting with another drift or level on the front vein running south along the vein 155 feet, in the same character of ore as on the upper level, making a distance of 245 feet south from the main tunnel. At the extreme end of this level is sunk a shaft 50 feet, showing ore all the way down and of a superior quality at the bottom. The depth from the bottom of this shaft to the surface croppings of the front vein is 300 feet. Nowhere along the line of these drifts have the foot or hanging walls been struck. Returning to the month of the main tunnel, and about 30 feet south of it, is sunk an incline 60 feet deep, from the bottom of which runs a drift northerly along the vein 60 feet in very fine ore. Also from the bottom of this incline shaft a crosscut is run east toward the foot-wall 25 feet, in carbonate ore, with no indications of the foot wall. The body of ore now visible in the crosscut and extending across the front ledge is not less than 40 feet. How much further it extends remains to be solved by further development. We now go through the main tunnel and at 165 feet from its mouth we went through a chute rising to the surface through the north workings of vein No. 2, and everywhere were vast chambers of carbonate and galena ores. From the floor of the main tunnel to the surface is 150 feet. The tunnel now being run from the mouth of main tunnel to tap vein No. 2, is now in 125 feet and ore has already made its appearance. An immense body of ore lies immediately north of this tunnel. Proceeding further in, in the main tunnel 175 feet from the mouth, we enter a drift running south 84 feet in vein No. 2, where at that point it is crosscutted a distance of 25 feet, showing a magnificent body of ore, and the crosscut progressing with no indications yet of either wall. Again we return to main tunnel and move forward to the grand "bonanza," where it breaks through the floor of the tunnel at 300 feet from the mouth, and at a distance of 250 feet from the surface. Here there are several stratas or feeders apparently dipping toward vein No. 3, which appear to be about five feet in width on the floor of the tunnel. An open cut is now run across the floor of the tunnel and is sunk below the floor 25 feet. This cut is ten feet wide at that depth, all in splendid chloride ore, and the vein widening as it goes down. Two drifts are now started, running north and south on this vein, with the same result as at the centre of the tunnel. To say that this is the finest smelting ore we have yet seen in this mineral section would give no conception of its true value. It is the finest body of ore to be seen outside of the famous Raymond & Ely mine when it was in its glory. As to its permanency we have no doubt. The vein dips into the hill; the ore is soft, compact and solid, with no foreign substance intermixing, as in the front vein. The ore resembles the rich yellow ore of the Raymond & Ely. From three assays made yesterday, and taken at random—for there is no choice in the ore—they went $234.25, $443.14 and $465.44. We are overjoyed at the good fortune of the lucky owners. They spent their money without squealing, and now may congratulate themselves on their success. At 75 feet from vein No. 3 we find another body of ore of a somewhat similar character. This last body of ore is about 10 feet in width with similar feeders running toward it as in vein No. 3, as this vein, as yet, has not been opened to any extent, we may indulge the hope that it will prove another great bonanza in the Defiance.

A GOLD VARNISH.—Researches made by M. Kayser, of Nuremburg, have shown that a gold vernish, distinguished both by its hardness and beautiful color, may be obtained by the use of picric and boracic acid. A very pure solution of gum lac should be mixed with picric acid and about half per cent. of crystallized boracic acid, the two acids having been previously dissolved in alcohol. In this way a gold varnish may be prepared, possessing all the advantages of those that are met with in commerce.

Coal Resources of Contra Costa County.

Among the Contra Costa county Centennial papers, is one written by J. T. Cruikshank on the coal and other resources of the county east of the Mt. Diablo meridian. This has been published in the Contra Costa *Gazette* and we extract from it what pertains to the coal mining interests, giving as it does a history of that industry in the county:

In 1859, at Horse Haven, six miles south of Antioch, William C. Israel, in cleaning out a spring on his land, discovered a vein of coal. In connection with his father and brother George, he opened the vein for a short distance; but, not having capital to work it, they disposed of their interest to James T. Watkins and — Noyes, who, either from want of knowledge or capital, failed in opening the vein so as to make the working of it successful. They abandoned the mine in 1861. It has not since been opened.

On the 22nd of December, 1859, at a distance of three and one-half miles west of Horse Haven, Francis Somers and James T. Cruikshank discovered the vein of coal which has since become so well known as the Black Diamond vein. Somers, Cruikshank, and their associates, H. S. Hawxhurst and Samuel Adems, located the lands which were afterwards known as the Manhattan and Eureka coal mines.

George Hawxhurst, George H. P. and Wm. Henderson, in company with Francis Somers, opened the cropping of the same vein, on what was afterwards known as the Black Diamond and Cumberland mines. But, believing that the expense of making roads was beyond their means, they made no attempt to secure title. The Black Diamond mine was shortly after located by Noah Norton, and the Cumberland mine went into the hands of Frank Such and others. These lands, with others adjoining, have since became noted as the Black Diamond coal mines.

The Pittsburg mine, east of the Eureka and towards Horse Haven, was located by George H. P. Henderson, who entered into a contract with Ezra Clark to open the mine, in the opening of which the vein of coal known as the Clark vein was discovered.

The Central coal mine, east of the Pittsburg, was located by John E. Wright. The year following Wm. B. Stewart became connected with it and still remains so.

The Union mine, north of the Manhattan, was located by George Hawxhuret.

The Independent mine, north of the Eureka, was purchased from Major Richard Charnoch by Greenhood and Neubaner.

The Manhattan, Union, Eureka and Independent, comprise the mines forming the basin in which the town of Somersville is situated, and from which there is a railroad for the transportation of coal to Pittsburg Landing, on the San Joaquin.

The Cumberland, Black Diamond, Mt. Hope and other lands, comprise the basin of the town of Nortonville, and from which also a railroad exists for the transportation of coal to Black Diamond Landing, at the head of Suison bay. From the mines enumerated there is about one hundred and twenty thousand tons of coal per annum shipped.

The Central coal mine, although taking out large quantities of coal has no railroad. The coal is hauled by teams to Antioch, on the San Joaquin river. The property is owned by a corporation.

The Empire company opened this year. Have a magnificent vein of coal, and have already contracted for a hundred tons of coal per day. They will soon have a railroad to the mine. The Empire is six miles south of Antioch, and within three-fourths of a mile of the first opening made on the coal veins of the county by the Israels. The mine is owned by George Hawxhurst and John C. Rouse. Openings on the veins from that mine to the Brentwood coal company's works on Marsh's grant have been made, which show that our county has an abundance of fuel to last until the next Centennial year, even if the demand should increase a hundred fold greater than it is at present.

The coal mining interest is becoming rapidly one of the most important ones of the county. It has already built up four towns, viz: Somersville, Nortonville, Black Diamond and Pittsburg Landings, and added greatly towards the progress of Antioch, which place was settled upon in 1849 and 1850 by Parson W. W. Smith, George W. Kimball and J. C. McMaster. The town had no trading post until 1861, when Martin Homburg, now the owner of a fine large brick store, well stocked with merchandise, erected a small building about 20 feet square; since which time its growth has not been rapid but permanent. In the future its growth will be more rapid than in the past. There is south of the town three thousand eight hundred and forty acres of coal land—that is coal lands that can with profit be worked—containing 5,184 tons of coal to the acre, in all 10,906,460 tons, all of which must have its outlet at Antioch. Iron, gypsum, cinnabar, potter's clay, and hydraulic cement rock are found south of Antioch, the two latter in large quantities. Also petroleum, but of such great specific gravity that it will not penetrate through the shales and sandstone. If ever worked it will be by distillation. There is an abundance of it, but it can probably be obtained at less cost from the lower counties of the State than it can be produced for here.

The Fan Method of Ventilating Mines.

We gave in our last issue some details of the operation of the Guiboldt fans in the coal mines in England. One of these fans has been put up in the Gould & Curry mine, on the Comstock, and is thus spoken of by the Gold Hill *News:*

We had the pleasure yesterday morning of viewing for the first time, in full operation, the new Guiboldt suction fan, recently erected under the superintendence of Colonel James G. Fair, at the mouth of the old Gould & Curry tunnel. This fan is a piece of ventilating mechanism entirely different in its operations and results to anything ever before erected on the line of the Comstock. Superintendent Fair, who always has his eyes open for anything in the shape of improvement in mining machinery, found one of the fans in operation at one of the coal mines in Pennsylvania, while on a visit last summer to the East, and struck with its good success as a ventilator, brought with him a plan for the machine, and at the same time ordered from the manufacturers at Wilkesbarre, Pennsylvania, the Guiboldt patent arms necessary for the construction of the fan. Upon his return to Virginia City, an immediate order was given to the Pacific Iron works in San Francisco for the manufacture of boilers, engines and other necessary running machinery. This machinery consists of two upright engines each having a 14-inch cylinder and a 30 inch stroke. The steam for these engines is supplied by two 54-inch tubular boilers, each 16 feet in length. Either engine has sufficient power to drive the fan with ease, in case the other may need repair. This machinery, on its arrival, was erected at the mouth of the tunnel. The mouth and sides of the tunnel were then boxed up air tight, and a chamber of 22 feet in hight and 15 feet in width, constructed in such a manner that the entire volume of air drawn through the full size of the tunnel could have no other exit than through an escape purposely constructed in the top of the chamber. In the center of this air tight chamber is built the fan, it being again enclosed in a casing nine feet in width, in the top of which is the escape. On the other side is left an open space through which the air is drawn when the fan is in motion. The diameter of the fan is 20 feet, and the paddles eight feet in length by five feet in width. Under ordinary circumstances it is run at a speed of 70 or 80 revolutions per minute, which speed can be greatly increased whenever it is desirable to do so. At the time of our visit, the air drawn from the mouth of the tunnel had about the speed of a strong gale, or was traveling at the rate of 60 miles per hour. The simplicity and beauty of the principle is understood at a glance. When this immense volume of hot air is being drawn from the lower levels of a mine through one shaft, it naturally creates a vacuum, which must and will be supplied by fresh air from the surface so long as there is another shaft or opening through which it can descend. The effects of the new ventilator are already being felt to a powerful extent in both Gould & Curry and the Best & Belcher mines, and even extend into the Consolidated Virginia. In the Best & Belcher and Gould & Curry, where the thermometer was at 120 to 130 degrees before its starting up, the temperature is now only from 90 to 95 degrees, and is still steadily decreasing. Mr. Fair deserves and should receive great credit for the introduction and operation of not only this, but many other practical improvements in the machinery for working our deep mines. There is nothing so valuable in the working of a mine as good ventilation. It not only vastly increases the health and comfort of the workmen, but enables them to do double the amount of labor in a given length of time, and will thereby alone return to the stockholders an hundred fold the cost of such machinery.

The Central City Tunnel.

This tunnel, says the Colorado *Register*, is a new enterprise and one of no little importance when considered in the light of the results likely to be achieved from the accomplishment. The tunnel is to be of the uniform size of five and one-half feet wide by six and one-half feet high, and is to be driven through Quartz hill to the vicinity of Leavenworth gulch, a distance of 3,000 feet. Its starting point is in Nevada gulch, a short distance above the mouth of the Quartz hill tunnel, and its direction will be 24 degrees, 51 minutes west of south. Over 30 lodes, more or less developed, are in its course, including the famous Borroughs, Roderick Dhu, Illinois and others, where a depth of 500 feet and over will be attained. As the tunnel will thoroughly explore that part of this wonderful depository of wealth, many blind lodes and extensive ore deposits are likely to be met with. These will furnish a large quantity of ore, while for drainage purposes and as an ore outlet for the mines, it will prove of great benefit to both owners and miners generally. This tunnel site was located in November, 1874, by D. G. Wilson and B. O. Russell, two well known miners of the olden time, who have since organized upon it the Central City tunnel company. Recently Mr. Wilson returned from New York and immediately began the work of driving the tunnel, which is now in 22 feet. A blacksmith shop will be put on the large level plat of ground fronting the gulch. The Adeline and Lewis cluster of lodes will be intersected, and the Fortune lode, that has yielded so well, and is owned by the company, will be cut at a distance of 720 feet and 320 feet below the surface.

MECHANICAL PROGRESS.

New System of Grinding in Germany.

Soma commotion and lively discussion has lately been caused iu Germany and Austria by the announcement that a Mr. Vincent Till, who owns a mill and bakery at Bruck on the Main, had discovered a new process uf grinding grain into flour, which enabled him to make 100 lbs of fine white bread unt of 80 lbs of wheat. Tha *Muehle*, which is the official organ of the society of German millers, said, in one of its October numbers:

Cylinders are undoubtedly destined to play an important part in milling. Yet, however important they may ba, they will alwnys he secondary to a machine which will completely remove the hull of the grain before grinding. Such a machine I have finally, after experimenting for many years, invented. With this mill I can remove every visible trace of the hull while tha grain is dry; and I can, moreover, remova one, two or even three coats from tha kernel, without in the least injuring or losing eny purt of the remainder. When this is accomplished, all the nourishing parts of the grain may be mede into flour; and 126 lbs. of bread may be mada out of 100 lbs of grain. By means of this shelling-machine (*Schaelmaschine*), with a good breaking machine (*Getreidebrecher*), and a smooth cylinder ron, 70 lbs of the finest flour may be made out of 90 lbs of wheat; while with hurrstones, only 20 or 30 lbs. can be produced. Burrstones are an unstacle in milling, and ahould ba done away with.

The inventor, continues the *Muehle*, has sent na a small sample of shelled rye, which has an excellent appearance, and is superior to anything we have ever seen turned out by a dry smutter.

We give the details of Mr. Till's process, as they are set forth by the inventor himself: A condensed sketch of the process is as follows:

1. The grain is oulled by means of a separator.
2. It is subjected to the action of the smut-machine, or wheat-scourer. (The German expression means, literally, shelling-machine).
3. Each kernel is crucked or broken into ten or twelve pieces, by smooth-cylinders.
4. These groats are ground hy cylinders.
5. The product is then subjected to the separating reel.
6. It is then assorted by the middlings purifier.
7. The middlings is then again ground by cylinders.
8. The coarse bran is again grouud by cylinders, as before, and is then
9. Subjected to the holting-chest.—*Miller and Millwright.*

New Electric Motor.

An ingeniously arranged electric-motor has been exhibited in London during the past week by Mr. Chutaux, uf Paris. When recently shown at the Palais de l'Industrie it was awarded both silver and bronze medals for its simplicity and practical superiority over other instruments of its class. The primary force is supplied by a battery of eight or more cells, being a modification devised hy Mr. Chatsux of that of Bunsen. The elements used are graphite and unamalgamated zinc, the exciting fluids being sulphuric acid and bichromate of potash in the inner (or graphite) cell, and a solution of acid sulphate or bisulphate of potash in the outer (or zinc) cell. No smell is emitted from the battery, it is stopped and started without trouble, is very constant, and will last for a long time without renewal. No material action is exerted on the zinc while the battery is at rest, hence the reason for dispensing with the process of amelgamation with mercury. Two or more horse shoe electro-magnets, with their poles upwards, are worked by the current, a wheel rotating on a horizontal axis immediately above and almost touching them. This wheel is practically formed uf two parallel wheels, joined by a series of soft iron bars. As soon as the current is set up the wheel begins to revolve, owing to the attraction between the electro-magnet and the iron, the motion being kept up and rapidly increased by means of a simple antomatic "current reverser." The principal feature to which the inventor draws attention is the construction of the transverse soft iron bars, each of which is composed of seven thin plates, much being thus gained in intensity of magnstization, and consequently in mechanical power. By a series of ingenious devices the machine is applied to working of pumps, sewing machines, lathes, etc., as a substitute for manual or foot labor. It is not, of course, in any way intended to supercede steam, its object being the simple and easy performance of labor of a light description.—*London Mining Journal.*

An Ingenious Contrivance.—An apparatus has been attached to the rear of the pey-car used on the middle division of the Pennsylvania railroad, which is expected to be of important service to the officers of the road when on tours of inspection. A roll of white paper 700 feet in length encircles a cylinder, from which it is paid out at the rate of three feet to the mile, run by the car, its forward movement being regulated by the revolutions uf the nearest axle under the car. A lead pencil, placed about the center of the paper, indicates by its mark the condition of the track. The more uneven tha track the longer will be the mark which the pencil will meke. Another way of showing the inspecting parties thst the track is uneven, is hy a horizontel piece of iron or steel, which oscillates like the pendnlum of a clock, as the train moves. When a very defective point is reached, the pendulum comes in eoutact with a metal on each sida, circular in shape, and creates a sound lika that of a bell. This new invention is expected to work much more satisfactorily than the telegraphic apparatus formerly in operation.—*Philadelphia Inquirer.*

English Quarry Working.

At the Ridge quarries, Corsham, Raudall & Saunders are getting out the Bath stone, which is extensively employed for building purposes. The bed of stone worked at these quarries is a member of the Bath or Great Oolite, is 16 feet thick, and lies at from 80 to 100 feet below the surface. The stone is removed by the pillar and stall system, the overburden and surface being left undisturbed; communication with the surface is effected hy an shaft inclined at 45 deg., the traveling road for the men being provided with well out steps. The face of a heading is first attacked by holing in the stone immediately under the roof, and the men use their tools with marvelous rapidity and skill in effecting this operation. The stone having tu be removed in large blocks, the holings, or as they are locally termed "jads," have to be cut horizontally from seven to eight feet in from the face, and to secure as little waste of stone as possible, they must not be deeper vertically than 10 inches. The tools employed for this purpose are the jadding pick and the jadding iron. The head of tha pick measures 16 inches from tip to tip, and weighs from five to seven pounds. It is set obliquely upon the helve, which varies in length from three to five feet, the shorter length being employed at the commencement, the latter towards the completion of the hole. The jadding iron is a long bar, with a steel chisel edge, employed to deepen those jads which have to be cut beyond the reach of the picks, and is made to act by being forcibly projected against the surface; it is also very serviceable as a lever. The ability to swing a pick having a helve five feet long, close under the roof into a jad five feet deep horizontally, and varying in vertical depth from 10 inches at the face to four inches at the cut, with the velocity necessary to chip the rock, and with the requisite accuracy of aim, is only obtained by long practice. The bold delivery of the blows in rapid succession, and the peculiar rocking motion of the body in the recovery after the stroke attract the notice of visitors, and call forth their admiration at the skill of the workmen. The side or back cuts, which must be made before the block of stone can be removed from its bed, are effected by the use of saws. Each stall has a powerful crane fixed in it, and when the block of stone is ready for removal a lewis bolt is fixed in its face, and the crane put into action. The surface of the block is then dressed with an axe by hand labor. It is now ready to be sent to the surface. This is easily accomplished, tramways being laid throughout the workings and along the inclined shaft. Horses are employed to yield the motive power underground, and one of Brown and May's 10-horse power portable engines is stationed at the surface, and turns the drum upon which the chain employed for hauling is coiled. The tramways is continued with a gentle gradient to the Great Western railway, the force of gravity being the motive power utilized in the descent of the loaded trucks, horse power bringing back the empties and stores.—*English Paper.*

Counterfeit Coins.—From the report of the deputy master of the mint, just published, we learn, says an English exchange, that prosecutions for manufacturing spurious coin are gradually decreasing, they having fallen from 387 in 1860 to 180 last year—the number of prisoners involved being for these periods respectively 887 and 327. The coins most frequently counterfeited are half-sovereigns, florins and shillings, and the skill and science applied to this nefarious manufacture have evidently increased. The most difficult part of the genuine coin to imitate is the milling around the edges; but some of the counterfeits are so well executed that they can only be detected hy careful examination. Ringing is not a certain test, for a slight crack renders it inapplicable, even frequent ringing has the same effect.

Metallic Pyrometer.—A bar of copper is, according to the invention of Mr. A. F. Huet, of Paris, enclosed within a porcelain tube firmly fixed within the surface. The end of the copper bar is rigidly attached to the end of the porcelain tube. The other end of the copper bar is pivoted to one end of a lever, pivoted at the other end to a rod ending in a piston moving in a cylinder filled with liquid. A thermometric tube leads into the bottom of this cylinder, and upon a scale marked upon this tube the rise and fall of the water produced by the lengthening or shortening of the copper bar under the action of the heat is indicated.

A Hundred-ton Gun.—Sir William Armstrong has nearly completed the first of his hundred-ton guns for the Italian government. It will be bored to 17 inch calibre, as originally inteuded, and polygrooved, the projectile being rotated by a sort of gas-check at the base.

SCIENTIFIC PROGRESS.

The "Man-root" of Colorado.

Thomas Meehan, the well known horticultural writer to the *Independent* an account of a wonderful Colorado plant. He says:

Once, in Colorado, I came un a convolvulus, or "morning glory," with wine-glass shaped and wine-colored flowers—but a "vine," but a bush, about a foot ur so over. Seed was not ripe, so I tried to get a root; but in no case could I get one out of the ground. This is all I knew. But here at the Centeunial I find the "man-root" of Colorado—the full size and stature of a men—*fifty eight* inches long! And I am told the account of its digging up. First two men, a half a day, with pick, shovel and crowbar; but the plant not out. The next half day so spent; and still no root. Next day the men were sent out with orders not to return without it; and then it came, and such a root as we see! Here is a small spray in my herburium—*Ipomœa leptophylla;* but I never dreamed of its having such a history as this. Most plants send their leaves and branches into the air, the herbaceous parts fall annually, and the trunk increases in size; but here the increase is all, from year to year, under the ground—a trunk like a small palm or tree-fern, crowned every year hy about 18 inches of foliage, all we see, and in ignorance of the great work going on below. We have something like it in the East. The *Ceanothus Americanus* (the New Jersey tea) and the "briar" (*Smilax rotundifolia*) have herbaceous tops, dying back annually, and yet with roots increasing from year to year, and finally making good-sized underground trunks. But this Colorado "man-root" beats them all.

Salt in the Sea.—Professor Chapman, of University College, Toronto, has published an interesting paper on the "purpose" of the saltness of sea water. After giving reasons why he does not accept the usually received opinions, he urges the theory that the object is to regulate evaporation. If any temporary cause renders the amount of saline matter in the sea above its normal value, eveporation goes on more and more slowly. If the value he depreciated by the addition of fresh water in undue excess, the evaporating power is the more and more increased. He gives the results of various experiments in reference to evaporation on weighed quantities of ordinary rain water, and water holding in solution 2.6 per cent. of salt. The excess of loss uf the rain water compered with the salt solution was, for the first 24 hours, 0.54 per cent.; at the close of 48 hours, 1.46 per cent.; and so on in an increasing ratio.

Constitution of the Sun.—M. G. Plante concludes from his experiments that the sun may be coosidered as a hollow electrified globe, full of gases and vepors, and covered with a liquid covering of molten incandescent matter; the wrinkles, or luculi of his surface, result from undulation in this liquefied stratum; the spots are produced by masses of gas and etectrified vapors proceeding from the interior of the orb, penetrating the liquid layer, and giving the edges of the cavities forms which characterize the passage uf positive electricity. The *Faculæ* seem to be a brilliant phase in the evolution of the gaseous masses when they approach the surface before their eruption. The protuberances are formed by the gases themselves issuing from the interior of the sun at a higher temperature, and consequently more luminous than those which form the atmosphere of his surface.

Phenomenal Effect of Rock Boring.—At a late meeting of the Physical and Natural History Society, of Geneva, M. Turrettini, who has to make frequent visits to the boring of the St. Gotherd tunnel, gave an account of a phenomena which is often produced in the granitic mass of the mountain. When the rock is shaken by the explosion of a mine the report is followed, at unequal intervals, hy other spontaneous explosions at considerable distances from the mine hole, of which the cause is unknown, and which are attended with serious results to the workmen. The phenomenon is new, and appears to indicate a kind of tension inherent in the formation of the granite, which, agitated at one point, is transmitted a distance so as suddenly to disengage large fragments of material.

A Shower of Sulphur.—During the late weather, says *Galignani*, the strange phenomenon known as a shower of sulphur was observed in some parts of the Herault. After the rain the leaves of the trees and sides of the road were covered with a yellowish powder resembling sulphur. This curious occurrence happens very rarely in the south uf France, and is only the pollen of conifers carried off by the wind from some pine forest.

Limit of Strain in Iron.—No. 23 of Van Nostrand's Science Series is an essay on the "Fatigue of Metels under Repeated Strains," from the German of Prof. Ludwig Spangenburg, with a preface by S. H. Shreve. "These experiences," Mr. Shreve says, "prove that there is a limit of strain within which iron is practically indestructible, and that that limit is but little over 30,000 lbs. per square inch for the best iron.

Brazilian Gems.

At a recent meeting of the Royal Geographical Society of England, a paper was read hy Mr. T. B. Wither, in which ucte is mede of the precious stones of the country. He says: In the immediate vicinity of the Tioagy, he informs us, there are large deposits of olaya and gravels, in which latter diemonds were discovered abont 30 years ago, and it was this discovery thet led to the formation of the present town, which, thongh the diamond mines are now no longer worked, still gives evidence of proaperity. The working of these diamond mines was abandoned some four years ego, not on account of their exhaustion, but because tha depth which the diamond-yielding stratum had then reached below the surface made their further operstions no longer profitable with the limited resources at the disposal of those interested. Statistics obtained on the spot, and verified where possible from independent sources, and a careful examination of the mine itself, convinced Mr. Wither that though abandoned for the present it is yet capnble of being worked with exceedingly profitable results. On resuming his journey from St. Jeronymo, and having pssed the river of that name, Mr. Withers found that the geological formation underwent a change. In the place of sandstones and porphyries a reddish-brown amygdaloid rock, with its numerous little cavities lined with the green mineral chlorite, forms the body of the hills, and continues to be the dominant formation down to a point some distance below Jatahy, whence down to the Paranapanema sandstone, split up in all directions by dykes and large masses of greenstone, again takes possession. This amygdaloid formetion extends in a southwesterly direction as far as the Jvahy valley, where it assumes a somewhat different character, the cavities in its substence increasing greatly in size, and often containing agates of four and five feet in diameter, which, when broken up, are found to be lined with brilliient and well formed crystels of amethyst and other varieties of quartz.

A New Microscopical Drawing Apparatus—Dr. Holle, Gottingen, has made au instrument the principle of which is to bring into view not tha pencil itself or its reflected image, hut the entire image thrown hy lenses. The eyepiece of the microscope serves also as eyepiece of a telescope bent twice at right angles end having two mirrors. The first (transpareut) is immediately under the eyepiece; the second, under the object-glass of the telescope. The former is very thin (0 2 mm.) that the images of the drawing-pencil, cast by the upper and under sides of the glass plate, may fall on each other. The other mirror is thicker; and between the two is a lens which again reverses the reversed image of the pencil. The microscopio image can thus be seen directly and without fatigue of the eyes. The drawing hand is immediately to the right, and so in the most convenient position. The image is unreversed.

Value in the Violet.—An Italian chemist has just found out that violets yield a very fine blue color, and this is so sensitive to exterior influences, as to render it of considerable value to the analytical chemist. Most people know that one of the best and most delicate tests employed by chemists to ascertain whether a solution is acid or not is to dip into it a piece of blue litmus paper, which at once reddens if tho least trace of acidity exists. In like manner the reddened litmus paper may be employed in searching for alkalies, for the paper returns to a blue tint on coming in contact with these. The coloring principle of the violet and iris is found to be more delicate still than litmus, and for this reason we may expect soon to see phyllocyanin—for so the new color is called—introduced into all our laboratories.

Eucalyptus Leaves and Oil.—In the *Archiv der Pharmacie*, Dr. I. Homeyer has a paper on the leaves of the eucalyptus globulus and their etherial oil. The paper is, first, a description of a microscopical and micro-chemical examination of the leaves. Secondly, a chemical examination of their oil leeds the writer to the conclusion that it is a mixture, containing: 1st, a terpene boiling from 150-151 deg.; 2d, another terpene boiling from 172 185 deg.; 3d, cymol; 4th, an oxidized substance which stands in a simple relation to cymol, and which has the formula $C^{10}H^{14}O$, or $C^{10}H^{16}O$, probably the latter. Dr. G. Vulpius has an essay in which the planting of this kind of trees is recommended, because the oil, having a tendency to produce ozone like turpentine, is thought to be conducive to health.

Ammonia in Rain.—About 4,590,000 cubic metres of rain fell over Paris in 29 days during the recent floods, and an examination of samples led to the estimate that 9,000 kilogrammes (2.2 pounds each) of ammonia were washed down with it, containing sufficient nitrogen for a forest that would cover the whole uf Paris. The question has often been raised whence plents get their nitrogen, and the above figures help to explain it. The rain was also estimated to contain 88,000 kilogrammes of mineral substance, amongst them being globules of iron of meteoric origin.

Metrical System in Sweden.—On May 3d the Swedish Diet voted the adoption of the metrical system with the French nomenclature. Its obligatory use is to date from 1889. The question has been under discussion more than 20 years. It was first brought forward in 1852; the motion was renewed in 1862, and again last year, when it was taken into consideration with the final result as above.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 Wk to June 29.		1 Wk to July 6.		1 Wk to July 13.		1 Wk to July 20.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	....	....
Advance	....	....	....	....	....	....	....	....
Alpha	47½	46	45½	47½	47	39½	41	34
Ala	....	....	....	....	....	....	....	....
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	....	....	....	....	....	....	....	....
Andes	2½	2½	2½	....	....	1½	2½	1
Alpa	1¾	1¾	1½	1¾	1¾	1½	1½	1
Amazon	....	....	....	....	....	....	....	....
Balt'm'e Con	1¾	1¼	....	....	1¾	1½	2	1¾
Belcher	17¼	16¼	18	17½	18¾	17¼	17¾	16½
Belmont	2¾	2½	2¾	....	3¼	2¾	3	2⅞
Best & Bel	48¾	45½	47½	43½	44½	39½	47½	40
Suckeye	....	....	....	....	....	....	....	....
Bullion	46	43	44	....	44	40	45	40
Caledonia	9¼	8	....	....	7¾	7	9¾	8
California	75¾	72¾	74	68½	70¾	64¾	64¾	55¾
Challenge	....	....	....	....	4¼	4	....	....
Chollar-P'tsi	81	74	80	72	....	....	83	71
Confidence	18¾	17	18½	....	17	16½	17½	16½
Con Imperial	6¾	6	7	6	6¾	5¾	5¾	4¾
Con Virginia	62	57	60¾	50½	52	46	51¾	46¾
Crown Point	10½	9¾	10¼	9⅞	10	8½	10	9
Cosm Con	35c	25c	....	....	65c	50c	30c	25c
Daney	....	....	....	....	....	....	....	....
Dayton	....	....	....	....	4¾	4½	....	....
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka (G V)	....	....	....	....	....	....	....	....
Eureka Con	16½	10¼	13¾	....	12¾	10½	12	10⅞
Exchequer	16½	16	18¾	16½	16½	14¾	16	14
Europa	....	....	....	....	....	....	....	....
Gila	1	75c	....	....	87½c	1	62½c	50c
Globe Con	....	....	....	....	....	....	20c	....
Golden Chlar	2¾	2½	1¼	1	1	37½c	40c	31½c
Gould & Curry	16½	15	15¾	15½	15	13½	15	12½
Bale & Nor	10¾	9	9¾	9	9¼	9	9¾	8½
Ida Elmore	....	....	....	....	....	....	....	....
Jefferson	1⅝	1	....	....	....	....	....	....
Julia	8¾	7¾	7½	7¾	8	5¾	6½	6¾
Justice	23¾	22	23	22½	22¾	20¾	22	20
Jackson	5	4	3½	....	4	3	2⅞	2½
K K Con	....	....	....	....	....	....	....	....
Kentuck	12⅞	12¼	13	....	13	10	11½	10½
Knickerk'r	....	....	....	....	30c	....	25c	....
Kossuth	81½c	50c	1¼	....	1¼	1¼	1⅛	81½c
Lady Bryan	80c	10c	75c	62½c	75c	70c	80c	75c
Lady Wash	2¾	2½	....	....	2½	2½	2⅜	2¼
Leo	....	....	....	....	....	....	....	....
Leopard	7¾	6¾	7¼	....	8¼	7¼	7¾	6¾
Leviathan	....	....	75c	....	75c	70c	70c	....
Mahogany	....	....	....	....	....	....	....	....
Mansfield	30c	....	....	....	....	....	51½c	45c
Meadow V'y	....	....	....	....	....	....	....	....
Mexican	29¾	27¾	30¼	28½	30	25	30½	27½
Mides	....	....	....	....	....	....	....	....
Mint	....	20c	....	....	....	....	....	....
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	87½c	75c	87½c	75c	87½c	75c	75c	62½c
Niagara	....	....	....	....	....	....	....	....
Northn Belle	42	37	37	36	37	32	39	27
New Cosso	3	1¾	2¾	2	2½	2¼	2½	1⅝
Occidental	3½	....	....	....	3½	3½	....	....
Ophir	51½	48	52	47¾	48¾	45	47	40½
Or Gold Hill	....	....	....	....	....	....	....	....
Overman	64	57	66	63½	68	60	63¼	65
Pacific	....	....	....	....	....	....	....	....
Phil'rdan	1¼	1	....	....	1¼	....	....	....
Pioche	....	....	....	....	....	....	....	....
Poorman	65c	60c	60c	....	30c	25c	50c	25c
Prospect	7	6¼	6	....	6	5¾	6	5⅞
Prussian	....	....	....	....	....	75c	1¼	....
Ray & Ely	....	8	9	....	10	9½	8½	8
Rock Island	2	1½	....	....	1	1¼	1¾	1
Rye Patch	....	....	....	....	....	....	....	....
Savage	23	18¾	21	19	20¾	17	21¼	17
Seg Belcher	75	74	72½	....	70	67	65	....
Sierra Nev'da	14¾	13	14¼	14	14	13¾	14¾	12
Silver Hill	7	....	....	....	7¼	7	7¾	6¾
Sth Chariot	40c	....	37½c	....	82½c	....	....	....
Sucoor	62½c	40c	50c	....	....	....	37½c	25c
Union Con	11¾	10¾	11¾	10¾	11¾	10¼	11¾	10¾
Utah	19	17	20c	....	16	15¾	18	16¾
Wells-Fargo	20c	19c	20c	....	15c	....	17½c	15c
Woodville	1¾	1	....	....	1¼	1	1¼	1
Yel'w Jacket	32½	29½	31¼	29¾	30	27¼	27¾	24

Sales at S. F. Stock Exchange.

FRIDAY, A. M., JULY 14.

180 Andes.....2
725 Alpha.....35½@34
480 Best & Belcher...41@40¾
240 Baltimore Con...1½@1¾
325 Belcher.....17@17¼
145 Bullion.....40
2515 Con Imperial.....4¾@5
1930 Con Virginia...47½@46¾
5480 California.....69¼@61½
120 C Point.....9¼@9⅝
90 Challas.....11@11½
40 Dardanelles.....1
60 Exchequer.....15@14¾
185 Gould & Curry.13¾@13½
750 Hale & Nor.....9¼@9
515 Justice.....20@19½
1240 Julia.....6½@7⅜
70 Kentuck.....10⅜@10½
100 Kossuth.....1½
300 Lady Bryan.....75c
25 Leviathan.....65c
325 Mexican.....27¾@27⅞
335 Ophir.....42¾@43½
895 Overman.....63@65
25 Occidental.....3½
20 Rock Island.....2
125 Silver Hill.....7¼@7
165 Savage.....18
90 Sierra Nevada.....13¾
515 Union.....11@11½
30 Utah.....16
25 Ward.....50c
200 Woodville.....1
740 Yellow Jacket...9@25½

AFTERNOON SESSION.

485 Alps.....1@1½
715 Be mont.....3@3¼
2010 Con Imperial.....4½@4¾
2710 California.....57⅛@57½
350 Coso Con.....30@31c
785 Con Virginia...46¾@46¾
200 Eureka Con.....11@11½
100 Gila.....50c
60 Gen Thomas.....2¼@2⅜
50 Golden Chariot.....40c
130 Hale & Nor.....8½
525 Hussey.....90c
260 Jackson.....2⅜@2⅜
100 Jefferson.....87½c@1
80 Leopard.....8¾@9
350 Metallic.....
100 Modoc.....3
1050 Mansfield.....2½@57½c
700 New Coso.....1¾@1⅝
100 Northern Belle.....2
555 Ophir.....40¾@41½
140 Overman.....65c@65½
680 Panther.....1⅞@1⅝
3 0 Prussian.....1
100 Pho.....1⅞
960 Yellow Jacket.....25@25½

SATURDAY, A. M., JULY 15.

185 Alpha.....35@36
390 Best & Belcher.....47½@48
315 Belcher.....17@17½
55 Bullion.....40
55 C nfidence.....17@16¾
2015 California.....59½@58
100 Challas.....8
3467 Con Imperia.....4¾@4½
250 Caledonia.....2@1¾
330 Crown Point.....9⅞@9¾
2960 Con Virginia.....47½@48
775 Exchequer.....14¾@14
60 Eureka Con.....12@11¾
585 Gould & Curry.13¾@13½
300 Hale & Norcross...9@8¾
300 Justice.....20½@21
2668 Julia.....6⅞@6¾
5 Kentuck.....10
950 Lady Bryan.....75c
1650 Mexican.....28¾@28¾
50 Meadow Valley.....75c
540 Ophir.....42@42½
305 Overman.....66@66¾
10 Ray & Ely.....8
30 Seg Belcher.....65
660 Sierra Nevada...13¾@13
540 Savage.....17¼@17½
240 Utah.....16½
705 Union Con.....11@10¾
560 Yellow Jacket..24¾@24½

MONDAY, A. M., JULY 17.

375 Alpha.....35½@37
100 Sullion.....40¾@40
655 Best & Bel.....41¾@42
10 Belcher.....17¼
1 California.....64¾@63¾
3075 Con Virginia...50½@51¾
480 Caledonia.....8¾@9¼
65 Crown Point...9¾@9⅝
4670 Con Imperial.....4¾@4¾
95 Confidence.....18¾@16¾
2424 Con Virginia...49¾@42½
175 Exchequer.....15@14¾
450 Gould & Curry.13¾@13¾
340 Hale & Norcross.8⅞@8½
605 Julia.....6¾@6¾
460 Justice.....20¾@20
315 Kentuck.....11@11¾
750 Lady Bryan.....75@80c
1535 Mexican.....29¾@29
425 Ophir.....42½@42½
350 Overman.....68@67¾
175 Savage.....17@17¼
365 Sierra Nevada...13@13½
20 Utah.....16
615 Union.....11
710 Yellow Jacket...25@25¼

AFTERNOON SESSION.

745 Alps.....1@1¼
245 Andes.....2¾@2½
150 Alpha.....3½@3⅜
580 Baltimore Con...1¼@1⅜
480 Belmont.....3@3¼
130 Best & Belcher...41½@43
905 California.....56@56¾
680 Con Virginia...49½@49¾
3475 Con Imperial.....4¾
200 Challenge.....4
5 Chollar.....73¾
100 Dardanelles.....1
100 Eureka Con.....11@11¾
380 Gila.....50c
245 Gen Thomas.....2¼@2
20 Gould & Curry.....13¾
890 Golden Chariot.....37½c
65 Con Virginia...57¼@57½
175 Caledonia.....9½@9
265 Crown Point.....9¾
630 Con Imperial.....5@5¾
110 California.....61¾@61¾
150 Crown Point R...30@25c
650 Coso Con.....30@27½c
45 Exchequer.....15¾
100 Golden Chariot.....40c
250 Jenny Glynn...57½@62½c
75 Justice.....20¾
145 Julia.....8@8¼
50 Kossuth.....1¼
700 Leo.....20@25c
885 Lady Bryan.....78@76c
20 Bullion.....43
225 Chollar.....80@83
20 Confidence.....17½@17¾
920 Caledonia.....9¾@9¾
6030 Con Virginia...59½@61¼
480 Crown Point.....10@9¾
4720 California.....59½@64¾
2312 Con Imperial.....5¾@5
120 Exchequer.....15¾@16
635 G & Curry.....13@15½
1551 Hale & Nor.....9¼@9½
3145 Julia.....8¾@8½
725 Justice.....21¾@22
115 Kentuck.....11½@11¾
400 Lady Bryan.....75c
3210 Mexican.....29¾@30¼
560 Ophir.....46¾@47
685 Overman.....65@69¾
315 Savage.....21@21½
440 Sierra Nevada...14@14¾
170 Utah.....17@17½
1785 Union Con.....11¾@11¾
460 Yellow Jacket..21¾@27½

AFTERNOON SESSION.

520 Alpha.....39@39½
235 Andes.....2¾@2⅞
260 Belmont.....3½@3¾
505 Best & Bel.....46@46½
170 Belcher.....17¾
955 Baltimore Con.....2@1⅞
1880 Con Imperial.....5¾
1960 Con Virginia...53¾@49¾
915 California.....61¾@61¾
10 Chollar.....60
45 Caledonia.....9½
60 Eureka Con.....11¼@10⅝
680 Gen Thomas.....2¼@2⅜
120 Gila.....62½c@50c
1140 Golden Chariot.....31½c
465 Gould & Curry.15¼@15¾
50 Hussey.....95c
320 Julia.....8¾@8¾
1 0 Kossuth.....1⅝@1
300 Knickerbocker.....25c
360 Leopard.....9@9¼
100 Lady Wash.....2¼
500 Mansfield.....45c
610 Mexican.....29½@30
1050 Maryland.....50c@52c
30 Northern Belle...29¾@32
70 New Coso.....3¼
50 North Carson.....25c
500 Nth Con Va.....75c
350 New York.....75c
155 Overman.....63¾@66
15 Prospect.....6
50 Poorman.....50c
5 Raymond & Ely.....8¼
300 Silver Hill.....6¾@6¾
150 Sutro.....20
175 Utah.....18
200 Virginia.....2¾
40 Woodville.....1
300 W Belcher.....2¾
250 Wells-Fargo.....11½c
420 Ward.....1
570 Yellow Jacket..23½@26½

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., JULY 13.

170 Alpha.....37
95 Andes.....2¾
100 Baltimore Con...1½@1⅝
280 Best & Belcher.....41¾
170 Belcher.....17@17½
15 Bullion.....40
130 Chollar.....73@74
980 California.....64¾@65
190 Crown Point.....9¾@9⅞
336 Con Virginia...47¾@48
403 Con Imperial.....5¼
340 Confidence.....16½
125 Caledonia.....7¾@7¾
100 Columbia.....50c
100 Dardanelles.....1
360 Exchequer.....15@15¼
130 Gould & Curry...14@14
725 Hale & Norcross...9@9¼
3195 Julia.....6¾@6¾
180 Justice.....21@21¾
100 Kossuth.....1½
270 Lady Bryan.....75c
120 Lady Wash.....2¼
795 Mexican.....27½@ 8¾
395 Ophir.....45@46
199 Overman.....63@63¾
20 Prospect.....5¾
180 Savage.....20¾@21
270 Sierra Nevada...13¾@14
50 Silver Hill.....7
265 Utah.....15¾@16¾
1225 Union Con.....11½@11¾
100 Virginia.....2¾
15 Ward.....1¾
185 Y Jacket.....27½@27¾

AFTERNOON SESSION.

90 Alps.....1½
1270 Belmont.....3¼
90 Belcher.....17¼
240 Con Virginia...48@47¾
1205 California.....64¾@63¾
35 Crown Point.....9⅝
350 Caledonia.....8¾
110 Exchequer.....15½@16
882 Gila.....75c@62½c
380 Gen Thomas.....2¾@2⅜
250 Golden Chariot.....37½
25 Hale & Norcross...9@9¼
240 Imperial.....5¾
50 Jackson.....3
675 Julia.....6¾@6¾
100 Justice.....21¾
650 Leopard.....8¾@8¾
50 Meadow Valley.....90c
1090 Mansfield.....52½c
175 Mexican.....28¾@28¾
795 Northern Belle.....30@31
740 New Coso.....2¾@2¾
130 Ophir.....45¼
410 Overman.....63¾
250 Prussian.....
1140 Panther.....1¾
35 Raymond & Ely.....8¾
50 Seg Belcher.....69@70
155 Sierra Nevada...13¾@13¾
855 Union Con.....11¼@11¾
260 Yellow Jacket.....27½

THURSDAY A. M., JULY 20.

45 Andes.....2¾
160 Alpha.....38@39¼
845 Best & Belcher...45¼@45¾
150 Baltimore Con...1¾@2
170 Belcher.....17½@17¾
40 Bullion.....40@41
135 Crown Point.....10@9¾
1875 Con Imperial.....5½
1825 Con Virginia...47½@47¾
120 Confidence.....9¾
130 Chollar.....76@78
1060 Con Virginia...55¾@57¾
1675 California.....60½@61
30 Exchequer.....14¾@15
285 Gould & Curry...14¾@15
1215 Hale & Norcross.8¾@9¼
620 Justice.....21@21¾
310 Julia.....7¾@8
60 Kentuck.....10½
540 Kossuth.....1
450 Lady Bryan.....75@81½c
60 Lady Wash.....2¾
100 Lewisham.....75c
365 Mexican.....29¾@29¾
230 Ophir.....44¾@45
60 Overman.....66
60 Sil Hill.....8¼
370 Savage.....18¾@18¾
850 Succor.....25@25½c
230 Sierra Nevada...13¾@14
430 Union.....11½@12
60 Woodville.....1¾
400 West Belcher.....2¾
610 Ward.....1¼
250 Yellow Jacket..25½@25¾

AFTERNOON SESSION.

No Session of the Board.

California Board—Latest Sales.

WEDN'SDAY, A. M., JULY 19.

240 Andes.....2¾@2¾
600 Baltic.....2½@2⅝
85 Best & Bel.....47½@48¼
250 Columbia.....75c
65 Con Virginia...57¼@57½
175 Caledonia.....9½@9
265 Crown Point.....9¾
630 Con Imperial.....5@5¾
110 California.....61¾@61¾
150 Crown Point R...30@25c
650 Coso Con.....30@27½c
45 Exchequer.....15¾
100 Golden Chariot.....40c
250 Jenny Glynn...57½@62½c
75 Justice.....20¾
145 Julia.....8@8¼
50 Kossuth.....1¼
700 Leo.....20@25c
885 Lady Bryan.....78@76c
550 Mansfield.....50@52½c
500 Monumental.....12½c
30 Mexican.....29¾@29¾
20 N Sierra Nevada.....1
500 North Mon.....37½c
235 Nevada.....37½c
100 Niagara.....20c
25 Occidental.....3¾
1960 Con Virginia...46¾@49¾
915 California.....61¾@61¾
10 Chollar.....60
45 Caledonia.....9½
60 Eureka Con.....11¼@10⅝
680 Gen Thomas.....2¼@2⅜
120 Gila.....62½c@50c
1140 Golden Chariot.....31½c
465 Gould & Curry.15¼@15¾
50 Hussey.....95c
320 Julia.....8¾@8¾
1 0 Kossuth.....1⅝@1
300 Knickerbocker.....25c
360 Leopard.....9@9¼
100 Lady Wash.....2¼
500 Mansfield.....45c
610 Mexican.....29½@30
1050 Maryland.....50@52½c
30 Northern Belle...29¾@32
70 New Coso.....3¼
50 North Carson.....25c
500 Nth Con Va.....75c
350 New York.....75c
155 Overman.....63¾@66
15 Prospect.....6
50 Poorman.....50c
5 Raymond & Ely.....8¼
300 Silver Hill.....6¾@6¾
150 Sutro.....20
175 Utah.....18
200 Virginia.....2¾
40 Woodville.....1
300 W Belcher.....2¾
250 Wells-Fargo.....11½c
420 Ward.....1
570 Yellow Jacket..23½@26½

Pacific Board—Latest Sales.

WEDN'SDAY, A. M., JULY 19.

50 Alpha.....42
955 Best & Bel.....47@46
15 Belcher.....18
970 Con Im erial.....5.30@5¾
100 California.....63¾@63¾
1290 Con Virginia...50½@51
100 City of B ston.....80c
250 Caledonia.....9¾@9¾
25 Crown Point.....9⅝
710 Chollar.....78@79
100 Dardanelles.....1
700 Erie Con.....1½@1.10
270 Gould & Curry...15@15½
200 Bale & Nor.....9@9½
165 Julia.....8¾@8¾
95 Justice.....21½@23
15 Kossuth.....1¾
550 Lady Bryan.....80@82½c
980 Mexican.....29¾@30¼
20 Overman.....64
310 Ophir.....46¾@47
100 Rock Island.....1¾
10 Savage.....19¼@19½
50 Sierra Nevada...14¾@14¾
700 Union.....11@11¾
151 West Belcher...2¾@2¾
175 Ward.....1

740 Yellow Jacket...27@27½

AFTERNOON SESSION.

610 Julia.....8¾@8¾
110 Kossuth.....1½@1¾
370 Leopard.....9@8¾
150 Lady Bryan.....80c
500 Mansfield.....50c
250 Mariposa S.....1¾
1315 Mexican.....30¼@29¾
300 New Coso.....1¾
100 Occidental.....3¼
210 Panther.....1¾
120 Ophir.....46¾
210 Panther.....1¾
30 Raymond & Ely..8¾@8¾
290 S Chariot.....26c
100 S Nevada.....14@14¾
500 Savage.....19¾@19¾
115 Virtue.....
420 Ward.....1
365 Yellow Jacket..26½@27½

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Deling'nt.	Sale.	Secretary.	Place of Business
Chollar Potosi M Co	Washoe	10	5	June 26	July 28	Aug 16	W E Dean	419 California st
Europa M Co	Washoe	6	25	June 19	July 25	Aug 15	R B Noyes	419 California st
Florida S M Co	Washoe	5	25	June 19	July 27	Aug 21	L Hermann	220 Sansome st
Gila S M Co	Nev	1	25	July 10	Aug 19	Sept 13	W A Knapp	309 Montgomery st
Golden Chariot M Co	Idaho	17	10	July 11	Aug 18	Sept 8	L Kanlan	Merchants' Ex
Ida Elmore M Co	Idaho	20	1 00	June 26	July 31	Aug 21	W Willis	309 Montgomery st
N Con Virginia M Co	Nev	3	25	June 3	July 7	July 29	J Maguire	419 California st
Niagara G & S M Co	Nev	2	15	June 12	July 13	Aug 1	W R Townsend	Nevada Block
North Dayton M Co	Nev	2	10	June 21	July 31	Aug 18	R S Culverwell	330 Pine st
Overman S M Co	Washoe	35	3 00	June 26	July 31	Aug 21	G D Edwards	414 California st
Picton M Co	Washoe	11	10	July 13	Aug 15	Sept 2	S Phillips	408 California st
Rock Island G & S M Co	Washoe	11	50	June 26	July 31	Aug 22	J W Clark	418 California st
Savage M Co	Washoe	24	2 00	May 31	July 6	July 25	E B Holmes	309 Montgomery st
Silver Hill M Co	Washoe	8	1 00	July 18	Aug 22	Sept 12	W E Dean	419 California st
South Chariot M Co	Idaho	17	30	May 25	July 3	July 27	W H McClintock	419 California st
Succor M & M Co	Washoe	15	50	July 11	Aug 14	Sept 1	W H Watson	302 Montgomery st
Trojan M Co	Washoe	2	30	June 14	July 20	Aug 10	D Wilder	323 Montgomery st
Utah S M Co	Washoe	13	2 00	July 11	Aug 16	Sept 4	G C Pratt	309 Montgomery st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Albany Q M Co	Cal	2	3	July 7	Aug 11	Aug 28	W H Widman	414 California st
Antilles M Co	Cal		20	July 7	Aug 6	Sept 8	H M Morgan	207 Sansome st
Aurecla G & S M Co	Nev	1	10	June 17	July 20	Aug 5	T S Fitch	240 Montgomery st
Bullion G & S M Co	Nev	2	1 00	July 10	Aug 16	Sept 5	E T Allen	535 California st
Big Bar M & M Co	Cal	1	5	May 29	July 3	July 22	J M Buttington	311 California st
Cherokee Flat Blue Gravel Co	Cal	36	5	June 8	July 18	Aug 5	O H Bogart	328 Montgomery st
Coos Bay Coal M Co	Oregon		4	June 20	July 27	Aug 15	T P Seach	424 Montgomery st
Coquille Black Sand M Co	Oregon		20	June 24	Aug 3	Sept 21	F P Reynolds	111½ Leidesdorff st
Defiance M Co	Coeo Dist	Cal	1	50	July 26	Aug 16	W G Hughes	314 Montgomery st
Eagle S M Co		Nev	4	25	May 16	June 26	H L Byrne	533 Kearny st
Eclipse & Lee M Co		Cal		25	June 22	July 22	Aug 5	D Buck	309 Montgomery st
Enterprise Con M Co		Cal	8	15	June 2	July 15	Aug 8	F J Hermann	418 Kearny st
Florence Con G M Co		Cal	1	5	June 12	July 14	Aug 1	L Leavitt	309 Montgomery st
Hurrioane M Co		Cal		25	July 7	Aug 26	Aug 26	W O M Berry	240 Montgomery st
Kearsarge Con Qnick M Co		Cal		15	July 1	Aug 28	Sept 16	Jas McHaffee	Stevenson Block
Kelsey G & S M Co		Cal	16	10	June 6	July 11	July 31	J H Sayre	330 Pine st
Mariposa L & M Co		Cal	6	1 00	July 6	Aug 7	Sept 2	L Leavitt	309 Montgomery st
Montezuma M Co		Cal		25	July 7	Aug 26	Aug 26	W O M Berry	240 Montgomery st
New England T & S Co		Cal	2	10	June 10	July 20	Aug 10	C C Tripp	401 California st
Omega Table Mt M Co		Cal		5	June 23	July 31	Aug 21	David Wilder	328 Montgomery st
San Jose M Co		Nev	12	5 00	June 14	Jn y 17	Aug 2	A Garrigan	107 Front st
Santa Rosa G & S M Co		Washoe	22	25	July 16	Aug 22	Sept 14	J M Gillam	113 Davis st
Ore Fino M Co		Idaho		15	June 6	July 12	Aug 6	W H McClintock	419 Califrnia st
Renton Coal M Co	Washington Ter		2	1 00	June 5	July 2	Aug 24	T H Henderson	24 Sacramento st
Silver We t Con M Co		Nev	6	10	May 24	July 8	Aug 5	F R Bunker	606 Montgomery st
South St Louis M Co		Nev	1	10	June 8	July 13	July 30	R B Noyes	419 California st
Table Mt Alpha M Co		Cal		10	July 13	Aug 15	Sept 5	L Leavitt	309 Montgomery st
Umpire Tunnel & M Co		Utah	5	5	June 23	July 24	Aug 14	W W Haris	605 Montgomery st
Wall Street Q M Co		Cal	2	20	July 11	Aug 14	Sept 4	D K Tripp	401 California st
Washington Blue Gravel Co		Cal	1	60 00	June 1	July 15	Aug 15	H Steinegger	Britton & R y
Woodside M & M Co		Cal	5	25	June 6	July 17	Aug 17	S M Cutler	226 California st
Young America M Co		Nev	4	10	July 18	Aug 21	Sept 9	R H Brown	426 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
American Flat M Co	Nev	C A Sankey	331 Montgomery st	Annual	Aug 2
Carrie Hale Hydraulic M Co	Cal	F W Van Reynegom	531 California st	Annual	July 31
Dayton G & S M Co	Nev	W E Dean	309 Montgomery st	Annual	July 2
Defiance M Co	Cal	W G Hughes	314 Montgomery st	Annual	Aug 7
Eagle S M Co	Nev	H L Byrne	533 Kearny st	Annual	Aug 1
Emigrant S M Co	Nev	W H Chickering	426 California st.	Annual	July 25
Europa M Co	Nev	R B Noyes	419 California st	Annual	July 27
Lady Franklin M Co	Nev	Called by Trustees	507 Montgomery st	Special	July 26
New York Hill G M Co	Cal	F J Hermann	418 Kearny st	Annual	July 28
Overman S M Co	Washoe	Called by Trustees	414 California st	Special	July 25
Picton M Co	Nev	S Phillips	408 California st	Annual	July 22
Sag Europa M Co	Nev	R B Noyes	419 Califo nia st	Annual	July 27
South Comstock G & S M Co	Nev	J M Buttington	311 California st	Annual	Aug 21
Tintic M Co	Utah	H Clay Miller	310 Sansome st	Annual	Aug 14

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	C D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	June 19
California M Co	Washoe	O P Gordon	309 Montgomery st	2 00	July 11
Consolidated Amador	Cal	F B Latham	426 California st	25	July 8
Con Gold Hill Quartz M Co	Washoe	R Wagener	414 California st	25	April 17
Cons Virginia M Co	Washoe	Chas H Fish	401 California st	2 00	July 11
Comanche M & M Co		W W Traylor	Nevada Block	25	June 10
Empire M Co	Nevada Co	Cal D A Jennings	401 California st	2 00	April 11
Empire M Co	Sierra Co	Cal Chas Collishonn		5 00	Mar 15
Empire M & M Co	Washoe	W E Dean	414 California st	25	April 17
Imperial S M Co	Washoe	W E Dean	414 California st	25	April 17
Northern Belle M & M Co		W Willis	309 Montgomery st	1 00	July 15
St Patrick M Co	Cal	D F Verdenal	409 California st	30	Mar 10
West Comstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Feb 24

The Mining Share Market.

The depression in stocks has been more than nsually marked dnring the past week. Contradictory rnmors affecting the bonanza stocks have made the market somewhat variable, bnt the bears seem to have had the best of the sitnation. The daily press seems divided in opinion on the snbject of the merits of these mines, and interviews with leading operators are in order. Several of these have appeared, but the pnblic seem none the wiser for them, so varying are the statements. Some say the honanza is nearly worked out; others that it is as good as ever. Dnring the latter part of lsst week and the first part of this the market was in a very depressed condition and the honanza as well as other stocks, as may be seen by our tables, were at "bedrock". Dnring Wednesday, bowever, tbey rallied somewhst, although Thnrsday morning's ssles showed rather a falling off from Wednesday's prices.

There are a good many theories as to the canse of the "decline and fall," more in fact thsn we have spsce even to ennmerate. Whether the decline was the resnlt of a well directed bear movement or simply a lack of confidence of the pnblio we bave no means of knowing. Witb regard to the reports which have appeared in one of our sensational daily papers, Colonel Fair, of the "bonanzs firm," totslly denies tbem. He says that no work has been done for five montbs on the 1500-foot level of the California, and that the 1700-foot level of the Ophir has been flooded since the October fire. Tbe winzes from the 1500-foot level of the California and Consolidated Virginia, he states, are in rich ore. He attributes the efforts of the bears to disparage the mines to their fear of being cinched in stocks.

The decline in silver will no doubt seriously injure tbe silver mining interests of tbe country, and Nevada must natnrally be the first to snffer. We are beginning already to feel the evil effects of the present heavy discount on this metal.

Several important elections of mining companies took place this week. The most prominent wss that of the Savage, over which there has been snch a fight. There were 99,668 shsres represented. The following were the officers elected Trustees: James R. Keene, Henry Keene, John W. Coleman, S Steinhart and Thomaa H. Williams. Henry Keene was elected President, and E. B. Holmes, Secretary. Thns ends the great contest over Savage, which has heen the talk of the street for a month past.

The Yellow Jacket mining company held their election at Gold Hill, and elected as Trustees Thos. G. Taylor (President and Snperintendent), James G. Fair, F. A. Tritte, George A. King and D. L. Bliss. An assessment of $1 per share, amonnting to $120,000, wss levied jnst after the election, the second tax on the new stock, and the 23d assessment since the opening of the mine, aggregating $2,598,000, against $2,184,000 dividends.

The struggle between the dissatisfied stockholders of the Newark mine resulted in an election of an entirely new Board of Trustees, said to be in the interest of the ontsiders and composed as follows: A. H. Gazzli (President), I. Weightman, Joseph Warbnrton, T. B. Smithson and Joseph Naphtaly; and J. A. Fairweather was elected Secretary. There were nearly 18,000 shares of the capital stock voted by the snccessfnl party, the late management making no attempt at opposition.

There is dissstisfaction among the stockholders of the Picton mine, and a movement is on foot to oust the present controllers of the company.

The assessment of the North Chipman mining company, levied March 3d, 1866, haa been declared void by the Fifteenth District Court.

There was no session this (Thursday) afternoon, of the San Francisco Board, the body having adjourned in respect to the memory of the late Jas. H. Latham, who was a member at the time of his death.

THE House has granted a pension of $50 per month to the widow of General Custer.

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior in proximity to the mines mentioned.

California.

AMADOR.

FIDDLETOWN MINING NOTES.—Amador *Ledger*, July 15: The period of inactivity has overtaken this prosperous mining camp. The noise of the giants has ceased, the supply of water having failed. The big company—the American Flat—was compelled to suspend hydraulicing on Saturday last. Considerable work, however, is still being done in drifting. We are informed that negotiations are pending for the erection of a ten-stamp mill. A large quantity of cement is met with in this neighborhood, which contains considerable gold. It cannot be worked to advantage by sluicing, and therefore a small mill is to be put up forthwith to reduce it. Should the experiment come up to the expectations, several mills will be running in a short time. The citizens of Fiddletown look forward to a season of great activity next fall.

TO BE STARTED UP.—It is currently reported that arrangements are now being made to commence work on the Hazard mine, on the great mother lode, between the Bunker Hill and Gover mines. A. Hayward, we believe, owns a considerable interest in the property, and it is in consequence of this influence that work is to be resumed at an early day. All the mines in the vicinity which are being worked at present are paying well.

THE COMPANY'S GRAVEL MINE.—The Amador canal company continue to prosecute work upon their gravel mine at Humbug Hill. They recently cleaned up one of the boxes, to put in a new one, and realized some $600 or $700. They have not reached the most auriferous part of the claim yet. No general clean-up will be made until toward the close of summer.

BUTTE.

AT WORK.—Oroville *Mercury*, July 14: The ten-stamp quartz mill on Roberts claim started up a few days ago, and everything about it runs as smoothly as any one could wish. The ledge is one of the richest in the county, though it pays only in spots. When one of these paying streaks is reached, gold is taken out in abundance for a short time.

ELECTRIC MINE.—We learn that a new superintendent has been employed, and that work is progressing rapidly in the tunnel with a prospect of soon reaching the lead. They have a splendid mill that will do good work.

FLEA VALLEY COMPANY.—From Daniel Hilton, one of the directors of the Flea Valley company, we learn that about 100 men are at work on the ditch. The company's saw mill is located in Flea valley, beyond Yankee Hill. A V flume is being built from there to the West branch of the North fork, and will be 15 miles in length. A large part of it has been completed. From there to Pence's, a ditch capable of carrying 3,000 inches of water is being dug. And on this ditch are the 100 men at work with a prospect of being done about the first of November. It will be seven miles from where the water is taken out to the place where the dump will be. This water will be of no small value at this point, as it is in the vicinity of several very valuable mines that greatly need it to carry on operations. Situated as the mill is, in one of the best timbered sections of Butte county, this piece of property is one of the most valuable in the State. It has a very large country to supply with timber, and will save to the farmers a distance of 20 miles' travel over a rough and hilly country.

CALAVERAS.

QUAKER CITY MINE.—Calaveras *Chronicle*, July 15: A 5 ft ledge of fair milling ore has been struck in the Quaker City quartz mine, 20 feet from the shaft, in the 200-ft level. The quartz is so excessively hard that the level is to be diverged from and run parallel with it, prospecting of the vein being done by cross-cutting at intervals. Mr. Macnevin, general superintendent, informs us that he intends driving the level the entire length of the ore chute before putting up milling machinery.

UTICA COUNTRY MINING JOTS.—The new mill being erected on the Josephine, at West Point, will be ready to run on the first of August. Large quantities of high grade ore continue to be taken from the mine. A wide ledge of good ore has been struck in the 300-ft north level of the Mica Rica, 50 feet from the shaft. Indications that it is an extensive permanent chute of ore are favorable. We have it from a pretty reliable source that all claims against the San Bruno mine, at Mosquito, will be paid up and work resumed within 10 days.

MINE SOLD.—The Mt. Tmolus quartz mine, located in Jesus Maria district, formerly owned by Messrs. Rigney, Lefoy and Tynan, has been sold to a company of San Jose capitalists. We cannot speak authoritatively regarding the sum for which the mine was sold, but common report fixes it at $6,000—$4 000 down and the balance at some future time. We understand that the new proprietors will immediately commence active operations, having already, in fact, let a contract for sinking the shaft 50 feet deeper.

THE LAMPHEAR MINE.—Active preparations are being made for sinking the shaft on the Lamphear quartz mine, near town, 100 feet deeper. For the purpose of keeping the mine free of water and facilitating sinking, a 6 inch Cornish pump is to be put into the shaft. The pump is to be run independent of the hoisting works, a hurdy-gurdy now being erected to furnish the necessary power. The frame-work for the reception of the water wheel is already completed and the pump is on the ground.

EL DORADO.

QUARTZ.—We have been permitted to examine a few specimens of ore from the Blue lead at Spanish Flat. This ledge is owned by Varozza, Witmer and others. Edwards and Pasqui have a contract to sink a shaft on the ledge from the old tunnel. They are now down about 60 feet, where they have a ledge from 5½ to 6 feet wide. Assays of the ore has ranged from $80 to $100 per ton. There are now about 100 tons of ore on the dump. The samples exhibited to us sustain the above reports as to the quality of the ore.

FRESNO.

QUARTZ.—Fresno *Expositor*, July 12: T. J. Dunlap left at this office last week a specimen of quartz taken from the Confidence mine at a depth of about 90 ft. The rock appears more solid than that taken from near the surface, and the gold seems to be more generally diffused through the rock. The rock carries considerable sulphurets and some silver. The ledge now shows a width of about 9 feet.

INYO.

THE DEFIANCE.—Coso *Mining News*, July 15: Work on this mine has been continuously progressing. The main incline is now down from the mouth of the main tunnel 160 feet. The dip of the incline for the first 100 feet is about 32 degrees, and the dip of the other 60 is about 45 degrees. At the bottom of this incline a vein has been struck and breaking into it shows very fine carbonate ore, but whether this is the foot wall of ledge No. 2, or another blind vein lying between ledge No. 1 and ledge No. 2, we are unable as yet to determine; however, it proves that the ore not only continues down but is richer as depth is obtained. From the bottom of said shaft to the surface of ledge No 2 (admitting the ore in the bottom of this shaft to be on ledge No. 2) it is 180 feet perpendicular. This, we imagine, proves the permanency of the Defiance beyond a question, but when we state that the ore is more concentrated and richer, we only assert an absolute fact. The north drift or tunnel running to tap the immense ore body proved by north incline shaft, is now in ore, showing the same general characteristics as that in vein No. 2, carbonate and galena. There is enough ore in sight in ledges Nos. 1 and 2 at present to keep both furnaces running for an indefinite period. The drift running north on vein No. 3 is now in 50 feet, and is being stoped 50 feet in hight from the floor of the main tunnel, with the same class of ore on the roof of stope. This is the most remarkable vein of the series, being of a fine yellow chloride and carbonate, and more concentrated than veins 1 and 2. The ore is much richer, as the bullion now being extracted from it shows the true ring of the metal.

LOS ANGELES.

COAL AND OIL.—Reports from the San Fernando oil and coal regions are very encouraging. In addition to the late flattering oil prospects, a vein of coal has just been discovered, which promises to prove valuable. This coal mine was found by Mr. Brophy some months ago, but until within a few weeks past it remained unprospected. Lately, however, parties have sunk some 15 or 20 feet on the vein, and find the seam to increase in width and the coal in quality. The close proximity of this mine to the Southern Pacific railroad will give its products increased value. The oil fever is increasing as the prospects become more encouraging. Mr. Michael Brophy, who owns large land interests in the oil region, informs us that two mines have been placed on the market in San Francisco, at $150,000 each, and the indications are that the stock will sell readily. The well in which a flowing stream was struck some weeks ago continues to pour forth a steady volume of oil, and old miners are confident other wells of equal or greater power will soon be struck.

NEVADA.

GRAVEL.—*Foothill Tidings*, July 15: A prospect shaft is being sunk on the northwest corner of the old Weare place, Alta hill, with the expectation of striking a pay channel of the old river bed known to be somewhere in the vicinity. We shall watch this work with much interest, as a new development on the Alta or its tributaries would be a grand thing for Grass Valley.

GOOD MINE.—We are glad to learn that the Yuba mine, near Washington, in this county, which was bought by a company in this place, the Messrs. Coleman being the principal owners, about a year ago for the sum of $40,000, has prospered so well under the efficient management of the superintendent, Mr. George Lord, that an offer was recently made by responsible parties from San Francisco, of $220,000, or at the rate of $55 per share. The owners, we understand, think there will be no trouble in realizing that sum in a year or two and then leave the mine worth several times as much.

HOWARD HILL MINE.—We are glad to say that it is now almost certain that work on the Howard Hill mine will be resumed in about two weeks. All the indebtedness of the mine has been settled up and everything has been put in shape ready for the resumption of business.

RICH STRIKE.—Placer *Argus*, July 15: Tyler and Lawler have struck a quartz ledge about a mile and a half west of Clipper Gap, which, from accounts, equals in richness the best strikes of early days. The ledge is only a few inches thick, thoroughly decomposed, and shows free gold all through it. They have sunk down about 25 feet, and all the rock thus far taken out has yielded from $1 to $50 to the pan. If this holds out the boys need nothing better.

MINING ITEMS.—At the Eclipse mine work is progressing finely. The ledge, we understand, holds out well in size, and the character of the ore is good. The crushings thus far have been satisfactorily remunerative. The Booth mine, which was shut down some time ago, has been worked some recently by William Werry, who met with encouragement. The company propose to start the mine up themselves within a short time. The St. Patrick company, at the Crater mine, are moving steadily along at about the same old rate; getting out good rock, and cleaning up at the end of every month lots of gold. The Julian mine, on Jenny Lind flat, below Newcastle, is not doing so much work as usual just now, owing to prevailing indisposition among the hands. The cause is not known, unless it be the extreme change in the weather, but nearly every other man employed at the mine was a few days ago suffering some complaint or other. The mine itself is looking very fine. The main shaft is down about 300 feet, and the lead at the bottom, which averages about two and a half feet thick, is richer than it has been at any point between that and the surface. A crushing from rock taken from the new air shaft being sunk about 300 feet north to connect with the 140-ft level, paid at least a third more than the best ore taken out of the main shaft, which is another encouraging indication.

PLUMAS.

MINING ITEMS.—The Franklin company, on Willow creek, are making arrangements for their machinery, and will soon be at work again in their shaft. Surveyor Hendel, of La Porte, has, during the past week, been making a survey of the underground work of the Crescent mine. Work on the Buchanan ledge, near Indian valley, is soon to commence. Numerous mining locations are being made in Plumas these days. A lot of rock from the New York ledge, near Greenville, owned by Whitlock & Co., recently crushed in the Lone Star mill, paid over $15 per ton. The East Branch company's mine, below Shoo Fly, is prospecting splendidly. The superintendent, J. W. Smith, has gone below for a short time. Meyfert & Bell have located 40 acres of mineral land near Nigger gulch.

SAN BENITO.

QUICKSILVER.—Salinas *Index*, July 13: We had a call the first of this week from Mr. George Shriver, of the Salinas quicksilver mine, situated in San Benito county, about 40 miles from this city. He informs us that their tunnel is in 125 feet, and they have cut the lead and are following it. In the tunnel they struck a solid vein of antimony, 12 inches thick. Veins of quicksilver run through the antimony and all over the face of the tunnel. Mr. Shriver is jubilant over the prospects of his company, and thinks they will develop a quicksilver bonanza of huge proportions. In close proximity to the Salinas mine is the Consolidated Woader, which is yielding considerable ore of good quality, the owners of which have the brick burned for the construction of a smelting furnace.

TUOLUMNE.

THE BEMINGTON GRAVEL MINE.—Tuolumne *Independent*, July 15: This claim, recently purchased of James Brown and Cie Johnson, for $3,000 by San Francisco parties, is situated near Yankee hill, above the old Shanghai mine. The claim covers 20 acres, and has been prospected 40 feet deep, with no bottom to the gravel, which prospects well. The new owners are now running a race to the claim, some 600 or 700 feet, which will tap the deposit 80 feet deep. They are putting in a three-foot flume, with a fall of eight inches to a 16-foot box. They have just received 900 feet of 11-inch pipe, No. 14 iron, which will be used to convey water for the hydraulic. A part of the pipe at the head will be 18-inch. They will use a "little giant," with 300 inches of water, to be furnished by the Tuolumne water company. Some dozen men are at work getting the claim ready for washing, which will probably be in two weeks—in the race. Undercurrents and all the latest improvements in hydraulic mining will be put in as the work progresses. We look upon this enterprise as opening a new era in Tuolumne county mining. We have often called attention to the large deposits of gravel known to exist above Columbia, and are glad to notice that a move has been made to work some of them. At the Philadelphia diggings and vicinity, are hundreds of acres of these deposits, which only await a little capital to open immense sources of wealth.

A RICH quartz mine has been discovered near Yankee hill, one-quarter of a mile distant from and supposed to be an extension of the old Shanghai lode. The croppings are exceedingly rich in free gold. Mr. Remington, the owner, will organize a company to develop the lode.

Nevada.

WASHOE DISTRICT.

CON. VIRGINIA.—Gold Hill *News*, July 13: Sinking the main shaft to connect with the upraise from the 1650-ft level is going rapidly ahead. The downward extension of the shaft, along with other needed repairs, has greatly interfered with the extraction of ore during the past week. The main north drift on the 1700-ft level is steadily advancing, the face in good running ground. The improvement of the air on that level by the use of the fan will be sufficient to soon admit of cross-cutting the ledge in that portion of the mine. The draft of air through the main drift, connecting with the C. & C. shaft on the 1500-ft level, is also greatly benefiting the ventilation in that part of the mine. At the C. & C. shaft a very serious breakage occurred during the first part of the week. The pump-rod parted near the top of the shaft, letting the piston back with such force as to burst the cylinder-heads in. New heads were immediately ordered, and the damage will be repaired in a very few more days. In the meantime the water is being kept down in the shaft by a steady use of the hailing tanks. Sinking the shaft will be resumed as soon as the water is drained.

CALIFORNIA.—Daily yield, 700 tons of ore. The ore breasts are looking splendidly and are yielding rich ore. The mine in fact is showing splendidly throughout. All the winzes and air openings have been repaired and enlarged up to the 1300 ft level, so as to give as great a circulation of air as possible. A portion of the ore extracted is being hoisted to the surface through the Ophir shaft.

BULLION.—Slow progress is being made in the northeast Alpha drift, on the 2000-ft level, on account of great heat. The drift will have 60 or 80 feet yet to run to connect with the north drift of the Imperial mine, so as to get the needed circulation of air. The upraise from the 1700-ft level has not yet made the connection with the winze now being sunk from the 1400-ft level, although the workmen are very close together and are liable to complete the connection at almost any moment. As soon as this connection is made it will complete the ventilation from the 1700 up to the 800-ft level. As soon as this connection is completed and the 1700-ft level is ventilated, the prospecting of that portion of the mine can be resumed at once.

YELLOW JACKET.—The east winze below the 1950 ft level is down 100 feet, or to the 2040-ft level. It is the intention to start a drift from each winze to connect the two for ventilation purposes at the very earliest moment possible. The two winzes are about 150 feet apart.

SIERRA NEVADA.—Sinking the main shaft is making the usual excellent progress, the bottom still in porphyry mixed with seams of quartz and clay highly impregnated with pyrites of iron and sulphur.

AMAZON & GLASGOW.—The combination shaft is being steadily crowded downward at a very rapid rate of speed, considering the character of the rock. It is now down 352 feet. At the depth of 400 feet it is the intention to open another station and prospect the ore vein. It is confidently believed by experts that a concentration of the rich sulphuret ore struck on the third level will be found when a greater depth is attained, and a good paying body of ore developed. This shaft is developing both mines. Some very fine seams of quartz and ore are occasionally encountered in the bottom of the shaft.

JUSTICE.—Daily yield, 70 tons of ore per day. The ore breasts are looking well and yielding good ore. The Woodville mill started up on ore from the mine during the fore part of the week. It has a crushing capacity of about 25 tons per day. The Shearman and Excelsior mills are also kept busy crushing the ore. The developements both north and south, on the 800-ft level, are of the most favorable character.

OPHIR.—Daily yield, 280 tons of ore, keeping the mills steadily running. The ore breasts on the 1600-ft level are showing well and yielding the usual amount of good ore.

UTAH.—Sinking the shaft is making better progress than it has done before for some months. The rock in the bottom is still quite hard, but bisste out well. The flow of water is giving much less trouble. The shaft is down 790 feet, or 390 feet below the 400-ft level.

SUPERIOR.—A burst of water flooded the shaft for two or three days during the first portion of the week, stopping the sinking and concentrating the full use of the machinery in its extraction. Last evening the water had been again drained sufficiently for the men to resume work in the bottom of the shaft, which had the appearance of being nearly the full size, in quartz of the finest description. This begins to look as if the shaft will soon cut the ore vein.

JULIA.—The main south drift on the 1500-ft level is looking better every day. The face of the main south drift on the 1600 ft level is also showing much better. The quartz and ore encountered are of better quality, and it seems almost certain now that by the time the drift has reached as far south as where the quartz and ore is found on the level above, a good paying mine will be opened.

BADGER.—Nothing is yet doing in the shaft, on account of the strong flow of water recently struck. This, however, will soon be remedied, as the company are preparing to put up first-class hoisting works, and pumping machinery of sufficient power to drain the water and permit the prosecution of the development of the mine without further delay.

NORTH CON. VIRGINIA.—The guides have been finished in the shaft and the water drained, ready to resume sinking. The pump stations are completed, ready to receive the pumps and hobs. The stone foundations for the engine are finished, and the placing of the machinery has been commenced. The drain tunnel has yet about 230 feet to run to connect with the shaft.

WEST BELCHER.—The extraction of ore has been commenced in good earnest from the 340-ft level. The assays of ore are excellent, varying from $50 to $70 per ton. The ore bressts are looking well and promise a good yield. It is the intention to commence milling the ore about the 15th of the present month. The ore breasts are about 20 feet in width, and are yielding about 40 tons per day of ore. The Vivian mill on the Carson river, has been engaged to crush the ore.

SAVAGE.—The old pumps and pump columns are being rapidly taken from the shaft and the new ones lowered into their places. The huge pumping engine will soon be ready to start up.

BELCHER.—The usual amount of ore is being extracted, and the ore breasts show but little if any change. The erection of the new pumping machinery at the air shaft is making the usual steady progress.

CALEDONIA.—The water was drained and the bottom of the shaft reached a day or two ago, and the sinking resumed in good earnest, when the water again poured in at the bottom at a rate so fearful that the sinking was once more suspended. It is, however, again under control.

OVERMAN.—Sinking the shaft has been resumed and is making fair progress. The foundations for the new pumping engine are fast approaching completion.

WARD.—Sinking the shaft is going ahead at the rate of four feet per day. The Burleigh drilling machine and air compressor for running it has arrived on the ground and is being set up ready to run.

IMPERIAL CONSOLIDATED.—The north winze is down a distance of 112 feet, the bottom still in ore of a fine character. The south winze has reached the level of the Yellow Jacket 1940-ft level, and a drift is about being started to connect with the Yellow Jacket works at that point.

DAYTON.—Sinking the main shaft is going steadily forward, the bottom being in good hiasting ground. The flow of water is still strong.

TAHOE.—Sinking the combination shaft on the south line of the Lady Bryan mine is being pushed ahead with all the vigor possible.

SUCCOA.—During the first portion of the week the water was drained from the shaft and the old pumps taken out to make room for the new. The foundations for the new pumping machinery are all well under way.

ALTA.—Nearly the whole of the new machinery is now on the ground, and most of it is in place ready for use.

CHOLLAS POTOSI.—Daily yield, 75 tons of ore, the assay value of which is $33 per ton. Sinking the main incline is progressing at the rate of two feet per day. Sinking the Combination shaft is going steadily ahead. The new hoisting and pumping machinery is being rapidly placed in position, ready for work.

CROWN POINT.—Sinking the main incline is being pushed vigorously forward, the bottom in hard blasting rock. The main south drift on the 1700-ft level is still advancing, the face in low grade ore.

PHIL. SHERIDAN.—Sinking the shaft is making steady progress notwithstanding a strong flow of water at the bottom. This flow of water takes up much of the use of the machinery in draining it and makes the task of sinking much more laborious than it would otherwise be. The shaft is now down 232 feet.

ROCK ISLAND.—The pumps are gradually gaining on the flow of water, which appears to be steadily lessening.

NIAGARA.—Sinking the main incline is progressing at the rate of two and a half feet per day, the bottom in soft porphyry, carrying heavy seams of clay, with some quartz and ore of a very encouraging description.

EUROPA.—Driving the north drift on the 500-ft level is making excellent progress, the face still in porphyry with occasional streaks of clay.

SILVER HILL.—Sinking the main incline is being pushed vigorously forward, the bottom still in hard blasting rock. It is now down 050 feet.

LADY BRYAN.—Laying the foundation for the new and powerful pumping machinery is making steady progress. Sinking the joint shaft on the line of the Tahoe is making favorable progress.

NEW YORK CONSOLIDATED.—Preparing to get in the pumps. As soon as this is completed, will resume sinking.

FLORIDA.—South drift in clay and quarlz, with bunches and stringers of low grade ore.

COSMOPOLITAN.—North drift going ahead as usual, showing good pay ore in its face.

SUTRO TUNNEL.—Total length of tunnel, 13,758 feet. Face of header in favorable working vein matter. The Ingersoll and Burleigh drills do excellent execution, and the regular weekly advancement is from 00 to 80 feet.

MITCHELL.—Excellent progress is being made sinking the winze, which is now down 87 feet, with the bottom in very promising low grade ore. The ledge is five feet wide, and increases in width.

BALTIMORE AND AMERICAN FLAT.—The north and south drifts on the 1050-ft level are in very favorable ground.

UNION CONSOLIDATED.—The north drift on the 1300-ft level is being steadily advanced, the face still in favorable ledge matter.

NEVADA.—Cross-cut from main south drift still in improving quartz.

BALTIC CONSOLIDATED.—Face of the drift in favorable looking clay and porphyry, with streaks of quartz.

ELY DISTRICT.

LOCAL NEWS.—Pioche *Record*, July 11: During the past week there has been shipped $28,291 in bullion by Wells, Fargo & Co., an increase of $20,000 on the previous week. At the Raymond & Ely mine the same work continues without change of note, and are turning out about the usual amount of ore. In the Meadow Valley, excavations are being made in the mine for the pumps and tanks and also for a hoh pit. The contractors in the American Flag still continue the work of sinking on the main shaft, whilst a small amount of work goes on in the upper levels. Sinking on the main shaft of the Pioche is also going on rapidly, the prospects being flattering. Work at the Alps mine is continued without change, whilst at the mill they are crowded with custom ore that is daily arriving. Work on the Antilica in the cross-cut, is progressing regularly. In the Hunn & Hunt, the owners are pushing the work of extracting ore as rapidly as possible, and with good success. The owners of the Washington & Creole are extracting ore rapidly and shipping the same to the Alps mill for reduction, ten men being employed at the mine. The two smelting furnaces that are to be erected are engaging the attention of business men, by the time chases are soon as they are started, affairs will improve in the camp, as each one will place to work, either directly or indirectly, nearly 200 men, besides the miners who will be engaged in extracting smelting ore. With the erection of these furnaces and the pump of the Meadow Valley startlog to work, we may look for increased prosperity in the camp in mining matters before a great lapse of time.

Montana.

MINING ITEMS.—Helena *Independent*, July 9: The mining ground at the head of Granite gulch, in Madison county, has been surveyed for claimants. Armstrong's smelter at Glendale is doing a splendid business. Mining prospects in Bryant's gulch are reported to be much better than last season. Burton gulch miners have a fine head of water and are taking out good pay. The Epler lode, near Iron Rod, is improving in the quality of its ore. The arastra of Mayne & Wilson, on Cherry creek, is crushing a very fine quality of rock with the best possible results. Heinman's mill at Silver Star started up last week and is doing a fine business. The new quartz discoveries near Missoula are reported to be exceedingly rich. The Chinese are talking about abandoning the Alder gulch placers. A fine head of water is making things lively in the Cedar creek mines. McGovern & Co.'s diggings on Moose creek are turning out well. The placers on French bar are turning out a large quantity of gold dust. The bedrock flume on Clancy creek is working splendidly, and the miners are taking out good pay. The Pioneer ditch is carrying to the miners a regular supply of water. Rocker and Basin gulches are sending in large quantities of gold dust. The mines are much better this year than last season. The Trout creek ditch is giving a regular supply of water, and mining prospects are unusually encouraging. The new bedrock flume in Greenhorn gulch is to have 100 feet pressure. The Wisconsin Gulch mining company have got their bedrock flume nearly completed. Mining operations in Meagle gulch, which were suspended for a while on account of the flood, have been resumed.

Oregon.

EETHER MINE.—Oregon *Sentinel*, July 9: Mr. Wallace one of the owners of the Eether mine, generally known as the "Browning load," was in town on Saturday. He informed us that work was progressing finely and everything looked satisfactory. They have a five-stamp weter mill running, and will soon have a pan to assist it. Its capacity is an average of nine tons a day. The company has expended considerable this spring, in money and labor, in constructing roads from the mine to the mill, about a mile apart, and they are now taking out ore that looks better than any yet crushed. The rock yields about $10 per ton. They expect to do more work, and with much better results, as soon as they get their pans to work and complete more perfect methods of taking out and delivering the ore.

THE Constitution of Colorado prohibits the imprisonment of witnesses in criminal cases. It also provides that no new bill shall be introduced into the Legislature during the last 15 days of a session, and absolutely prohibits all special legislation.

The Centennial Ode.

The following national ode, written for the occasion by Bayard Taylor, was read at the Fonrth of July celebration at the Centennial Exposition:

I.

Sun of the stately Day,
Let Asia into the ehadow drift,
Let Europe bask ln thy ripened ray,
And over the severing ocean lift
A brow of broader splendor!
Give light to the eager eyes
Of the land that waits to behold thee rise;
The gladness of morning lend her,
With the triumph of noon attend her,
And the peace of the vesper skies!
For, lo! ehe cometh now
With hope on the lip and pride on the brow,
Stronger, and dearer, and fairer,
To emile on the love we hear her—
To live, as we dreamed her and eought her,
Liberty'e lateet daughter!
In the clefts of the rocks, in the eecret places,
We found her tracee;
On the hills, in the crash of woods that fall,
We heard her calt;
When the linee of battle broke,
We saw her face in the fiery emoke;
Through toil, and anguish, and desolation,
We followed and found her.
With the grace of a virgin nation
As a sacred zone around her.
Who shall r joice
With a righteoue voice,
Far heard through the ages, if not she?
For the menace ie dumb that defied her,
The donht le eesd that denied her,
And she etands acknowledged and strong and free.

II.

Ah, hark! the eolemn undertone
On every wind of human story blown.
A large divinely-molded Fate
Questions the right and purpose of a State,
And in its plan euhlime
Our eras are the dust of Time.
The far-off Yesterday of Power
Creepe back with etealthy feet,
Invades the lordship of the honr,
And at a banqnet takes the unbidden seat.
From all unchronicled and silent ages
Before the Future first h-got the Past,
Till History dared, at last,
To write eternal words on granite pages:
From Egypt'e tawny drift, and Aesur'e mound,
And where, uplifted, while and far,
Earth highest yearns to meet a star,
And man his manhood hy the Ganges found,
Imperial heads, of old millennial sway,
And still by some pale eplendor crowned,
Chill as a corpse-light in our full-orbed day,
In ghostly grandenr riee
And say, through stony lips and vacant eyes:
"Thou that assertest freedom, power and fame,
Declare to ne thy claim!"

III.

On the shores of a Continent oset,
She won the Invlolate eoil
By loss of heirdom of all ths Paet,
And faith in the royal right of Toil!
She planted homes on the ss vage eod,
Into the wilderness lone
She walked with fesrlese feet.
In her hand the dlvining rod,
Till the veins of the mountaine heat
With fire of metal and force of stone!
She set the speed of the river-head
To tnrn the mills of her bread;
She drove her plowehare deep
Through the prairie's thousand-centuried sleep;
To the South, and West, and North,
She called Pathfinder forth,
Her faithful and eole companion,
Where the finished Sierra, snowy-starred,
Her way to the sunset harred.
And the nameless rivers in thnnder and foam
Channeled the terrible canon!
Nor paused, till her uttermost home
Was built, in the emile of a softer eky
And the glory of beanty still to he,
Where the haunted waves of Asia die
On the strand of the world-wide sea!

IV.

The race, in conquering,
Some fierce Titantic joy of conqnest knows;
Whether in veine of serf or king,
Onr ancient blood heats restless in repose.
Challenge of Nature unsubdned
Awaits not man's defiant answer long;
For hardship, even as wrong,
Provoked the level-eyed heroic mood,
This for herself she did; hut that which lies,
As over earth the skies,
Blending all forms in one benignant glow—
Crowned conscience, tender care,
Justice, that answers every bondman's prayer,
Freedom where faith may lead or thonghts may dare,
The power of minds that know,
Passion of hearts that feel,
Purchased by blood and woe,
Guarded by fire and steel.
Hath she secnred what blazon on her shield,
In the clear Century's light
Shines to the world revealed,
Declaring nobler triumph, horn of right?

V.

Foreseen in the vision of sages,
Foretold when martyrs bled,
She was born of the longing of ages,
By the truth of the noble dead
And the faith of the living fed!
No blood in her lightest veine
Frets at remembered chains,
Nor shame of bondage has bowed her head.
In her form and featuree etill,
The unblenching Puritan will,
Cavalier honor Hnguenot grace,
The Quaker truth and sweetness,
And the strength of the danger-girdled race
Of Holland, blend in a proud completeness.
From the homee of all, where her being began,
She took what she gave to man:
Justice, that knew no station,
Belief, as soul decreed,
Free air for aspiration,
Free force for independent deed
She takes but to give again,
As the sea returne the rivers in rain;
And gathers the chosen of her eeed
From the hunted of every crown and creed.
Her Germany dwells hy a gentle Rhine;
Her Ireland seee the old sunhurst shine;
Her France pursues some dream divine;
Her Norway keeps his mountain pine;
Her Italy waits by the western brine;
And broad-based under all,
Is planted England's oaken-hearted mood,
As rich in fortitude
As e'er went worldward from the island-wall
Fused in her candid light,
To one strong race all races here unite;
Tongues melt in hers, hereditary foemen
Forget their sword and slogan, kith and clan;
'Twss glory, once, to be a Roman;
She makes it glory now to be a man!

VI.

Bow down!
Doff thine Æonian crown!
One hour forget
The glory, and recall the debt;
Make expiation
Of hnmbler mood,
For the pride of thine exultation
O'er peril conquered and strife subdued!
But half the right is wrested
When victory yields her prize,
And half the marrow tested
When old endurance dies.
In the sight of them that love thee,
Bow to the Greater above thee!
He faileth not to smite
The idle ownership of Right,
Nor spares to einews fresh from trial,
And virtue schooled in long denial,
The tests that wait for thee
In larger perile of prosperity.
Here, at the Century's awful ehrine,
Bow to thy Father's God and thine!

VII.

Behold! She bendeth now,
Hnmbling the chaplet of her hundred years;
There is a solemn sweetneee on her brow,
And in her eyes are sacred tears.
Can she forget,
In present joy, the hnrden of her debt,
When for a captive race
She grandly staked and won
The total promise of her power hegun,
And bared her bosom's grace
To the sharp wound that inly torturee yet?
Can ehe forget
The million graves her young devotion eet,
The hande that clasp ahove
From either side, in sad, returning love?
Can she forget,
Here, where the ruler of to-day
The citizen of to-morrow,
And equal thousands, to rejoice and pray
Beside these holy walls are met,
Her birth-cry, mixed of keenest hlles and sorrow?
Where, on July's immortal morn
Held forth the people saw her head
And shouted to the world: "The King ie dead,
But, lo! the Heir ie born!"
When fire of youth, and sober trust of age,
In farmer, soldier, priest, and sage,
Arose and cast npon her
Baptismal garments—never robe so fair
Clad prince in old world air—
Their lives, their fortunes, and their sacred honor!

VIII.

Arise! Recrown thy head
Radiant with blessing of the dead!
Bear from this hallowed place
The prayer that purifies thy lips,
The light of courage that defies eclipse,
The rose of man's new morning on thy face!
Let no iconoclast
Invade the risin« Pantheon of the Past,
To make a blank where Adam stood,
To touch the father'e sheathed and sacred blade,
Spoil crowne on Jefferson and Franklin laid,
Or wash from Freedom's feet the etain of Lincoln's blood.
Hearken, as from that haunted hall
Their voicee call:
"We lived and died for thee;
We greatly dared that thon might'et be;
So from thy children still,
We claim denials which at last fulfill,
And freedom yielded to preserve thee free!
Beside clear-hearted Right
That smiles at Power'e uplifted rod,
Plant duties that requite,
And Order that sustains, upon thy eod,
And stand in stainless might
Above all self, and only lese than God!"

IX.

Here may thy eolemn challenge end,
All-proving fact, and each discordance die
Of donbtful augury,
Or in one choral with the Present blend,
And that half-heard, sweet harmony
Of something nobler that our eons may see!
Though poignant memories hurn
Of days that were, and may again return,
When thy fleet-foot, O Hnntress of the Woode
The slippery brink eef danger knew,
And dim the eyesight grew
That was so sure in thine own solitudes—
Yet stays come richer sense
Won from the mixture of thine elements,
To guide the vagrant scheme,
And winnow truth from each conflicting dream.
Yet in thy blood shall live
Some force misspent, some essence primitive
To seize the highest use of things;
For Fate, to mold thee to her plan,
Denied the food of kinge,
Withheld the udder and the orchard fruits,
Fed thee with savage roote,
And force t thy harsher milk from harren breasts of man!

X.

O sacred woman—form
Of the first people's need and passion wrought—
No thin, pale ghost of thought,
But fair as morning and as heart'e blood warm,
Wearing thy priestly tiar on Judah'e hills,
Clear-eyed beneath Athen's helm of gold;
Or from Rome's central seat
Hearing the pnlses of the continente beat
In thnnder where her legions rolled;
Compact of high heroic hearte and wills,
Whose being circles all
The selfees aime of men, and all fulfille;
Thyself not free, so long as one is thrall;
Goddess, that as a nation lives,
And as a nation dies,
That for her children as a man defies,
And to her children as a mother gives,
Take our fresh fealty now!
No more a Chieftainess, with wampum-zone
And feature-cinctured brow;
No more a new Britannia, grown
To spread an equal oanner to the breeze,
And lift thy trident o'er the double eeas;
But with unborrowed crest,
In thine own native beauty dressed,
The front of pure command, the unflinching eye, thine own

XI.

Look np, look forth and on!
There'e light in the dawning eky;
The clouds are parting, the night is gone:
Prepare for the work of the day!
Fallow thy pastures lie
And far thy shepherds stray,
And the fields of thy vast domain
Are waiting for purer seed
Of knowledge, desire and deed,
For keener sunehine and mellower rain.
But keep thy garments pure;
Pluck them back with the old disdain
From the touch of the hands that stain!
So shall thy etrength endure.
Transmute into good the gold of gain,
Compel to beauty thy rude powere,
Till the hounty of coming hours
Shall plant on thy fields apart,
With the oak of toil, the rose of art.
Be watchful, and keep us so;
Be strong, and fear no foe;
Be just and the world shall know!
With the eame love love us as we give;
And the day shall never come,
That finds ue weak or dumb
To join and smite and cry
In the great task, for thee to die,
And the greater task, for thee to live!

Oregon's Representative Mine.

A correspondent of the *Oregonian* writing from Bsker city desoribes the Virtue mine, which is sitnsted about eight miles from that town, as follows:

One is surprised at the amount of work done and the improvements which sre being accomplished. Mr. Rockafellow and others discovered this mine in 1863. The shafts now are snnk to 500 feet in depth and the workings are hy five levels. The present ore is heing taken out from hetween the second, third and fonrth levels principally. One hundred thonsand dollars in hullion have been realized in the six months of the present year. The main shaft, the mouth of which opens into the new building where the hoisting works sre to he erected, is substantisily and admirably timhered down to the lowest level. It presents an opening eight feet hy four and a half feet in extent. It is divided or partitioned, so that on one side there is a conveniont ladder way, where ascent or descent is made easy, so that free communication with the levels is maintained while the ore hnokets are rising and descending.

Down this shatt went your correspondent to the third level, where the steam machinery is at work, to keep the lower levels free from obstruction hy water, and, hy the way, all the water that is pnmped from the mine is utilized hy the stamp mill, which runs 20 stamps. Furnished with a lighted candle we proceeded along the third level to its hreast, a distance of some 400 feet. It was something new and exciting, hardly to he described. Cara filled with ore passing yon, while you crouched in a little recess, to permit them to do so. The stoping ont in the fourth level in one place had made communication with the npper one so that you conld look down and see the men at work. The vein matter, or the lode, more properly speaking, perhaps, inclines considerably, dipping towards the west. The third level communicates with a tnnnel 580 feet long, through which the ore is conveyed hy cars to the stamp mill.

When the new hoisting works are completed all the ore will he taken ont at the main shaft, and the stamp mill moved to a more convenient locality. At present it is too far from the mine. The new building, 48 feet by 60 feet, for the hoisting works, is a substantial structure, containing the furnace, hnilt of stone, the hoilers, engine and necessary machinery for the purpose intended. The great expense attending the transportation of shoes for the mill and other heavy pieces of casting, which frequently have to be replsced, hsve determined the owners of the mine to erect a foundry of their own, which will soon he in operation, on the site of the old Ruckel stamp mill in Baker city, where there is an excellent water power. At present there are employed in and about the mine some sixty men. The mining force is composed of forty men operating day and night. The chief ownership of the Virtoe mine rests with J. W. Virtne, Esq., of this city, and a Mr. Gray, of San Francisco. The enterprise and pnsh of these gentlemen as displayed in the Virtne mine, entiile them to he successful and prosperous.

Arizona Mines.

A correspondent of the Santa Barhara *Index*, who is now traveling through the monntains of Arizona, writes an interesting letter to that paper, from which we extract the following:

"This little town of Greenwood is 245 miles up the Colorsdo river from Yuma, and 40 miles east of Aubrey, on the river. It is the site of the Greenwood mill, owned by the Senator and Alta consolidated mining company, whose mines the Senator and Alta, commonly known as the McCracken mine, is 12 miles west at McCracken hill, or mountain. Greenwood is in the beautiful little valley of the Sandy, which comes in from the north, and which uniting with the Santa Msria, some 15 miles south, forms the Bill Williams fork of the Colorado. It is here a fine, clear little rivulet which, like most of the streams of Arizona, sinks at places in the deep sandy hed, and after a few miles agsin reappears, running for a distance and then agsin sinking. The same is also trne of the Santa Maria, and slso of Bill Williams fork. There is a population of about 100 here all told—three small stores, the mill, blacksmith's shop and one public eating honse. Up the valley a few miles are a half dozen or more ranchoa or farm, which can he irrigated and capahle of producing fine crops of grain, frnit and vegetahles of all kinds. The olimate is good and sickneaa almost unknown; in trnth the climate of the monntain region of Arizona and the Colorado river region is unsurpassed. The water of the Sandy is excellent and the water from the few small streams and aprings here and thers in the mountains is pure and good generally. The oonntry to the north for 100 miles is all a rioh mineral region, and to the east, south and west, are some of the best mines yet opened in the Territory. To the sonthwest some 18 miles is the Johnson mine, hut partially opened, which was lately sold to a Boston company for $30,000 cash. To the north of the Johnson mine some 10 miles is the Potts mine, which is partially opened with excellent prospects of a large and rich vein.

Twelve miles west of Greenwood, and six north of the Potts mine, is the celebrated McCracken mine, now known as the Senator and Alta consolidated, which is the best developed of any in the Territory, although it was discovered only 21 months since. It is incorporated in California and is now heing put in good shape for working, and 25 miners can take ont a daily snpply of ore to run a 40 stamp mill for many years to come. It is opened by shafts over 600 feet, the main one heing 367 feet deep, and has 4 tnunels which aggregate 1,100 feet in length. The hody of ore at the 155, 255 and 355 foot levels has been worked in places to a width of from 25 to over 42 feet in width, and the hanging and foot walls in no one place reached. The actnsl width of the ore is yet wholly unknown, hut the qnantity is enormons. One peculiarity of this mine is the total absence of all qnartz, in which respect it differs from all others. The formation is spar, and the conntry rock is granite. The ore is of a dark color mostly, and to the casual observer presents the sppearsnce of broken shale. In it are formed deposits and strata of carhonate ore, hut no sulphnrets. The carhonate ore is fine for smelting, and is shipped to San Francisco for reduction. The last four shipments gave an average assay of $237 per ton. The hlack ore is free milling ore snd is divided into two classes, the first the mill at this place is now crushing, and assays an average of $90 per ton, of which the mill saves 60 per cent., producing bullion 985 fine. The second-class is reserved for future reduction and gives hy assay over $60 per ton. There is now on the dnmp pile over 4,000 tons of second-class ore, and in the tnunels and drifts over 1,000 tons of first-class ore is ready for milling as soon as brought to the surface.

Agricultural Statistics.

The latest issne of the monthly report of the Department of Agriculture at Washington, contains a detailed description of the exhibition which the Department is making in the government building at the Centennial. It appears that a nnmher of large charts have been prepared to show, hy scales and diagrams, the production of the different agricultural staples in the several States. Some of these charts are printed in redneed size in the report and it will he interesting to review them and state the position occnpied hy our State in the showing.

It is shown, hy figuring from total prodnction and amount exported, that the smount of wheat consumed in this country is an average of five hnshels per year for each individual. California produces an average of 29¾ hnshels per capita according to our population. Minnesota produces 42 9-10 hushels per capita. Minnesota is the only State which surpasses California in this respect. Oregon, 25¾; Iowa, 24⅝; Wisconsin, 24¼. All the other States are under 17 hnshels. The New England States do not average a hushel a head and Rhode Island, the least of all in wheat, only 3-1,000 of a bushel to a man.

Another chart shows the proportion of wheat sown hroadcast and in drills. California drills 2 per cent. of her seed; Oregon 19 per cent.

A separate diagram shows the average yield per acre in the several States. California heads the whole list and is credited with a yield of 38.2 per acre, as an average of the crops hetween 1866 and 1875. Minnesota is in the second class and scores 32¼ hushels, Oregon is placed at 29.9.

The wages of farm lahorers, monthly rate without board, from 1866 to 1875, are given for all the States. This shows the fluctuation in the price of farm lahor during this period of 10 years. There is shown to have been a general decline in most States. California is marked at $45.71 in 1866 and $44.50 in 1875. These figures head the list, Oregon heing the next, at $38.25. per month.

A NEW WHEAT WORM.—We learn from the proceedings of the St. Louis Academy of Science that Prof. Riley exhibited specimens of a worm that was just at this time devastating the wheat fields of parts of Kansas, and particularly of Dickinson county. It does not eat the hlades, but attacks the heads. Specimens had been sent to him last week hy Mr. John W. Robson, of Cheever, hut in transit they had all eaten out and escaped from the hox in which they were enclosed. On the way, however, they had moulted, and from the heads alone Prof. Riley had determined the species to he the *Leucania albilinea*, though the insect had never hefore been reported as injurious from the West. Other specimens, just from Prof. F. H. Snow, of the State Univeraity at Lawrence, and from Mr. John Davis, editor of the *Tribune*, at Junction City, proved the correctness of the determination. The species is generically allied to the common army worm, and may be popularly called the wheat-head caterpillar. As it had never till lately attracted nnusual attention, too little was yet known of its habits to warrant any suggestion as to the best mode of destroying it.

The Mining Outlook.

Amid the general depressiou of business in most parts of tbe Union, it is refreshing to find in the precious metal mining industry a very different state of affairs. The far West counts examinstion at present and desires nothiag better than that its claim as a profitable field for iavestment be closely scrutinized. And as success in any one line of trade is bound to ia-fuse life and more or less vigor in all others, the present remarkable prosperity of the Pacifio coast mineral interests may well be regarded as an encouragement to despondent business men of the Atlantic and valley States.

The harvest of the miner is a perpetual one, depending neither on fsir weather nor plentiful storms. Let as glance across the 1,200 miles of mountains lying between Denver and the Pacific, and see what is being done. The inspection will have many elements of interest aside from the array of figures which express the outflow of metal from the bowels of the earth. The wiater has been a long and tedioas one, and though now quite at an end, but a small area of ground is yet fully nuder placer work, not one-fifth of what will be iu the next 30 days. This brunch of our industry produces annually about one-tenth of the annual precious metal yield, or between seven and eight millions, and in an examinution of the oondition of the industry at the present time of the year much of this important item must he disregarded. But what is left makes an exceedingly respectable showing.

Nevada, the silver State, is pouring ont daily $125,000 in silver, $75,000 in gold, $8,000 in lead, and $2 000 in other minersls, making a yield of $210,000 daily, or $63,000,000 per nonum.

California is producing dsily about $40,000 in gold, $10 000 in silver, $8,000 in quicksilver, $5,000 in lead and copper, $7,000 in coal, and fully $5,000 in iron, untimony, zinc, und other minerals. Its total yield is therefore $75,000 oorre ponding to an unnual output from its mines of $23,500,000.

Colorado is prodncing $15,000 in silver every 24 hours, $10,000 in gold, and $1,000 in other minerals, or $26,000 daily, equal to $7,800,000 yearly.

Utah is credited with a daily outpnt of $12,-000 in silver, $9,000 in lead, $2,000 in other minerals; $23,000 per day, or $6,900,000 per year.

Idaho, Montana, Oregon, Arizona, and New Mexico together are turning out each dsy $20,-000 in gold, $17,000 in silver, and $1,500 in bsee metal, giving a totsl of $38,500 each day, or $11,550,000 annually.

Footing these items it appears that from sunrise to sunrise the miaeral regions of tbe western Uoited Ststes throw into tbe markets of the world not less than $334 000 in pure bullion, and $48,500 worth of other metals and minerals. Each hour of the 24 is the parent of $15,521 worth of metal, and each minute of the hour the producer of permsnent metallic value to the extent of abont $260. With nesrly every tick of the Centennial clock in Philsdelphis, a half-eagle rolls out of the mines and takes its place in the world's treasury, the contribution of America to the world's supply of oirculating medium.

It is only by examining closely into the details of affairs that we arrive at a full comprehension of their signifioance. The precious metal mining interests of the United States are to-day a tremendous fact. The production of $111,000,000 of metal each year from a region, three-quarters of which was a howling wilderness 15 years ago, is something to be prond of and to wonder at, and an argument in support of the profitableness of the indnstry that is difficult to be overthrown. Assuming, for the sake of quietiag those habitual growlers who sre continually asserting that profitable gold and silver mining is a delusion, that a billion of dollars has been invested hy the world in openiog and developing the West (a figure nearly twice the actual facts) the investment is now returning an annual intereet of over 10 per cent., and hetore another qnarter of a century is passed will be yielding from 15 to 20 per cent. No amount of outside discouragement or disfavor can stop the work or retard the industry. For the first time in the history of the world, mines practically inexhaustible have fallen into the hands of a race whose energy and intelligence are as profound. When the next century drives the present back into the ages, as the *Review* prepsres its tabular statements of the yield of American mines for 1901, its editor will langh that the record for 1876 was considered so enormous, and gaze with pitying contempt on the wretched $100,000,000 wbich we think so much of to-day.—*Mining Review.*

Peculiar Case of Contraction.—The London *Engineer* states that a few days ago a fly-wheel three tons weight, nine feet in diameter, cast in one piece, having worked for yesrs as part of a steam-engine, was laid horizontally on two balks of timber in the yard of the West Hartlepool cement works, Eng.; the wheel was left perfect at night, and was found next morning tractured in several places, no person having tonched it. The day previous the snn's rays had heated the rim considerably, and the night being cold, the arms having retained but little heat, contrscted too rapidly, snapping from the boss and rim of the wheel.

Useful Information.

Bread Made from Whole Wheat.

When told that it is quite unnecessary to convert wheat into flour before making bread, one is inclined to express some sstonishment; hat seeing certain colors are now mixed, and that on a large scale, without any previous grinding, and without any rubbing at all, thus sweeping awsy with the greatest expenses that attended the trade, we may not refuse to listen to a plan for doing away with the use of millstones, holting cloths, and all the paraphernalia of the flour manufactnrer.

The new system of bread making is the invention, we believe, of a Frenchman named Sezille. Let us state, by way of preface, that according to some scientific men, the total amount of indigestible matter, or bran in wheat, is not more than from four to five per cent. of the whole; by the present method of flour-grinding and bread-making, scarcely 80 per cent. of the alimentary part of the wheat is made available.

Now for the method itself, which is divided into three successive operations:

First.—The wheat is placed in a mash-tub, or other vessel, with more than sufficient water to cover it, and well stirred with a peel for some minutes; by this operation all the overlight and damaged grains, as well as dust and other impurities, will rise to the surface, be dissolved, or held in suspension; at the end of half an hour the water is drawn off, and the wheat having been allowed to drsin, is afterward placed in a cylinder of plate-iron, pierced or worked so as to have the effect of a rasp when made to revolve. With the aid of this cylinder, from two to three per cent. of the outer pellicle, which is the coarser, is easily removed; as to the second skin, and that in the crease of the grain, it only amounts to about two per cent., and might all be left in without injury to the nutritive quality of the bread.

Second.—The grain is now placed in a vessel filled with water, at a temperature of about seventy-five degrees Fahrenheit, in the proportion of about two parts by weight of water to one part of wheat, so that there shall be a certain qnantity of water above the grain; to this water is to be previously added one part of half-dry yeast and five or six ounces of glucose to 200 parts of water. The ferment in the water acts gradually upon the wheat, and after immersion for 20 or 24 hours, according to the nature of the grain and the temperature, the wheat will have absorbed from 50 to 70 per cent. of water, and be ready for panification. The water will now have become of a reddish color, having extracted an amount of the coloring matter from the remaining bran, and is allowed to rnn off; thus another step has been made towards the bleaching of the dough.

Third.—After the wheat has been again drained it is made to pass through one or more pairs of rollers, and, being of the consistency of cheese, it is easily reduced to a paste; by this operation the bran of the second skin has become excessively finely divided, and equally mixed throughout the whole mass. This being done, and the dough placed in a trough, the proper amount of salt to give flavor to the bread is dissolved in water and poured over the dough, and, should the wheat not have absorbed more than fifty per cent. of water, fifteen to twenty per cent. more is now to be added, and the whole is well mixed by being turned over two or three times by hand. The dough is now treated in the ordinary way, rolled and made up into lumps, and left to ferment until the right moment for putting it in the oven.

There is certainly nothing unreasonable in this process; the machinery is of the simplest kind, and the processes such as any baker could carry ont without difficulty. It well deserves a trial, and, although the wish has ungrateful sound, we heartily wish that M. Sezille may have found the method of dispensing with the ase of mills, millstones, bolting-machines, and flour-sacks, and even with the jolly miller and his men.—*Good Health.*

Rough Determination of Weight of Beam Iron.—For rough determinations of the weight of bars or beams of nniform make, where a balance is not at hand, it will answer to measure off the whole of the remainder of the beam and divide this remainder into two equal parts. At the line of their division place the bar upon a support having a full edge. If the bar is symmetrical in form this part ought to be in equilibrium; if, therefore, we place at the extremity a weight which balances the measured yard, we get the weight of the bar. This method of approximative weighing is in use in Belgium, and gives results, it is said, accurate up to a hundredth of the total weight.—*English paper.*

Or-Moulu.—The or-moulu of the brass founder, popularly known as an imitation of red gold, is extensively used by the French workmen in metals. It is generally found in combination with grate and stove work, It is composed of a greater portion of copper and less zinc than ordinary brass, is cleaned readily by means of acid, and is burnished with facility. To give this material the rich appearance, it is not unfrequently brightened up after dipping by means of a scratch brush, the action of which helps to produce a very brilliant gold-like surface. It is protected from tarnish by the application of lacquer.

Bats and Insects.

We make the following extract from a recent number of the London *Farmer:* In the winter of 1875-76, a large number of dead, and, for the most part, hollow trees in the Thier-garten of Berlin, were felled and cut up for firewood. As a consequence of this measure, many thousands of bats, hybernating in these natural retreats, and awaiting the return of spring to renew their energetic campaign against insect vermin, were necessarily destroyed. It is needless to point out here the great utility of these harmless little creatures; any one possessed of the slightest smattering of natural history must be well acquainted with the fact. The question to be considered is how such a needless destruction of useful animal life may be best avoided. Numerous observations have fully shown that bats in a state of hybernation can endure any degree of cold without injury; but that if once disturbed while in this state they are extremely susceptible to change of temperature, and but rarely survive the disturbing intrusion on their sleep. Baron Nolde writes to a German contemporary, suggesting that such trees as form the resting place of bats should be felled only in the warm months of the year, while their inhabitants are in a state of activity, and able to seek fresh shelter for themselves. The only objection in this place is, that labor is more easily and cheaply procured in the winter than in the summer months. But granting this, it by no means allows that by felling such trees in winter is in the long run the cheaper plan. The importance of the bat in the economy of nature has not been properly recognized. He cites the case of a forest belonging to the crown in illustration of this point. Well grown oak trees being required for naval purposes, a notice was issued that none should be felled until the receipt of special orders. Long after the trees had arrived at maturity, the notice remained unrevoked, and they were suffered to run on to a state of decay. This being reported to the higher authorities, orders came to cut down the trees for firewood. The work was undertaken in the depth of winter; thousands upon thousands of hybernating bats died from disturbance and exposure, and the ultimate result was the total destruction of the whole forest, for in the second year after their extermination the damage done by caterpillars—which up to this time had never been specially remarkable—attained such an enormous development as to render the felling of the whole plantation the only practicable course to be pursued.

Carbolic Acid Paper.—According to the *Engineer*, the carbolic paper which is now used in such quantities for packing fresh meats, etc., for the purpose of preserving them against deterioration by atmospheric or other influences, is made by melting five parts of stearine by gentle heat, and then stirring in thoroughly two parts of carbolic acid, after which five parts of paraffine in a melted form are added. The mass thus prepared is then to be well stirred together, until it cools, after which it is applied with a brush to the paper.

Horse Meat.—The consumption of horse-flesh seems to be steadily increasing in Paris, the official report being that during the first quarter of 1876, the horse butchers of Paris have furnished 2,370 horses, asses, and mules for public food, yielding 429,300 kilogrammes of net meat, or considerably more than in the same quarter of last year.

Good Health.

Restoring Persons from Drowning.

The following directions are circulated by the Humane Society of the commonwealth of Massachusetts, 1875:

1. Lose no time. Carry ont these directions on the spot.
2. Remove the froth and mnous from the month and nostrils.
3. Hold the body, for a few seconds only, with the head hanging down, so that the water may run out of the lungs and windpipe.
4. Loosen all tight articles of clothing about the neck and chest.
5. See that the tongue is pulled forward if it falls back into the throat. By taking hold of it with a handkerchief it will not slip.
6. If the breathing has ceased, or nearly so, it must be stimulated by pressure of the chest with the hands, in imitation of the natural breathing; forcibly expelling the air from the lungs, and allowing it to re-enter and expand them by the elasticity of the ribs. Remember that this is the most important step of all.

To do it readily, lay the person on his back, with a cushion pillow, or some firm substance under the shoulders; then press with the flat of the hands over the lower part of the breast bone and the upper part of the abdomen, keeping up a regular repetition and relaxation of pressure twenty or thirty times a minute. A pressure of thirty pounds may be applied with safety to a grown person.

7. Rub the limbs with the hand, or with dry cloths, constantly, to aid the circulation and keep the body warm.
8. As soon as the person can swallow, give a tablespoonful of spirits in hot water, or some warm tea or coffee.
9. Work deliberately. Do not give up too quickly. Success has rewarded the efforts of hours.

How to Treat Sun Stroke.

The unusual visitation of sun stroke in this State during the last three weeks calls attention to a subject which Californians have had very little cause to consider. Although the occasion for remedies and preventatives has probably passed for this time we give them in order that our readers may have them at hand for any future emergency. The sanitary committee of the New York board of health in speaking on this subject says:

"Sunstroke is caused by excessive heat, and especially if the weather is 'muggy.' It is more apt to occur on the second, third, or fourth day of a heated term than on the first. Loss of sleep, worry, excitement, close sleeping rooms, debility, and abuse of stimulants predispose. It is much more apt to attack those working in the sun, and especially between the hours of 11 o'clock in the morning and four o'clock in the afternoon. On hot days wear thin clothing. Have as cool sleeping rooms as possible. Avoid loss of sleep and all unnecessary fatigue. If working in-doors and where there is artificial heat, see that the room is well ventilated.

"If working in the sun wear a light hat (not black, as it absorbs heat) and put inside of it on the head a wet cloth or a large green leaf; frequently lift the hat from the head and see that the cloth is wet. Do not check perspiration, but drink what water you need to keep it up, as perspiration prevents the body from being overheated. Have wherever possible an additional shade, as a thin umbrella, when walking, a canvass or board cover when working in the sun. When much fatigued do not go to work, or be excused from work, especially after 11 o'clock in the morning on very hot days, especially if the work is in the sun. If a feeling of fatigue, dizziness, headache or exhaustion occurs cease work immediately, lie down in a shady or cool place, apply cold cloths to and pour cold water over head and neck. If any one is overcome by the heat, give the person cool drinks of water or cold black tea or coffee, if able to swallow. If the skin is hot and dry, sponge with or pour cold water over the body and limbs, and apply to the head pounded ice wrapped in a towel or cloth. If there is no ice at hand keep a cold cloth on the head, and pour cold water on it as well as on the body.

Do Not Give Way to Fear.—The following from the London *Times* is a fresh illustration of the well known fact, that fear and imagination are sometimes fatal poisons: "On Wednesday, Mr. Langham held an inquest on the body of Mr. George Gillian, who died from fright under the belief that he had taken poison. It appeared that the deceased complained of illness, and his wife by mistake gave him a draught out of a lotion bottle marked 'poison.' The bottle had not been used for some years. The mistake was immediately discovered, and the deceased exclaimed, 'Oh I am poisoned. I shall die.' Medical assistance was obtained, but the deceased died the same afternoon. Dr. Waters said that the bottle originally contained prussic acid, which, however, had evaporated. The body of the deceased did not contain the slightest traces of poison. Death arose from disease of the heart. In his opinion deceased was under the belief that he had taken poison, and the fright caused a sudden failure of the action of the heart. The jury returned a verdict accordingly."

Fruit as Medicine.—Many years ago a chronic cough induced us to look into medical books for the best expectorants. Dr. Good stated that ripe raspberries were one of the best remedies of the kind. As it was then approaching mid-summer, we obtained a daily supply for some weeks. We found them quite an agreeable medicine to take. They cured the cough. Again, at a late meeting of the Western New York farmers' club, Wm. H. Pillow, of Rochester, said he had been in the small fruit business several years, and he believed that strawberries had saved his life. One spring, after severe sickness, he had no appetite till strawberries came, when he almost lived on them, and improved rapidly. Land owners, plant strawberries and raspberries. —*Country Gentleman.*

How Typhoid Fever May be Spread.—Dr. Frankland, in a recent address to the Fellows of the Chemical Society, on the Organic Impurities of Drinking-water, adduced, as a striking instance of the persistency of the typhoid poison when diffused in water, the outbreak of a violent epidemic of typhoid fever in a Swiss village through the use of spring water, which, after contamination with the poison, had filtered through nearly a mile of porous earth, but had nevertheless lost none of its virulent properties. The occurrence in question is one of the most remarkable, if not the most remarkable, on record.

A Grotto of Health.—At Monsummano, in the province of Lucca, high up in the picturesque Apennines, there is a cavern famed far and wide for its beneficent effects on chronic rheumatic sufferers. The invalid breathes the temperate air of the cave, bathes in the medicated waters that drip from its walls, and bids farewell to his sufferings. Such, at least, was the experience of Herr Hugo Knoblauch, a respectable German traveler, who has written a book on the grotto and its effects, well spoken of by our Prussian cotemporaries.—*Medical and Surgical Reporter.*

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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Our latest forms go to press on Thursday evening.

San Francisco:
Saturday Morning, July 22, 1876

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A STRIKE IN EL DORADO COUNTY.—In a recent letter of our correspondent from El Dorado county, was a report of the Volcanoville mining company, situated in Volcanoville. Since our correspondent examined the mine, which was being worked by a hydraulic nozzle, the owners write us that they have struck some of the richest rock they ever saw in California. They have found a well defined ledge from three to five feet wide. They are down on it 50 feet, with the ledge exposed for 100 feet in length. Gold can be plainly seen all through the vein from one side to the other. They have beaten out some of the rock with a hand mortar and estimated that it will mill about $400 per ton. They consider that they have one of the best prospects in that part of the county. They are taking out pure specimen work every day showing the gold in large pieces. A mill is to be erected immediately. There are only three shares in the mine, owned by three miners, J. B. Watkin and the Graves Brothers.

THE SILVER QUESTION.—We give in another column the full text of the "silver bill" as passed by Congress. The question is becoming a most important one for us on this coast, as it very seriously affects the mining interests. The steady and persistent decline in silver has already had the effect of partially closing down several mines, and others are mentioned as about to close down, among them the Richmond of Eureka. The outlook for the silver mines is at present rather gloomy.

GEMS AND PRECIOUS STONES.—Mr. Hauks' continued article on this subject is unavoidably deferred this week, but a double article will appear in our next.

The San Francisco Foundries

The principal manufacturing establishments of San Francisco are the iron foundries which are of a character that would be creditable to much larger and older cities. For many years the whole coast was almost entirely dependent on the foundries of San Francisco for necessary iron work of all kinds, and even now, although imported machinery is more plentiful, the majority of the work is performed by our machanics. Of course under these circumstances every variety of work has to be performed, from monster mining machinery to the simplest castings, and our foundries are often put to much more severe tests than the much larger ones in older communities. The principal ones have now machine tools capable of doing any class or size of work, and doing it well, so that they can turn out as good jobs as any foundries in the country.

Of course on this coast the principal large work is mining machinery, and of late years the city foundries have built more massive and magnificent machinery of this kind than ever before made. As the mines in the great Comstock lode have increased in depth, the difficulties of hoisting and pumping have materially increased, and what was considered large machinery ten years ago is now looked upon as insignificant. Sixty-stamp mills are now nothing unusual, and more iron is put into one pumping or hoisting outfit than was used in half a dozen ten years ago.

There are in San Francisco 17 foundries, machine shops, boiler manufactories, etc. Some of these are of course on a small scale, while several will compare favorably with much older institutions in the Eastern States. These different shops employ altogether from 2,500 to 3,500 men. They pay annually for wages upwards of $1,000,000. The wages of mechanics are fully 33⅓ per cent. higher here than elsewhere, so the foundries are seldom short of men. Skilled labor receives from $3 to $4 per day. A few receive more, but that may be taken as an average.

Although the foundry business has been generally profitable here, it has had many serious drawbacks to contend with, prominent among which has always been the lack of certain descriptions of material. Pig iron and iron have long stood in the way of the manufacturers, and do so still. The price of coal will range from $8 50 to $20 per ton, according to its class. Pig iron is worth about three times as much as in England or Pennsylvania, and there was upwards of 17,000 tons of it used here last year. Moreover, everything that is ordered is wanted in the greatest hurry possible. The mining companies in particular never make up their minds what they want until they absolutely need it, and then it must be turned out immediately. Plenty of jobs of this kind have been undertaken and furnished by our local works in a space of time which would look preposterous in older communities. Within the past few months the larger foundries have been crowded with heavy orders of this kind, which they were required to fill within a limited space of time.

The foundries have, however, been fully up to the requirements. They have procured the best of tools capable of doing the largest work and the mechanics are as good as they make them. The superintendents of the different foundries all have an intimate knowledge of mining machinery as well as a varied experience in general foundry business. Those in the three principal works have under their charge continually from 300 to 500 men, and have lately constructed some of the largest machinery ever made. The work has to be well done, as so much depends on it and any slight error in construction might endanger the lives of many. As no complaints on this score have ever been made we may conclude that the work is generally as good as can be done. It is not generally understood, but is nevertheless a fact, that people on this coast expect more out of machinery than they do anywhere else. An engine is generally made to do twice as much work as it is expected to do by other people, and the machinery must be made strong enough to stand these requirements. The Eastern made engines do not as a usual thing come up to the California standard.

As Californians we should be proud of the position which our foundry interests have taken among those of the land, and should also foster them as far as lies in our powers. Our mechanics do work here at home which few people fully appreciate. In mining machinery we can, of course, beat the world and in general work we are not at all behind. Some of the marine machinery turned out within the past few years by our local works would do great credit to any foundry, and in strength, durability and finish cannot be surpassed. Many would be surprised to see what is being done in that part of the town where the foundries are located, should they take a stroll in that direction. Iron work of any character, large or small, can be procured at short notice and turned out in first class style. At present the shops are busy, although the best of the season has past and some of the larger works have just completed a number of heavy jobs for the Comstock mines,

The Highly Important and Practical Value of the Mechanics' Institute Fair.

The time is fast approaching for the opening of the Mechanics' Institute Fair in this city. On the 8th of August the great pavilion will again throw wide its doors to the public; and the public, educated and interested by its former experience within the walls, will press forward again to read the industrial progress of another year. The prospect is that they will not come in vain, and that this year's fair will surpass all that have gone before in all those things which constitute success in an industrial exhibition.

The applications which have been already made for space exceed the former limits. The popular spirit and the popular interest in the efforts of the managers of the Institute give full assurance that the people are with them, and their work will result in the grandest display of industrial achievements ever made in this city. As this is the case there are several suggestions which we regard pertinent to this occasion.

Honorable and worthy industry thrives by popular approval. To secure approval attention must be arrested and examination courted. Industrial lights do not burn well under bushels; they must be put forward into the free air of popular contemplation. Every producer, every manufacturer, every man who gives form to a worthy work of hand or brain, every man who has succeeded in wrestling things of value from the natural resources of the coast—all these classes of workers owe it to themselves to give their work the advantage of a popular display. They owe it to their own success and to a public to whom their work may be of benefit. In these busy days the people have not time to search long for excellence. They must look, think and act in a moment. They have come to look upon excellence as a thing which is sure to rise where all can see it. In these days of quick thought and wide information, to be unknown is almost to be worthless.

As this is the disposition of the age, wise men have learned to profit by it. The result is that the triumphs of industry, instead of hiding away in by-places, as they did in former years, come out now into the broad daylight of public scrutiny, trial and admiration.

Fostered by this praise and patronage of the people, the industrial spirit has taken to itself new life and strength. Catching new thought from the clash of competitive display, ingenuity has been sharpened, industry has been doubled, and success has been wonderfully promoted. The history of industrial advancement is inseparably connected with the history of industrial exhibitions.

The thought of these truths lead the mind to the opening of the Mechanics' Fair, to which we have alluded. It is impossible to measure the good work which has been done for the industries of this coast by the Mechanics' Institute. Limits cannot be placed to it because the spirit of progress and advancement, which it has implanted and fostered, is still expanding. The full influence of the Institute cannot be measured so long as there is a hammer left to strike, or an anvil to sound the ring of industry on this coast. The Institute works for all our future, and its work will not be done until the honorable labor and enterprise of this coast shall have done their perfect work, and our full growth and greatness shall be achieved. In the hurry of the present we are too prone to forget the future of our labors. If we judge the Mechanics' Institute by the good it has already done and the industrial growth which has already been gained, in no small part by its labors, we have some basis on which to rest an estimate of its value as a factor in our growth and progress, and foresee its future position among the institutions of the coast.

The Mechanics' Institute is a popular institution. It purpose in the ripeness of time in answer to a demand of our industries. It was wisely planned by men whose heart was in their work and whose tireless energy shrank from no effort.

It has ever grown and prospered by the inherent right which there is in it and by the self sacrificing devotion of those in whose hands its management has been entrusted. It is not necessary to recite its history. The facts are generally known. It is not necessary to mention its patrons and promoters. Their names are already written in the public mind in connection with a score of honorable institutions and enterprises of which we are proud.

We have, however, a direct word to all readers, to all patrons of industry and to all workers in our industrial arts. The Fair of the Institute gives opportunity to exhibit excellence. No better opportunity can be devised. The popular eye will be turned toward your labors. The popular mind will be in a frame to study, to compare, to patronize. You may catch a man's eye as he passes along the street, you may gain his ear by calling upon him at his place of business but at such times and places his mind is occupied and the impression you make is generally slight. At an industrial exhibition his disposition is different. He comes for the express purpose of hearing, seeing and judging for himself. The lesson is plain. Every manufacturer and tradesman is neglectful of his own interests if he fails to avail himself of the privileges of the Institute and place his best articles on exhibition.

To the inventor, the man who has made a new and valuable device for improved an old one, the opportunity of exhibition is invaluable. His success depends directly upon the extent to which he secures the popular eye. He might be almost as well out of existence as out of the thought of men. Let our inventors then come forward without exception and serve their own interests and at the same time display the inventive spirit of the coast so that all can see and admire it.

To the mechanic, the man who swings the hammer or holds the calipers, a mechanics' fair is of great importance. The mechanic's thought, like the scholar's, needs new material; it profits by suggestion and grows by the original adaptation of hints gained, from study and observation. Every mechanic should elaborate his best mechanical idea, whether it be in original work or in the excellence of workmanship on some frequent task, and place his masterpiece where all can see it. The demand of the day is for the most skillful workmen. Common laborers are abundant. Let it be seen that your work is not common. Do something above the ordinary run of work and put the result where all can see it at the Mechanics' Fair. It will do you good. It will show your ability, and depend upon it, there are many interested eyes seeking for the best skill and will bid high for it.

The coming Fair commends itself to the people of this State in every way. We have only pointed out, in an imperfect manner, a few directions in which its usefulness lies. As we have said before, it is an institution of the people. Its officers are but discharging a trust for the whole people. They deserve the fullest patronage and support. They should receive the earnest co-operation of every friend of industry on this coast. There are indications that they are receiving this, for the prospect for the coming exhibition is very bright. But there are some useful things, we doubt not, which are not yet entered for the display, and some enterprising citizens who have neglected to take the part which it will be for their own and the public interest that they should take. To such as these, if such there be, we would make a direct appeal to come forward and show their appreciation of the labors of the Institute, by contributing whatever excellent thing they have, to secure for this Centennial exhibition of this western shore a fullness and excellence which will be always memorable.

Comstock Papers.

NO. 1.

Discovery and Early History of the Great Washoe Lode—Singular Misapprehensions in Regard to the Facts.

That the Comstock lode, in the item of active production, surpasses every other gold and silver bearing ore channel of which we have any knowledge, admits of no question. Other veins may have been discovered and worked in both South America and Mexico, carrying ores of higher grade, and from which larger aggregate sums may in the course of centuries have been taken, but from none of them has the annual product of bullion been half or perhaps one-quarter so great as from this. These slow going countries, with their crude machinery and their man and mule power, required 10 years to accomplish what we, with the aid of steam and other modern inventions, accomplish in one. Throughout all the mining regions of Spanish America it was formerly, as it is almost everywhere still the custom, to bring the ore to the surface on the backs of men, to raise the water in buckets and drive the arastras and nearly all other machinery by mule power, as many as 1,400 of these animals having been kept for this purpose and for treading the patios, in the district of Guanajuato alone. The machinery employed on some half-dozen claims on the Comstock lode would be more than sufficient to perform the service exacted from these 1,400 overworked and underfed brutes, supplemented by whole armies of equally hard-faring men. It is this capacity to

Perform Much in a Short Time

That gives to the mother lode of Washoe its superior importance as compared with the most renowned *Veta Madre* of these older and historically famous mining countries. And yet the out-turn of these latter has for more than 300 years been remarked upon by scientists and political economists as of vital consequence to the commerce and industries of the world. The chroniclers of the past notice it as a feat worthy of special comment that Mexico and South America combined should have been able to turn out gold and silver at the rate of $20,000,000 per year. Since the conquest of Mexico by the Spaniards, that country has produced an annual average of only about $8,000,000, this being the rate at which Peru and Bolivia, the great bullion producing countries of South America, have turned out the precious metals in the meantime.

The State of Nevada has yielded to date over $300,000,000, being at the rate of $20,000,000 per year since the business of mining was here first actively engaged in. Of this total about two-thirds came from the several mines situate on the Comstock range. The most prolific ledge in Mexico yielded during a period of 284 years an average of not quite $2,500,000 per annum, while the richest in South America, that of Cerro del Potosi, in Bolivia, yielded less than $5,000,000 per annum during the 250 years it was worked.

From two claims on the Cometock, the Crown

Point and the Belcher, covering jointly a lineal section of 1,480 feet of the ledge, there were extracted, in the space of three years, $50,000,000, of which one-half was dishnrsed in dividends to the shareholders. Within the past two years there have been taken from the Consolidated Virginia mine alone about $35,000,000, of which over $20,000,000 were net profits. Dnring the year 1873 the dividends declared to shareholders in the varions mines a ong the Comstock amounted to $22,000,000, o rate of clear earnings that has since been maintained.

That the Productive Era

Of an ore channel so veat and marked by features of such permanence will extend into the distant fntnre may well be expected, this being in accordance with geological facts and all previous experience. History teaches that silver mines situated at these high altitudes and oo cnpying great notural chasms never wholly give out. Mexican mines opened by the Axteos still continne to yield well, and there are districts in Spain that were operated before the Christian era, which to this day richly repay the labor bestowed npon them. In many parts of Europe there are silver mines now being worked with profit that were opened from 500 to 1,000 years ago, thongh none of them exhibit the masterly proportions of the great dominating lode of Nevada.

That the facts connected with

The Discovery and Early History

Of a gold and silver hearing vein that has already yielded so largely of the precious metals, and is destined to occopy such a conspicuous place in the annals of mining, should have been so misapprehended, not to say strangely perverted, is a circumstance to be accounted for only on the hypotheses of sheer cerelessness or indifference on the part of those who first nndertook to make public record of this event. According to the generally received version of this affair, the finding of the Comstock lode was due to certain parties who, while excavating a hole to collect water for gold washing, threw up a qnanity of earth mixed with free gold and the decomposed snlphurets of silver, this rich material consistiog of the disintegrated out-crop of the main lode which here came to the surface. This excavatioo was made on the dividing line between the old Mexican and Ophir cloims, being near the southerly eod of the present Ophir grond. Prior to this incident, which occurred in the latter part of May or early in Jone, 1859, James Finney, commonly koown as "Old Virg nny," had located n quartz claim on the line of croppings a little to the west of the Comstock, afterwards known as the Virginia ledge, hut had done no work npon it. This claim, which was recorded on the 22d day of February, 1858, was taken up because the locator considered it to be on the ledge previously occupied end already extensively worked at Gold Hill, a mile and a quarter farther south. These croppings, though quite hold, were not, however, on that ledge at all, or at least not on the main Comstock, which, as has since heeo shown, lies several hundred feet to the east of them.

The Real Site of the First Discovery.

Now, it will not he denied that the ground of Consolidated Imperial company is on and constitutes a section of the Comstock lode, and as this grond was occupied and extensively worked as early as 1857, it follows that the discovery of the lode must anteda.e thet event. More than a year before Finney had taken up his claim on the croppings of the Virginia ledge end more than two years before Peter O'Reilly and Patrick McLaughlin, the gold washers, had dug the excavation mentioned, a nnmber of arastras were being run on the rich ores et Gold Hill, quite a hamlet having already sprung up at that place. That the parties operating here had little idea of the magnitnde or importance of the lode they were working and were wholly ignorent of its extension either to the north or south, must he admitted. But that they were really on the Comstock and were well advised as to its character at that particular point, cannot be questioned. If to ony one, then, the credit of discovering this lode is due, it belongs to these quertz workers at Gold Hill, who had been opening it up and crushing its ores for so long a time before the rich surface deposits were struck upon it farther north at Virginia City. It is not claimed that there was much merit in their being there. They had worked out Gold canyon, which afforded fair placer diggings, and having arrived at its head and found there a heavy reef of rich quertz, went to work upon it, treating it simply as an auriferous ore, never dreaming that it would at greater depths rnn into silver, or thet heavy deposits of that metel existed in the neighborhood.

The Grosch Brothers.

So far as seerching after argentiferous ores wes concerned, the idea does not appear to have entered the heads of any of these pioneer Washoe miners, if we except from the number H. B. end E. A. Grosch, commonly spoken of as the Grosch Brothers, two young men who came over to this region from Placerville, California, in 1852. While they made gold washing their principal business, they seem to heve entertained the idea that there was silver also in the country, and being educated mineralogists, with some knowledge of metallurgy, spent much time in seeking after this class of ores. That they succeeded in finding what they considered silver-bearing lodes is well established, they having carried to California and there exhibited samples of ore carrying a considerable percentage of that metal. By some it hes been claimed that they obtained these samples from the Cometock ledge. But this is obviously a mistake, noless we consider the ore channel that passes through the present Dayton claim as being on the mother lode, for there can be no question but they obtained their best specimens from that neighborhood. On a sort of bench, 200 feet above the American ravine, and on a line with the Dayton croppings, the remains of a shaft sunk by these young men are still to be seen, the fragments of a rude furnace erected near by and nsed hy them in experimenting npon their ores being also visible in 1859. They probably never pushed their researches further north than Gold Hill. Certain it is, if they had ever found any of the rich silver ores of the Comstock proper, or at least such as were first struck at Virginia City, they, being qualified to appreciate their value, would have teken measures to secure the discovery and turn it to practical account. The fact is, they never found any ores of that character; yet to these men more than to ony others is due the merit of having first paid attention to the snbject, and of actually engaging in a search after silver ores on the "Eastern slope;" and it is not improbable that they would, had their lives been spared a little longer, have been instrnmental in making more important discoveries of this metal.

Next to these brothers in the list of those who may with any propriety claim even an indirect agency in bringing about the discovery of the great Washoe *Vela Madre*, stand the early Gold Hill quartz miners, followed by Finney, O'Reilly end McLaughlin, in the order mentioned, Comstock, whose name the lode hears, having had no more to do with that event than the man who is supposed to occnpy the lunar attendant on our planet. The circumstences thot led to this singular and awkward misnomer will he expleined in the next number of the Comstock Papers.

Improved Amalgamating Pan.

We illustrate on this pege an improvement on grinding end amalgamating pans recently pateoted through the MINING AND SCIENTIFIC PRESS Patent Agency, by Charles Commings, of the Union iron works, Virginia, Nevada.

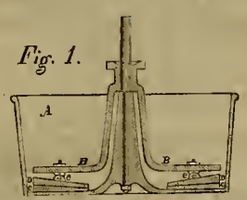


Fig. 1.

Fig. 2.

Cummings' Amalgamator.

The main principle of this invention consists in constructing the shoes and dies with a gradually increasing thickness or metal towards their outer edges, where they are subjected to the greatest amount of weer. This arrangement improves the efficiency and dnrehility of the shoes and dies which are nsed in grinding and amalgamating pans, saving not only in the superior manner of triturating the pulp, but in the length of time that the shoes and dies will run without replacing, as it is always a considerable item of expense to stop the pans to remove worn-out shoes and dies and replace them with new ones.

In the engraving, Fig. 1 is an elevation in section of the pan, and Fig. 2 is a view of one of the shoes. *A* represents the pan and *B* the muller. Owing to the rotary motion which is imparted to the muller, the outer edges of the shoes and dies, where the speed is greatest, always wear away much faster than that portion which is nearer the center, and which consequently moves at a less rate of speed. On this account, therefore, it is impossible to maintain a uniform grinding surface, as the faster motion of the outer extremities wears the metal of the shoe away so much faeter than near the center where the speed is slower, thus requiring more power to do the same work then if the grinding were done at the outer extremity.

To remedy this difficulty Mr. Cummiag constructs the dies *C* and shoes *D* with a gradually increasing thickness of metal towards their outer edges, so as to render them more durable and obviate the necessity of changing them so often. The dies *C* are rigidly secured to the bed of the pan as shown, but instead of fixing the shoes *D* rigidly to the under side of the muller, they are attached by means of a pivot or loose joint as at *e*, so they can adapt themselves to the irregnlerities of the wearing surface, and thus maintain an even and uniform surface at all times, no matter how much they may become worn.

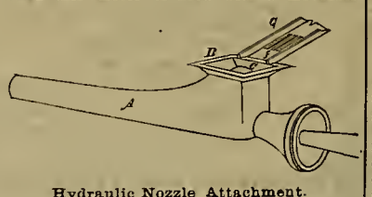
Any suitable pivot or hinge joint can be employed that will let this shoe vibrate or move freely, and the hinge or joiot may extend entirely across the middle of the shoe, or it can be merely a point attachment at their centers. Although shoes and dies of uniform thickness can be used with this method of attechmeut, a great advantage is gained in their durability by making them thicker towerd their outer edges.

Taking the Gravel Banks by Storm.

Rather a curious invention, of recent date, in the line of mining appliances, is one intended to increase the effectiveness of streams of water in hydraulic mining, which is done in a novel manner. It consists in the introduction into the stream of water, either before or after it runs from the nozzle, of stones, gravel, sand, or other bodies which, by their superior density and solidity, will admit the erosive action of the water, and more effectually pulverize the gravel. It is claimed that this will accelerate the operations of disintegration and more effectually release the gold from the large pieces of cement

The device for accomplishing this object is called a "hydranlic motor," an engraving of which is shown herewith. *A*, represents a tube or pipe 10 or 15 feet long. The pipe is mounted directly in front of the hydraulic nozzle so that the stream will enter the rear end of the pipe *A*, and pass through it. Near the rear end of the pipe is a hopper, *B*, upon it, and the hopper is connected with the interior of the pipe by a throat, *C*, so that the stones or gravel can be dumped with the hopper, pass through the throat into the passing stream and be carried by it against the bank. The throat, *C*, gradually widens from the bottom of the hopper toward the front of the pipe, so that the stones, etc., will have room to descend freely and not choke the passage. The stones can be dumped into the hopper by any convenient means; but as a stream of water soon as is nsed in hydraulic mining is capable of carrying a vast amount of foreign substances with it, in order to render the operation complete it should be quite strongly charged with stones or gravel.

The better way, the inventor thinks, is to construct a screen or "grizzly," *G*, on the side of the hopper. A trough or sluice is led from the bank which is being washed, to this grizzly, so that a portion of the stones and gravel which are dislodged by the stream will be caught by the sluice and conveyed into the hopper, thus automatically feeding the stream with missiles. The grizzly seems to draw off the water and sand, or a portion of them, before they enter the hopper. The bottom, *f*, of the grizzly is constructed to operate as a slide, so as to regulate the amount of water and sand to be drawn off. The pipe, *A*, must be larger in diameter than the nozzle from which the stream issues. When this motor is nsed with a moveable



Hydraulic Nozzle Attachment.

nozzle it is attached to the nozzle so they will both move together.

By loeding the stream with missiles as described, it is claimed that the efficiency of the stream is largely increesed. The stones seem to break np the pieces of cement or earth that are detached, thus freeing the gold from the lumps. The missiles nsed are not large enough to impede the flow of water through the sluice, but will keep up an agitation of the materiel in it and help form numerous eddies of comparatively still water which will favor the settling of the heavy particles. This method of "hydraulic bombardment" is the invention of the late Jasper O'Farrell end Dr. Ambrose Blatchley, of this city.

Interesting to Miners.

A correspondent writes as follows: "The issue of the 8th inst. of the MINING AND SCIENTIFIC PRESS has been received. Each number seems to excel the other in valuable information. Your El Dorado correspondence is especially interesting. I only regret my inability to furnish yon items written in a manner worthy of place among the snperior articles which appear in the PRESS!" This is a sample of the letters of encouragement we frequently receive, and we always feel gratified thet our efforts to meke a good paper are appreciated. Mr. Knox, our correspondent who has been writing up the interests of El Dorado and Placer counties, has written some very interesting letters which seem to be appreciated. We hope our friends will aid him all they can in his tour.

We commence in this issue a series of articles on Alpine county mines, which will be found of great interest. We also commence a valuable series of papers, giving a historical account of the great Comstock lode, which no one interested in that locality should fail to read. New subscribers now will be eble to receive the whole series. We have in preparetion a number of other articles of great value to the mining community which will appeer in due time. We intend to continue to improve the PRESS in snch a manner that no mining men can afford to be without it. The articles which are now running in series in the peper are alone worth the price of subscription and others on hand will still more increase its value.

Placer County Mines.

[By our own Correspondent.—No. 3.]

There is a very extensive body of gravel aronnd Iowa Hill; much of it is as excellent in quality as abundant in qnantity, showing in many clsims the true characteristics of whet is known as the blue lead. The want of a sufficient supply of water has been the great drawback. This has been remedied to a great extent. The Iowa Hill canal has been completed the distance of 45 miles; it will he extended 14 miles further. A large reservoir has been built with a present area of 100 acres, and when contemplated embankments are finished will cover a space of 200 more. It supplied last season 300,000 inches of water. With a little more capital to overcome this and some other difficulties, it would become one of the liveliest places in the State. The shipment from this place, including Damascus, during the half year just ended, amounted to $120,000. The Orion claim has 90 acres of pure gravel from 100 to 175 feet in depth, being clear of timber end cement, and is said to prospect well from surface to bedrock.

The North Star

Has yielded up to dete over $500,000. The Enterprise was partially opened last winter, running with a head of 400 inches of water, and paid good wages for the amount of work done. It turned out from $125 to $200 per day.

The Morning Star

Has about 80 feet of as beautiful blue gravel as one could wish to see—the whole bank 150 feet in hight. As it is worked into the hill it will probably reach 500 feet. It is opened with a face 700 feet in length and covers about 60 acres. The flume is four and one-half feet in the clear; grade eight and one-half inches in 12 feet, and 900 feet long; from 1,000 to 1,200 inches of water used under pressure of 500 feet. I noticed here two of Hoskin's letest improved little giants. This claim labors at present under a great disadvantage from a want of sufficient fall. Notwithstending it has done well, yielding on the first run of the season (15 days) about $8,000. Under more favorable conditions in anticipation it ought to yield enormously.

Not far from this comes

The De Kruse Claim,

Of 24 acres, with a similar bank of gravel 120 feet in hight, and about 30 feet of the blue streak that peys exceedingly well. There is a good outlet through Little Indian canyon, which belongs to the olaim. It averages $2,800 per month, requiring the labor of about one-half dozen men. The Irish & Byrne, adjoining, covers 100 acres of similar ground, with ample fall for all time to come. Two out of four hydraulic mines are running at Wisconsin Hill. Messrs. Vaughn and Ingersoll have a bank from 80 to 100 feet high, not having cut through the deep channel of cement to the bedrock. They have taken ont about $75,000 within the past nine years, late runs averaging about $16,000 per month.

Horman & Co. have 100 acres with a good outlet in the heed of N. Y. canyon and bank on the west side of claims of 130 feet. They intend to run a new tunnel from the canyon 300 feet in length to work the channel. The district assessor ought to make it pan out well when he makes them a visit, *verbum sat.* All the public need know is thet they have had a lengthy and profitable run.

Across the ravine

On Prospect Hill

Is the Lebanon company's ground. They have crushed some cement this season with very good results. It averages them in their 10-stamp mill $6 to $7 per ton, occasionally getting a rich seem that paye as high as $100. They have run a tunnel 3,000 feet in length, cutting a good quertz vein, from which fine gold quartz specimens have been taken, valued at from $30 to $60 apiece.

The Belte claim on one side, worked by hydraulic, has the appearance of being very good ground, and on the other side of the Lehenon is the Wesley, a drift claim of 46 acres, that pays $10 per day to the man. As high as $2,000 have been taken out here by the labor of two men in a single month. Mr. C. F. Schwab has 55 acres of excellent hydraulic ground adjoining.

On Independence Hill,

The Barber claim, though not yet fully tested, as the bedrock has not been reached, is said to prospect very well, while the adjoining one of Messrs. Entwistle & Worsley, now thoroughly opened, has paid handsomely, although they had not fully cleaned up.

The Gophir, on the same hill, the property of Mr. E. Metcalf, has a bank of 100 feet. A face of 600 feet had been washed off a distance of 300 feet into the bank, out of which about $25,000 had been taken. K.

THE East Justice mine is located immediately east of the Alta and Woodville mines on the Comstock and but 200 feet from the Alta hoisting works. A number one three-compartment shaft has been commenced and the sinking will be prosecuted vigorously.

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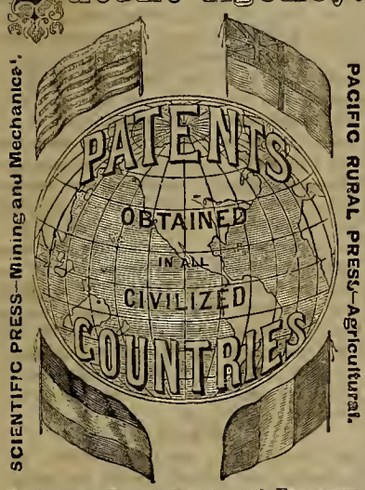

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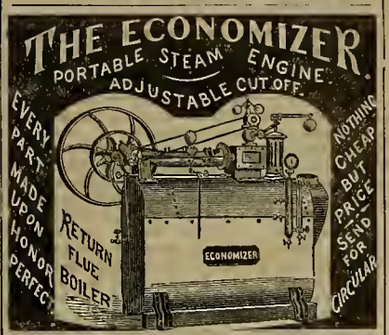

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Assay for Gold and Silver	$3 00
" " Gold, Silver and Lead	5 00
" " Gold, Silver and Copper	5 00
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" " Quicksilver	5 00
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Test for any single metal	2 00

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Qualitative Analysis of Ores	$10 00 to $25 00
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Chemical Apparatus,

Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.

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Ores worked by any process.
Ores sampled.
Assaying in all its branches.
Analysis of Ores, Minerals, Waters, etc.
Plans furnished for the most suitable process for working Ores.
Special attention paid to the Mining and Metallurgy of Quicksilver.

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Mining Engineers and Metallurgists.

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On all kinds of Ores, and particular attention PAID TO

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Tested to 1,000 lbs. per Square Inch,

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Persons engaged in the following business have their Signs Painted at contract prices, for goods or articles in which they trade, viz:

Merchant Tailors,	Gents' Furnish'g G'ds
Bootmakers,	Furniture Dealers,
Hatters,	Jewelers,
Hotels,	Piano Fortes,

Wine Merchants, Etc., Etc.

SODIUM AMALGAM.

I am prepared to furnish Sodium Amalgam for $1.50 per pound. Although the price is low, my reputation is a guarantee of its purity. Sodium being now much cheaper than formerly, the miner and millman should have the advantage of it. The temptation to adulterate the article being so great, consumers are advised to call for my manufacture when ordering from wholesale dealers, with an assurance on my part that the quality will be the best. Zinc is sometimes substituted for sodium, to the great disadvantage of the consumer. The following are the tests for pure Sodium Amalgam: shaken up with water it must be wholly decomposed, the mercury remaining perfectly fluid and the water becoming strongly alkaline.

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The very best in the country. A large stock at reduced prices.

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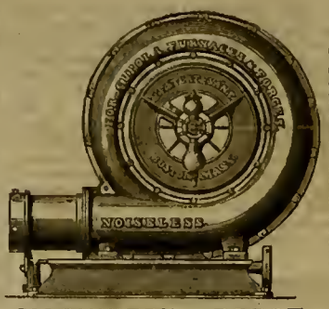

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Self-Oilers and Cylinder Cups.

Save from sixty to eighty cent. of oil over the old method.

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Manufacturers of Files of every Description

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All classes of mining properties reported on, consultations had on reduction of ores of all descriptions, plans for furnaces and reduction works furnished, and the construction of them superintended. Ore tests made at the office,

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BERRY & PLACE,

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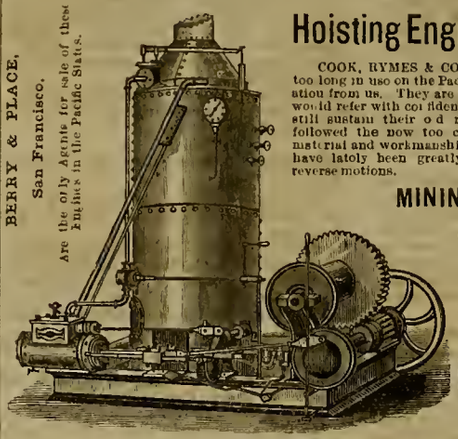
Are the only Agents for sale of these Engines in the Pacific States.



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MINING HOISTING ENGINES.

(Manufactured by the same parties.)

Our new Mining Engine is built from plans and specifications of several of our MOST SUCCESSFUL MINING ENGINEERS, and the result is the most complete

Double Drum Hoisting Engine

Ever built. Their advantages will be seen at a glance by any one familiar with the necessities of a mine. These engines may be seen in use in Ophir, Con. Virginia, Chollar, Europa, Niagara, Leviathan, Phil Sheridan, and several other mines on the Comstock Lode. For sale only at

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(Successors to Treadwell & Co.)

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Clothing,

14 & 16 Battery St.,

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These goods are specially adapted for the use of FARMERS, MECHANICS, MINERS, and WORKING MEN in general. They are manufactured of the Best Material, and in a Superior Manner. A trial will convince everybody of this fact.

Patented May 12, 1873.

USE NO OTHER, AND INQUIRE FOR THESE GOODS ONLY.

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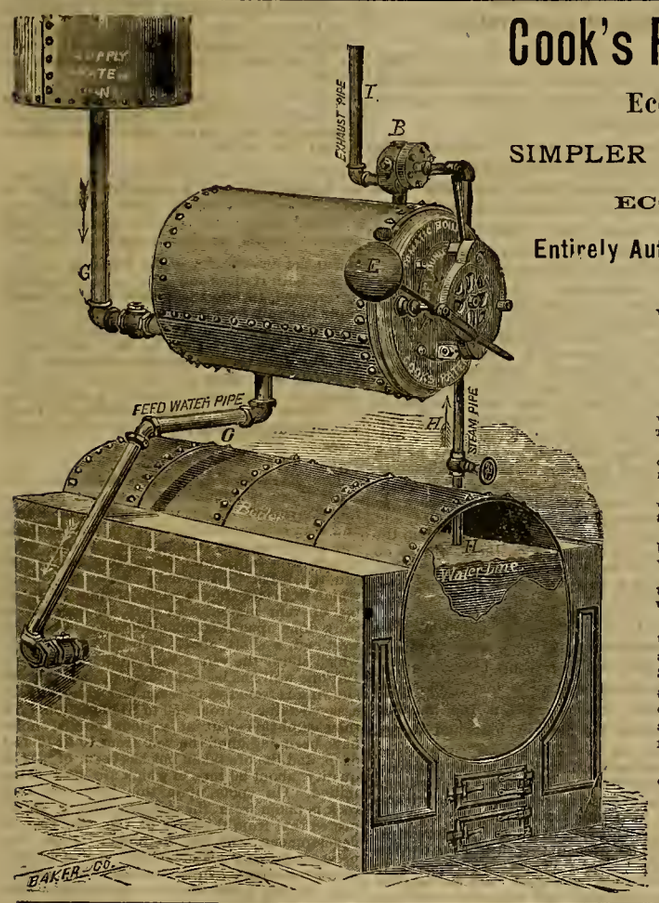
Economy in Operation. Absolute Safety from Explosion.

SIMPLER THAN A PUMP, AS IT REQUIRES NO ATTENTION.

ECONOMY IN FUEL.

Entirely Automatic, Reliable & Durable.



Cook's Automatic Boiler Feeders

WERE AWARDED THE HIGHEST PREMIUM OVER ALL MACHINES EXHIBITED AS BOILER FEEDERS AT THE CINCINNATI EXPOSITION AND THE ST. LOUIS FAIR.

The cuts show the operation of the Feeder. It was described in detail in the MINING AND SCIENTIFIC PRESS of May 20, 1876.

This Feeder will discharge from 40 to 200 gallons of water at one movement, where a pump would require hundreds of strokes to do the same work.

The water is kept exactly at the proper line, whether running fast or slow, without attention from the engineer.

Feeders, Heaters and Regulators Combined are made on this principle. Simple and economical.

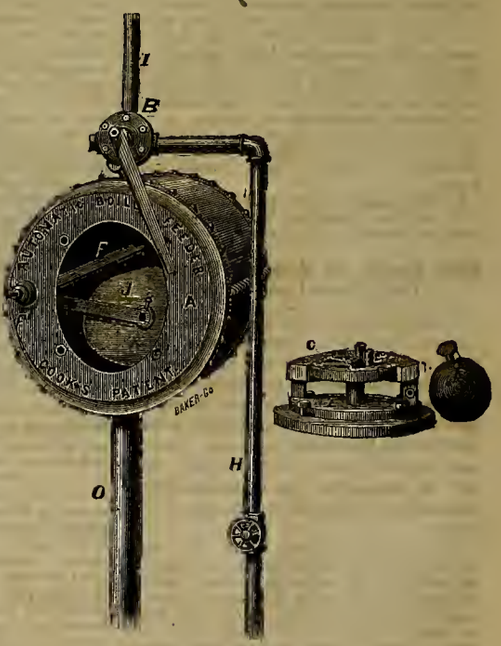
The control of feeding water to the boiler is taken out of the hands of the engineer and left to unerring natural laws.

These Machines are now introduced on this coast for the first time, although they are extensively used in the Eastern States. They supply the boilers with great regularity, and keep the water at exactly the same level. As a protection against explosion they are simply perfect, leaving nothing to be desired.

ONE OF THESE FEEDERS CAN BE SEEN IN OPERATION AT THE PACIFIC IRON WORKS.

Address,

For Circulars and further information,



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Several first premiums received for quartz mill Screens, and perforated sheet metals of every description. I would call special attention to my SLOT CUT and SLOT PUNCHED SCREENS, which are attracting much attention and giving universal satisfaction. This is the only establishment on the coast devoted exclusively to the manufacture of Screens. Mill owners using battery Screens extensively can contract for large supplies at favorable rates. Orders solicited and promptly attended to.

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Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes: Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.

TUBBS & CO.,

e20 611 and 613 Front street, San Francisco

(Continued from Page 57.)

of worship, public halls, etc., reflect remarkably the voice of the speaker and the notes of music.

Their fire-proof qualities are too evident to be spoken of. However, mention may be made of this fact that, with them, bank vaults are said to be safer than with solid brick or stones, owing to the air which the walls contain. They are invaluable as a substitute for wooden partitions, to which, as just demonstrated, the largest number of devastations by fire may be ascribed.

As regards their strength, it is difficult to compare them with common bricks, as the latter are sometimes thoroughly burnt and hard, but frequently very deficient in these particulars. Still it may be said that they are to solid bricks what hollow iron is to solid iron—that is to say, generally stronger. Their resistance to pressure has been so often tested, officially and otherwise, during the first few years of their introduction in Europe, that nobody there thinks of resorting to new experiments.

In 1853 Mr. Hodge, architect of the Congregational church and school of Battlebridge, in the district of St. James and St. John, Clerkenwell, London, before using Borie's hollow bricks in these buildings, piled 30 tons on four of them until the beams and planks, which supported the weight, began to yield and prevented laying more on. This was left piled up for several weeks, without the least injury to the four bricks, thus showing that a hollow brick will sustain, without danger, a column of the same size and material equal to three times the hight of the pinnacle of St. Paul's in London. Then the official referees, appointed under the Metropolitan Buildings act, to determine whether this kind of bricks was fit to be used in the said constructions, awarded affirmatively. (Vide *Builder*, July 30th, 1853.)

At about the same time, Mr. Calla, engineer and contractor of Paris, subjected two hollow bricks to a weight equal to a column of 2,490 feet of bricks of the same description, and they passed the trial with perfect success.

In the fall of 1852 the Great Western railway company of France erected, with hollow bricks, in the depot of St. Lazare, Paris, a succession of arches covering two and one-half acres, for the purpose of landing passengers and freight. The arches, which are supported by iron columns and girders, are unusually flat and thin, being 16 inches in the curve only, 8½ inches thick, with a span of 16½ feet. As soon as built a heavy carriage traffic began on them, without the slightest deflection. Previous to commencing the work, the company had submitted the bricks to the most severe trials.

Although imperfect in former times, as before stated, Borie's hollow bricks were rewarded with a prize medal in the International exhibition of London of 1851, and with two gold medals in those of Paris in 1855 and 1867, besides premiums obtained in the exhibitions of Sheffield, Amsterdam and others. A last and not least advantage of Jules Borie's improved hollow bricks, is that they can be manufactured as cheap as good common solid bricks.

For further particulars apply to Jules Borie, civil engineer, postoffice box 633, Oakland, Cal., and Junction City, Kansas.

Alpine County—Its Mines and Resources, Past, Present and Future.

[For the PRESS by VICTOR HARLAND.—No. 1.]

Alpine county, as its name indicates, is situated among the grand old monuments of Nature's rearing; among the world renowned mountain chains of the California Sierras, and upon the eastern slope. Our means of communication with the outside world are, however, most excellent—direct communication from your city being afforded us, in this age of lightning trains and progressive enterprise, in 26 hours.

The principal industries within the county are agricultural, timbering and mining. Of the latter it is my intention to treat, and, if possible, to place before the many readers of your widely circulated journal, and the public generally, the advantages of Alpine county as a mining region; together with the disadvantages under which we have labored in the past, which latter, however, are destined to give way before the ever advancing science of mining so successfully prosecuted by our mining men of the present day.

There are several

Mining Districts

Within the county, the most prominent of which are Silver Mountain and Monitor districts, and which, in the days that are past, were the scenes of active and busy life. Like many other mining localities in both California and Nevada, we have had innumerable difficulties to contend with, and which, for various reasons, have been prolonged to an extent that is unwarrantable and inexcusable in many instances. These reasons your correspondent will endeavor to analyze in general and in detail before closing the articles descriptive of the various districts and the mines situated therein.

Within the county and passing through four of the mining districts is a

Vast Mineral Belt

About eight miles in width, with a general, yet well defined course, northerly and southerly, and in the aggregate about 12 or 14 miles in length. The most casual observer, in passing through this belt, will not fail in noticing its boldness and magnitude, while the studious mining advocate and scientist will immediately observe its perfect adaptation for mineral purposes; and a careful examination will reveal the varied and prominent evidences of the mineral wealth here exposed. Among many of our notable men who have visited this region, we find the name of the late J. Ross Browne, who, in the course of his statistical information, paid this county a high tribute. The suggestions and directions from him and others of like note and experience, regarding deep working and an abandonment of

The Tunnel System

Were not heeded, and for years this country has been subjected to these worse than useless evidences of primitive conception in the form of surface tunnels, driven at a cost of thousands of dollars, where advantageous sites were easily obtainable for hoisting works and permanent shafts. Fortunately, however, the days of tunneling are over in this county, and now, at the eleventh hour, is inaugurated the system that should have been adopted at the time of the discovery and occupancy of these districts. Had this course been pursued heretofore our mines would now be adding their quota to the vast mineral productions of the coast, and the county of Alpine second to none as a region of mineral wealth.

The interest manifested by the Advance and Flint companies of Monitor, and the Exchequer of Silver Mountain district, has incited to action many other mine owners and prospectors here, and the universal opinion is, that from the present memorable year, an era of permanent prosperity and success will have dawned upon the county, greater than ever before realized since its discovery. Among the

Many Difficulties Experienced

Here is the lack of proper and economical roasting furnaces for the reduction of our ores. Worthless articles, of many descriptions, and bearing numerous titles, have been foisted upon the mining public as the one great thing needed. Expensive in erection, and worthless in action, they have paralyzed the interests here to a greater degree than perhaps anything else that we have been compelled to contend with, and are to-day standing monuments of fraud, and a mournful lesson to the directors and stockholders of the various companies whose pockets have been depleted by the erection and attempted use of these useless piles of brick and stone. It is self-evident to any one that sufficient caution in this particular was not observed by those whose duty called them to the front as superintendents and managers of the various companies, else these visionary monuments of uselessness would never have been erected. Our ores are refractory, it is true, but medium results have been obtained by raw amalgamation, and when a furnace or process not too expensive in working is shown to the public that will thoroughly and successfully treat our ores, no further apprehensions are needed regarding ultimate results from either quantity or quality of our ores. We want something that will terminate this battle with the baser metals, and once obtained, our future as a bullion producing region is not at all clouded. Our lodes are massive and well defined, and with the aid of well directed capital, furnished with one-fourth the uniformity exhibited on the Comstock, not only one, but hundreds of the lodes within this vast belt will prove conclusively to the promotors of such efforts that their labors will have not been in vain.

A SERIOUS FIRE.—We regret being called upon to record a serious loss which has fallen upon the Averill chemical paint company. On Wednesday morning, of this week, their store and office on Pine street was destroyed by fire and the stock on hand burned up. Although this is a severe loss the company do not on that account allow their business to be interrupted in the least. The office will be for the present at the factory, on Townsend street, near Fourth, and, as they have on hand there a large stock of paints and oils, customers can be supplied as usual without any delay. The Averill chemical paint company has been now so long established here, and their product is so well known and liked, that its many friends will regret to hear of the loss. The stock destroyed was partially insured.

A PRACTICAL BOOK.—There is shortly to be issued by Dewey & Co., MINING AND SCIENTIFIC PRESS, 224 Sansome street, a work of interest to miners, entitled "A Practical Treatise on Testing and Working Ores," by Charles H. Aaron. This is a thoroughly practical treatise, of value to the scientific as well as the working miner. To the latter, however, it commends itself most highly, as it contains hundreds of practical hints on everyday work, and describes the methods and processes of working different ores with the most economical appliances to be used. It is one of the most practical works on mining which has yet been written.

IN the Hale & Norcross mine the foundations for the new machinery are steadily progressing. The coping stone is nearly all in place, and the huge pieces of machinery are being prepared for the occupancy of their proper positions. The old pumps and columns have been all extracted from the shaft, ready to place the new ones.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING JULY 4TH, 1876.

BARREL TAPS AND FAUCETS.—Elisha T. Barlow, S. F.

LASTING MACHINES.—William Bayhouse, Boise City, Idaho.

STRAP HINGES.—Abraham C. Buffington, Cambria, Cal.

BRACKETS FOR HOLDING LAMPS.—Henry Campbell, S. F.

CHURNS.—James Root, Woodland, Cal.

COOKS AND FAUCETS.—Amos C. Springer, S. F.

ADJUSTABLE WATCH KEYS.—Henry Bequelin, assor. to S. Farjeon and Dinkelspiel, S. F.

AMALGAMATING APPARATOS.—Thomas W. Irving, Port Madison, W. T.

JOURNAL BOXES.—Geo. I. Schoenberg, S. F.

GANG PLOWS.—Reissue—F. A. Hill, San Leandro, Cal.

DESIGNS.

CENTER PIECE.—Samuel Killett, (two cases) S. F.

FOR WEEK ENDING JULY 11TH, 1876.

LAMP EXTINGUISHER.—Lucien Honriet, San Jose, Cal.

BEE HIVES.—Orson A Davis, Sacramento, Cal.

SAW CLAMPS.—Joseph Shelly, Mariposa, Cal.

DAMPERS FOR RETURN TUBULAR BOILERS.—Joseph Enright, San Jose, Cal.

RAILWAY TUBES AND CARS.—Andrew S. Hallidie, S. F.

MANUFACTURING COFFINS.—William O. Day, S. F.

SOLDERING CLAMPS.—Ferdinand C. Smith and Charles E. Smith, Portland, Or.

DESIGNS.

CENTER PIECE.—Samuel Killett, (three cases) S. F.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency the following are worthy of mention:

ALLOY FOR ANTI-FRICTION METAL.—Isaac Schoenberg, S. F. This alloy is more especially valuable for journal boxes, especially upon railway carriages and wherever there is a great amount of wear. These boxes are usually made from brass or some alloy forming yellow metal, and must be turned to fit the journal in order to be serviceable. They easily become heated if they fit too tight and they should not be wide enough sidewise to become cracked and split open. The improved alloy is formed into a box by pouring it around a shaft or journal which is properly luted into the outer iron box. No finishing is necessary, as the journal will gradually wear itself into perfect contact, but this wear takes place slowly, and the journal may travel over 3,000 miles of railway without the box being ground to a perfect bearing. This, however, is not prejudicial, as the metal seems to unite all the valuable qualities of anti-friction without being so hard as to cut or wear the journal. It is also tough, and if the journal should happen to bear upon the sides instead of the bottom, there will be no danger of the box becoming split open. This peculiar alloy is made of copper, tin and zinc, in certain stated proportions.

HINGE.—A. S. Buffington, Cambria, San Luis Obispo county. This inventor supplies what he calls a self-lubricating butt or hinge. The improvement consists in the employment of a metallic washer between the knuckles which comprise the joints of butts and hinges. The washer can be made of brass, copper, zinc or other soft metal that will not oxidize or rust, and adhere to the iron or steel knuckles, and the wearing of which will serve as a lubricator to prevent the joints from becoming stiff and squeaking. This improvement is more especially useful for strap hinges, such as are used on butter boxes. These hinges are exposed to wet and corrosion by contact with the salt employed in the butter, and soon wear out and break off by reason of this corrosion, and if one hinge becomes broken the box will almost certainly be destroyed before it reaches its destination. The inventor thinks that this construction will prevent, in a great measure, the breaking of the hinges by corrosion in the manner described.

ADJUSTABLE WATCH KEY.—Henry Bequelin, San Francisco. This invention is an improvement on that class of watch keys which are made to be adjusted to fit any sized post. It consists in the formation of two flat plates which are riveted together to form the thumb piece or handle. The stem is formed by a continuation of these two pieces drawn down to the proper shape, and the socket is formed one-half in each part of the post. The stem is made in the form of a double frustrum of a cone, and a sliding ring is fitted to the part of the cone nearest the handle. By sliding the ring back the parts of the stem are allowed to open, and they are closed by moving it forward. A groove is turned around the ring to receive a loose ring, by which to attach the key to a chain or key ring.

TAP FOR FAUCETS.—Amos C. Springer, San Francisco. This invention relates to a novel construction for a tap for barrels and other containing vessels, and it consists of a socket which is screwed into the barrel permanently, and has a screw valve which can only be opened by the faucet after the latter reaches its seat, and this valve must always be closed before the faucet can be removed, thus preventing all opportunity for leakage.

CLAMPS FOR BOOTS AND SHOES.—Wm. Bayhouse, Boise City, Idaho. The lever lasting clamp is an improved mechanism for lasting boots and shoes, and comprises a means for holding a boot in position, while the edge of the leather is seized by pincers operating in a novel manner, and drawn into place by means of a peculiar and powerful lever, which is mounted upon a fulcrum with a screw adjustment.

General News Items.

Two important South Wales collieries have stopped.

THE city training ship *Jamestown* will shortly start on a cruise to the Sandwich islands.

GENERAL T. W. BENNETT, recently nominated by the President for Governor of Idaho Territory, declines the office.

THE deaths in New York last week were 1,298, against 858 for the previous week. The increase is attributed to the very hot weather.

EVERY man who has more than three pimples on his face at the present time is suspected of having the small pox.

THIRTY deaths have already resulted from the explosion of the boiler of the *Thunderer*, and half of the wounded are not expected to recover.

THE failure of McLagor & Smith, New Haven, iron founders, is announced. Liabilities, $1,000,000, of which $880,000 is secured.

A LONDON *Times'* Paris dispatch says the Chamber of Deputies has unanimously passed the bill authorizing the International exhibition of 1878.

THE Postmaster-General has been informed by Commodore Vanderbilt and Colonel Scott, that the fast mail service will be discontinued on and after Saturday next.

OWING to the business depression, employers in England propose a reduction in wages or an increase in working hours of mill operatives and miners, who in some districts are preparing to resist. Great strikes are apprehended.

THE act amendatory of the Bankrupt act has passed both Houses and gone to the President. As enacted, its effect is simply to allow bankrupts to apply for discharge from their debts at any time prior to the final decision of the case, instead of limiting them to one year; and to provide, also, that voluntary assignments under State laws shall not be a bar to the discharge of bankrupts, if made in good faith for the equal benefit of all creditors. These amendments apply to pending as well as future cases.

THE RAINBOW LEAD.—This lead, says the *Butte Miner*, is probably the largest in Montana Territory. It lies to the north of Butte, and is in extent, as far as known, taking from the point farthest east to that of the west, nearly three miles, and along this entire line can the lodge be traced by its outcroppings which in places show a width of from 10 to 12 feet of vein matter. As yet, the amount of work done upon it is inconsiderable. Upon the west end, a shaft of 77 feet has been sunk, which shows the vein a very wide one so far. But one wall has been discovered, and the ore showing is from five to seven feet wide, with an assayed value of from $50 to $150 per ton. To the east of this shaft at various points, holes have been dug upon the vein from 10 to 12 feet deep, and the ore taken out has been of a fair quality, about 20 tons of which are now being milled. On spots upon this lode very rich rock is taken from the surface, and it is expected that from the sales of this the cost of development will be defrayed. From the present showing it is impossible to give the true character of this vein, but it has every indication of being a very extensive and inexhaustible lead, and at no very distant day it will be demonstrated that this lode is of such compass, and the ore of such quality that a score of mills will be required in order to work it, through its entire length.

THE new pan mill of the Consolidated Virginia mine is getting well under way and will soon be ready to run. The frame is up, ready to inclose. The framework of the platforms on which the pans and settlers will stand is completed, and several of the pans are already in place. The boilers are set and the pits dug for the foundations of the engines. Much of the other necessary machinery is already on the ground.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

HENRY NELSON, Merced Falls, is requested to address this office.

METALS.

(WHOLESALE.

THURSDAY, M., July 20, 1876.

American Pig Iron, ₩ ton	32 00	@	—
Scotch Pig Iron, ₩ ton	41 50	@	42 00
White Pig, ₩ ton	40 00	@	50 00
Oregon Pig, ₩ ton	31 50	@	32 50
Refined Bar	—	@	4½
Bollar, No. 1 to 4	—	@	5½
Plate, No. 5 to 9	—	@	5½
Sheet, No. 10 to 14	—	@	5½
Sheet, No. 16 to 20	5½	@	—
Sheet, No. 22 to 24	6	@	—
Sheet, No. 26 to 28	6½	@	—
Horse Shoes, per keg	7 00	@	8 50
Nail Rod	10	@	—
Norway Iron	—	@	9½
Rolled Iron	8	@	8
Other Irons for Blacksmiths, Miners, etc.	—	@	4½
COPPER.—			
Copper Tin	37	@	40
Sheathing, ₩ lb	34	@	40
Sheathing, Yellow	31	@	32½
Sheathing, Old Yellow	30	@	31
Composition Nails	34	@	—
Composition Bolts	34	@	—
STEEL.—English Cast, ₩ lb	20	@	25
Anderson & Woode's ordinary sizes	—	@	15
Drill	—	@	16½
Flat Bar	16	@	19
Plow Steel	8	@	9
TIN PLATES.—			
10x14 I C Charcoal	11 00	@	—
10x14 I X Charcoal	13 00	@	—
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	24	@	—
Australian	25	@	—
ZINC.—By the Sheet	—	@	11
Zinc, Sheet 7x3 ft. No 7 to 10 ₩ lb	—	@	11
do do 7x3 ft. No 11 to 14	—	@	11½
do do 8x4 ft. No 8 to 10	—	@	12½
do do 8x4 ft. No 11 to 16	—	@	12
NAILS Assorted sizes	3 50	@	3 75
QUICKSILVER, per lb	41	@	42½

LEATHER.

(WHOLESALE.)

WEDNESDAY M., July 19, 1876

City Tanned Leather, ₩ lb			22@29
Santa Cruz Leather, ₩ lb			22@28
Country Leather, ₩ lb			22@28
Stockton Leather, ₩ lb			25@29
Jodot, 8 Kil., per doz			$50 00
Jodot, 11 to 13 Kil., per doz			78 00@79 00
Jodot 14 to 19 Kil., per doz			82 00@84 00
Jodot, second choice, 11 to 18 Kil. ₩ doz			57 00@74 00
Cornellian, 12 to 16 Ko			57 00@67 00
Cornellian Females, 12 to 13			63 00@67 00
Cornellian Females, 14 to 16 Kil			71 00@76 50
Simon Ulimo Females, 12 to 13, Kil			68 00@72 00
Simon Ulimo Females, 14 to 15, Kil			68 00@70 00
Simon Ulimo Females, 16 to 17, Kil., per ₩ doz			73 00@74 00
Simon, 18 Kil., ₩ doz			61 00@12 00
Simon, 20 Kil. ₩ doz			65 00@67 00
Simon, 24 Kil. ₩ doz			72 00@74 00
Rubert Calf, 7 and 9 Kil			35 00@40 00
French Kips, ₩ lb			1 00@1 15
California Kip, ₩ doz			40 00@ 80
French Sheep, all colors, ₩ doz			8 00@15 00
Eastern Calf for Backs, ₩ lb			1 00@1 25
Sheep Roana for Topping, all colors, ₩ doz			9 00@13 00
Sheep Roana for Linings, ₩ doz			5 50@10 50
California Russett Sheep Linings			1 75@1 85
Best Jodot Calf Boot Legs, ₩ pair			5 00@ 5 25
Good French Calf Boot Legs, ₩ pair			4 00@ 4 7
French Calf Boot Legs, ₩ pair			4 00@—
Harness Leather, ₩ lb			24@ 22½
Fair Bridle Leather, ₩ doz			48 00@ 72 —
Skirting Leather, ₩ lb			35@ 37½
Wax Leather, ₩ doz			30 00@ 36 00
Calf Leather, ₩ foot			17@ 18
Wax Side Leather, ₩ foot			17@

LUMBER.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE —Retail Price.	
Rough, ₩ M	$18 00	Rough, ₩ M	22 50
Rough refuse, ₩ M	14 00	Fencing, ₩ M	22 50
Rough clear, ₩ M	30 00	Flooring and Step, ₩ M	32 50
Rough clear refuse, M	20 00	Flooring, narrow, ₩ M	35 00
Resin, ₩ M	32 50	Flooring, 2d quality, M	25
Rustic, refuse, ₩ M	22 50	Furring, ₩ lineal ft	—2½
Surfaced, ₩ M	30 00	REDWOOD—Retail.	
Surfaced refuse, ₩ M	20 00	Rough, ₩ M	22 50
Flooring, ₩ M	28 00	Rough refuse, ₩ M	18 00
Flooring refuse, ₩ M	18 00	Rough Pickets, ₩ M	18 00
Beaded flooring, ₩ M	30 00	Rough Pickets, p'd, M	20
Beaded finor, refuse, M	20 00	Fancy Pickets, ₩ M	30
Half-inch Siding, M	20 00	Siding, ₩ M	25 00
Half-inch siding, ref, M	16 00	Surfaced and Long Beaded	37 50
Half-inch, Surfaced, M	25 00	Flooring	35 00
Half-inch Surf. ref., M	20 00	Do do refuse, ₩ M	25 00
Half inch Battens, M	20 50	Half-inch surfaced, M	32 50
Pickets, rough, ₩ M	1 00	Rustic, No. 1, ₩ M	40 00
Pickets, rough, p'ntd	13 00	Battens, lineal foot	—½c
Pickets, fancy, p'ntd	6 00	Shingles ₩ M	3
Shingles ₩ M	3 00		

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, July 19, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 89¼ to 90. Silver, 7½@8.

GOLD in N. Y. 111½.

GOLD BARS, 880 to 890. SILVER BARS, 25 and 27½ per cent. discount.

EXCHANGE on N. Y., 50-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¾; Paris, five francs per dollar; Mexican dollars, 12 per cent. discount.

LONDON — Consols, 93⅝; Bonds, 102¾

QUICKSILVER in S. F., by the flask, per lb, 42½c

CLOSE observers of humanitarian tendencies must have noticed that nothing is so common among the working classes, male and female, as old ulcers, which resist all ordinary applications for their removal. GLENN'S SULPHUR SOAP will remove them. Sold everywhere.

Superior Photographs.

To be sure of a good picture, you have only to patronize G. D. Morse's Palace of Art, at No. 417 Montgomery street, S. F. The publishers of this journal have patronized Mr. Morse for many years, and do not hesitate to say that his pictures are not excelled by any we have seen produced in this or any other country. No one can ask for a better man to patronize than Mr. Morse. He is affable and respectful to all.

Our Agents.

OUR FRIENDS can do much in aid of our paper and the cause of practical knowledge and science, by assisting Agents in their labors of canvassing, by lending their influence and encouraging favors. We intend to send none but worthy men.

J. L. THARP—San Francisco.
B. W. CROWELL—California.
O. W. MCOREW—Santa Clara county.
J. M. MCARTHUR—Los Angeles, Santa Barbara, Ventura, San Bernardino and San Diego counties.
A. C. KNOX—El Dorado county.
F. A. SCOFIELD—Sonoma county.
C. N. WEST—Santa Cruz county.
CHAS. E. SAJOUS—Philadelphia.
A. C. CHAMPION—Tulare, Fresno and Kern counties.
RICHARD RULE—Nevada.

ROASTING OF GOLD AND SILVER ORES, and the Extraction of their Respective Metals without Quicksilver. 1870. It contains 142 pages, embracing illustrations of furnaces, implements and working apparatus. Price $2.50 coin, or $3 currency, postage free. Published and sold at this office.

BOUND VOLUMES of the MINING AND SCIENTIFIC PRESS from Jan. 1st, 1864, are for sale at this office at $5 per volume, two volumes a year. Unbound at $3 per volume.

The Mechanics' Fair Daily.

This journal, printed and issued in the Pavilion of the ELEVENTH INDUSTRIAL EXHIBITION, and circulated free, will be a superior publication. It will contain all OFFICIAL INFORMATION during the Exhibition, commencing Aug. 8th, 1876. ITS ILLUSTRATIONS will furnish accurate views of NEW INVENTIONS AND MACHINERY.

The volume will give a substantial and readable RECORD OF THE FAIR, quite valuable for reference and preservation, in addition to a goodly variety of other reading matter, daily, embracing GRAPHIC PARAGRAPHS AND HUMOROUS INCIDENTS, making altogether a paper eagerly sought for (both in and out of the Pavilion) by nearly a QUARTER OF A MILLION OF READERS during the term of the Exhibition—a circulation reaching a greater number of different individuals than that of any publication yet issued.

We shall make a specialty of inserting ATTRACTIVE ADVERTISEMENTS, representing the leading firms in nearly EVERY BRANCH OF TRADE AND INDUSTRY on this coast, upon favorable terms, soliciting such as we believe will be most benefited by advertising in a well conducted, enterprising and everywise meritorious journal.

This beautifully illustrated sheet, issued upon such an occasion, will receive close attention, and its contents—both reading and advertising being original—will be closely scanned throughout.

THE IMMENSE PAVILION has been improved for the coming Fair. An unusually large amount of space for exhibits has already been engaged. Special exhibitions and new and attractive features will be introduced, calculated to make the Fair of 1876 a GRAND SUCCESS.

Orders for advertising, sent in early, will receive careful attention.

The undersigned, publishers of the MINING AND SCIENTIFIC PRESS, have successfully issued a popular daily in the Mechanics' Fair during seven Industrial Exhibitions since 1864, and we are now confident of making the coming volume surpass all its predecessors in its standard of value as a reading journal of art and information and a medium of first-class business announcements.

We have been awarded by the managers of the Exhibition the EXCLUSIVE PUBLISHING AND ADVERTISING PRIVILEGES of the Eleventh Industrial Exhibition, and are determined to accomplish a work creditable to the MECHANICS' INSTITUTE, to OUR PATRONS, AND TO OURSELVES.

DEWEY & CO.,
Publishers and Patent Agents, No. 224 Sansome street, S. E. Cor. of California, S. F.

Thanks for Prompt Attention.

STOCKTON, June 26, 1876.

Messrs. Dewey & Co., S. F.:—

I have received the patent for my invention in wagon brakes, which you prosecuted for me; patented May 11, 1875—No. 163,046. Thanks to you for your prompt attention to the case; you will hereafter be my attorneys in such cases. I recommend all inventors on the Pacific coast to give you a call, which I think they will never have any cause to regret. Very truly yours,

GEO. G. BUCKLAND,
Stockton, Cal.

To Mining Secretaries.

An amendment to Section 336 of the California Code, taking effect **July 1st, 1874**, provides that in addition to the regular publication, daily or weekly, of the assessment and sale notices as heretofore,

PERSONAL NOTICE

Must be served as provided in the following quotation from the law:

"The notice must be personally served upon each stockholder, or in lieu of personal service, must be sent through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where the principal office of the Corporation is situated."

The above refers to the ASSESSMENT NOTICE only. Advertisers in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assessment notices printed on slips suitable for serving personal notice under this law at short notice.

DEWEY & CO., Publishers.

Assaying Taught. Practical Instructions in General Analysis.

J. J. Phillips, M.E.
EXAMINER OF MINES, MINERAL ASSAYER &C.
640 CLAY ST. S.F.

Author of Explorers', Miners', & Metallurgists' Companion, 672 pages, 83 illustrations. Price 2d edition, $10.50. Also, "WEE PET" Assaying Machine. Price, $100.

W. T. GARRATT'S
BRASS and BELL FOUNDRY
SAN FRANCISCO,
MANUFACTURER AND IMPORTER OF
Church and Steamboat BELLS and GONGS,
BRASS CASTINGS of all kinds,
WATER GATES, GAS GATES,
FIRE HYDRANTS,
DOCK HYDRANTS,
GARDEN HYDRANTS.
A General Assortment of Engineers' Finding.

Hunkar's Patent Celebrated
STEAM PUMP
The Best and Most Durable in use. Also, a variety of other
PUMPS
For Mining and Farming Purposes.
ROOT'S BLAST BLOWERS,
For Ventilating Mines and for Smelting Works.
HYDRAULIC PIPES AND NOZZLES,
For Mining Purposes.
Garratt's Improved Journal Metal,
IMPORTER OF
IRON PIPE AND MALLEABLE IRON FITTINGS,
ALL KINDS OF
WORK AND COMPOSITION NAILS,
16-tf AT LOWEST RATES.

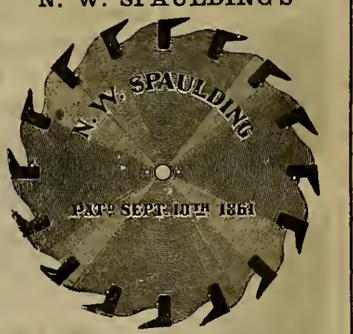
The Gardner Automatic Safety-Stop Governor.

MORE THAN TEN THOUSAND NOW IN USE. EVERY ONE WARRANTED. SEND FOR DESCRIPTIVE CIRCULAR AND PRICE LIST.

When all others fail, buy a "Gardner." We have all sizes of these celebrated Steam Governors on hand at all times.

BERRY & PLACE,
Selling Agents for Pacific States,
Cor. Market & Fremont Sts., S. F.

N. W. SPAULDING'S



PATENT DETACHABLE TOOTH SAWS.
Manufactory, 17 & 19 Fremont St., S. F.

WANTED,
12 German or American Miners,
For Quartz Mine.
Men Accustomed to Machine Drilling Preferred
WAGES, THREE DOLLARS PER DAY.
Apply to or address,
EDMUND C. BURR,
Supt. Mariposa L. & M. Co.,
Bear Valley, Mariposa Co.

MAGAZINES.	P
Harper's	3 00
Atlantic	
Godey	
New York Ledger	
Blackwood	
Hours at Home	
Good Words	
Peterson's	3 00
Arthur	
Lady's Friend	
Harper's Weekly	5 00
Chimney Corner	
Literary Album	
London Society	6 00
All the Year Round	
London Ill. News	15 00

W. E. LOOMIS,
News Dealer
AND STATIONER,
S. E. cornar of Sansome an Washington streets,
SUPPLIES ALL
Eastern Perodicals
BY THE
Year, Month or Week.

PATENT FOR SALE.

Improvement in Wagon Brakes; is alika good for buggy and the heavy wagon. A splendid opportunity for some person with little capital. The inventor having other business, will dispose of his United States right. For particulars, address

OEO. O. BUCKLAND,
Milton, Calavaras Co., Cal.
Pat. May 11th, 1875.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Antilles Mining Company—Location of principal place of business, San Francisco, Cal.

Notice is hereby given, that at a meeting of the Directors, held the seventh day of July, 1876, an assessment of 20 cents per share was levied upon the capital stock of the corporation, payable immediately, in U. S. gold coin, to the Secretary, at his office, No. 207 Sansome street (third floor), San Francisco.

Any stock upon which this assessment shall remain unpaid on August 16th, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, September 8th, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

H. M. MORGAN, Secretary.
Office, 207 Sansome street, San Francisco, Cal.

Cherokee Flat Blue Gravel Company— Location of principal place of business, San Francisco, Cal. Location of works, Cherokee Flat, Butte County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, No. 36, levied on the eighth day of June, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A Caselli	17	4008	$230 40
Mrs Mary W Farrington	35	144	7 20
Mrs E M Walton, balance of certificate No. 21	128	shares sold for assessment No. 35	81	73	3 65
George W Ramage, balance certificate No. 36, 320 shares sold for assessment No. 35	83	235	11 75

And in accordance with law, and an order of the Board of Directors, made on the eighth day of June, 1876, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the company, room 13, No. 328 Montgomery street, San Francisco, Cal., on Saturday, the fifth day of August, 1876, at the hour of two o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

O. H. BOGART, Secretary.
Office, Room 13, Safe Deposit Building, San Francisco, Cal.

Office South Comstock Gold and Silver Mining Company. NOTICE.—The annual meeting of the stockholders of the South Comstock Gold and Silver Mining Company, for the election of trustees and the transaction of such other business as may be presented, will be held on Monday, the 21st day of August, 1876, at two o'clock P. M., of that day, at the office of the company. Transfer books will be closed on Wednesday, August 16th, 1876, at three o'clock P. M.

J. M. BUFFINGTON, Secretary.
Office, Rooms 3 and 4, No. 311 California street, over Ætna Insurance Office, entrance 309 California street, San Francisco, Cal.

Kearsarge Consolidated Quicksilver Mining Company. Principal place of business, San Francisco, Cal. Location of works, Lake Mining District, Lake County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the first day of July, 1876, an assessment of fifteen cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, No. 10 Stevenson Block, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 28th day of August, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 16th day of September, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale

JAMES MCHAFFEE, Secretary.
Office, Room 10, Stevenson Block, San Francisco, Cal.

Mariposa Land and Mining Company of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the sixth day of July, 1876, an assessment (No. 6) of one dollar per share was levied upon the capital stock of the corporation, payable immediately, in United States currency, to the Secretary, at the office of the company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office, No. 9 Nassau street, New York.

Any stock upon which this assessment shall remain unpaid on the seventh day of August, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the second day of September, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

LEANDER LEAVITT, Secretary.
Office, Room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal.

Office of the Tintic Milling and Mining Company, San Francisco, Cal., July 14th, 1876. The annual meeting of the stockholders of the Tintic Milling and Mining Company will be held at the office of the company, No. 310 Sansome street, San Francisco, on Monday, August 14th, 1876, at two o'clock P. M., for the election of directors for the ensuing year, and the transaction of such other business as may be brought before the stockholders. By direction of the Board of Directors,

H. CLAY MILLER, Secretary.
San Francisco, July 14th, 1876.

Umpire Tunnel and Mining Company of Utah. Principal place of business, San Francisco, Cal. Location of works, Big Cottonwood District, Utah.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 23d day of June, 1876, an assessment (No. 5) of five (5) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, 605 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 24th day of July, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 14th day of August, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. W. DAVIS, Secretary.
Office, 605 Montgomery street, San Francisco, Cal.

Amusements.

WADE'S OPERA HOUSE, Mission Street, near Third. Open every evening with first-class Dramatic Company. Box Office open from 9 A. M. to 10 P. M. Doors open at half past seven. Commence at eight o'clock. AIMEE IN OPERA BOUFFE.

OALIFORNIA THEATER, Bush Street, above Kearny. Open every evening with the best Dramatic Company in the United States. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance. Doors open at half past seven. ROSE EYTINOE.

Iron and Machine Works.

WM. HAWKINS. T. G. CANTRELL

HAWKINS & CANTRELL,

MACHINE WORKS,

210 & 212 Beale St.,

Near Howard, - - - SAN FRANCISCO.

MANUFACTURERS OF

Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horse Power.

N. B.—Jobbing and Repairing done with Dispatch.

FULTON

Foundry and Iron Works.

HINCKLEY & CO.,

MANUFACTURERS OF

STEAM ENGINES,

Quartz, Flour and Saw Mills,

Hayes' Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard, San Francisco.

THE RISDON

Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,

SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors:

Joseph Moore, Jesse Holladay, C. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary

24v17-qy

THOS. PENDERGAST. HENRY S. SMITH.

ÆTNA IRON WORKS.

MANUFACTURERS OF

IRON CASTINGS

and MACHINERY,

OF ALL KINDS.

Fremont Street, bet. Howard and Folsom,

SAN FRANCISCO.

SHEET IRON PIPE.

THE

Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,

Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

☞ All kinds of Machinery made and repaired.

24v22-3m JOSEPH MOORE, Superintendent.

THOMPSON BROTHERS,

EUREKA FOUNDRY,

Light and Heavy Castings of Every Description Manufactured.

Sole Proprietors and Manufacturers of

LYNCH'S

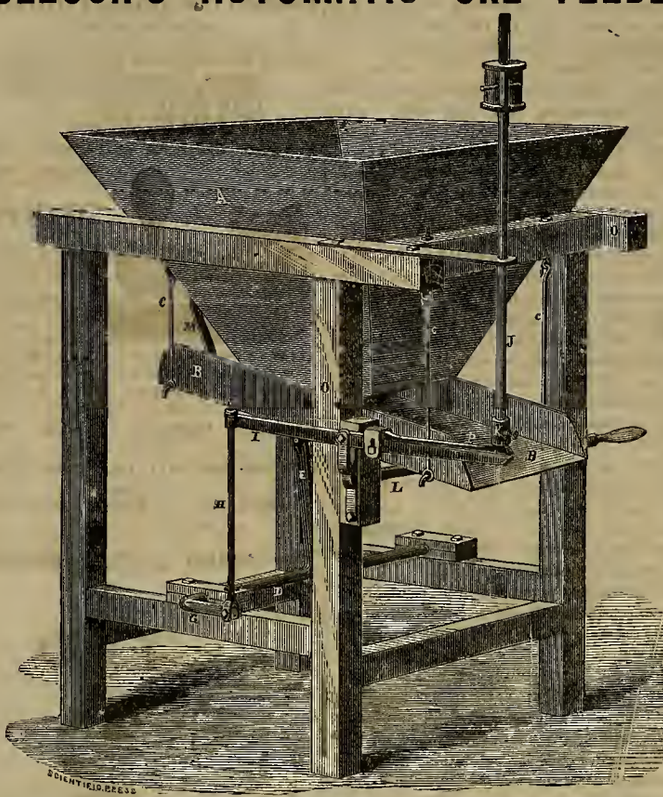
Ventilating and Illuminating Tile,

The Only Illuminating Tile Manufactured for Lighting Cellars, Basements and Dark Rooms which provides proper ventilation for such places.

129 and 131 Beale Street,

BET. MISSION & HOWARD, - - SAN FRANCISCO.

TULLOCH'S AUTOMATIC ORE FEEDER.



The **TULLOCH AUTOMATIC ORE FEEDERS** have been practically tested during the last year and a half in twenty-seven mills, of from five to eighty stamps each, and have, in every case, given perfect satisfaction. Refer to the following Mills: California, Con. Virginia, Northern Belle, Leopard, Trench, Humboldt, Douglas, Phœnix, Hite, Crescent, and others. Prices Reduced. Send for Circulars.

F. OGDEN, Sole Agent,
417 Market Street, San Francisco.

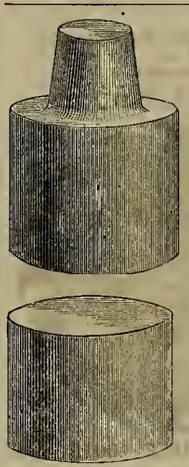
PATENTED

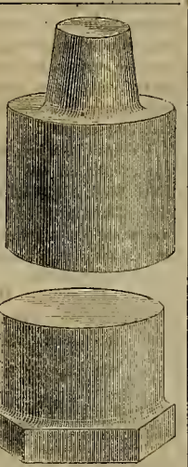
CAST STEEL SHOES AND DIES.

Guaranteed Cheaper than the Best Iron.

IMPORTANT NOTICE.

Reduction in Price from 16 Cents to 12 Cents Per Pound.





Owing to our largely increased business, the present low price of Iron from which our Steel is manufactured and the improved facilities for casting and forging, we take great pleasure in announcing that from and after this date we will supply our IMPROVED CAST AND FORGED STEEL SHOES AND DIES FOR QUARTZ MILLS at 12 cents per pound, delivered at San Francisco or Sacramento, instead of 16 cents, as heretofore.

We also furnish Steel Plates for Blake and other Ore Crushers, Steel Gut Gearing, etc., for Mills and Hoisting Works, Steel Pan Shoes, Battery Cams and Tappets, etc.

Address all orders, with dimensions or drawings, to

CAST STEEL SHOE & DIE CO.,
59 Nevada Block, S. F.

PACIFIC

Rolling Mill Company,

SAN FRANCISCO, CAL.

Established for the Manufacture of

RAILROAD AND OTHER IRON

—AND—

Every Variety of Shafting,

Embracing ALL SIZES of

Steamboat Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames,

—ALSO—

HAMMERED IRON

Of every description and size.

☞ Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2032, San Francisco, Cal., will receive prompt attention

☞ The highest price paid for Scrap Iron.

OCCIDENTAL FOUNDRY,

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Quicksilver Condensers and Furnace Castings.

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Miners' Foundry and Machine Works,

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Machinery and Castings of all kinds.

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Manufacturing Company,

MANUFACTURERS OF ALL KINDS OF

Wharf and Bridge Bolts, Railroad Trestle Work, Car Frames and Bolts, Machine Bolts, Set Screws and Tap Bolts, Lag or Coach Screws.

ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGON AND SQUARE NUTS, WASHERS, BOLT ENDS, TURN-BUCKLES, ETC., ETC.

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ROOT, NEILSON & CO.,

MANUFACTURERS OF

STEAM ENGINES, BOILERS,

CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

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Sole Proprietor and Manufacturer of the

Celebrated Hudson Force Pumps, Atwood & Bodwell Windmill Brass Pumps, Smith's Copper-Lined Pumps, Plumbers' Force Pumps.

☞ Special attention paid to Brewers', Distillers', Beer and Hot Liquor Pumps and Wine Pumps. Particular attention paid to AIR PUMPS, also to

DIVERS' SUBMARINE PUMPS.

Artesian Well Pumps Made to Order.

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All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells, and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles and Hose Couplings and Connections of all sizes and patterns furnished with dispatch

☞ PRICES MODERATE. ☜

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Builders of QUARTZ, SAW AND FLOUR MILLS

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THE ECONOMY HYDRAULIC HOIST FOR STORES,

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STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

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OFFICE, 317 California street, S. F.

FACTORY, Berry street, bet. 4th and 5th, S. F.

NEVADA AGENCY, 38 North C street, Virginia.

INDESTRUCTIBLE! NON-CONDUCTOR OF HEAT

Saves 15 to 30 per cent. in Fuel.

REFERENCES: U. S. Government buildings and principal manufacturing establishments in the East and on the Pacific Slope; principal mines and mills in Nevada.

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Asbestos Roofing and Paints

FIRE AND WEATHER PROOF;

Asbestos Steam Packing,

Made from Pure Long Fiber Asbestos,

INDESTRUCTIBLE! SELF-LUBRICATING!

Keefe's Boiler Compound,

Prevents the formation of Scale in Boilers and removes the same, without injuring the iron or causing the water to foam.

☞ Circulars, Descriptive Pamphlets, etc., Sent Free

NICKEL PLATED SCREWS

With Solid Heads. These Screws have excellent thread and highly polished solid heads. They are economical and durable. They can be used repeatedly, as the heads are not injured by the slipping of the screw driver. For all purposes they are far superior to capped screws. Manufactured by Adams Nickel Plating & Mf'g Co., South Windham, Conn. E. T. Allen, agent for manufacturers, 330 Sansome Street, San Francisco.

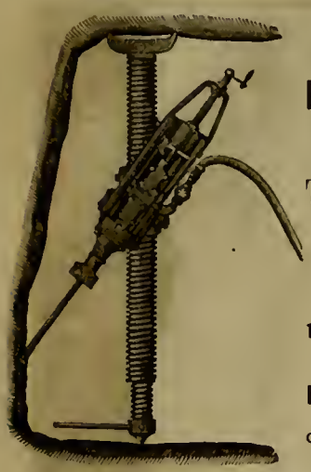
IMPORTANT TO GOLD MINERS.

A Valuable Discovery.

Stowe's Method of keeping Copper Plates in Quartz Mills clean and bright. Very cheap and effective. Can be applied without stopping the machinery. The right for sale. Address,

M. H. STOWE,
Superintendent Ellis Gold Mine,
Pine View P. O., Va.

MINING MACHINERY DEPOT,



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ROCK DRILLS and

Tunneling Machinery.

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(SEMI-PORTABLE)

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Centrifugal Steam Pumps.

FARMER'S ELECTRIC MACHINE FOR BLASTING AND HILL'S EXPLODERS.

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For Mines.

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MORSE TWIST DRILLS.

HASKINS' PORTABLE HOISTING ENGINES, constructed especially for economical use in mining districts, with Compressed Air or Steam, adapted to all classes of underground work and made throughout on the interchangeable plan, so that all parts can be duplicated when desired. Catalogues and Estimates given on application.

GOLD MEDAL

AWARDED TO

San Francisco Steam Pumps.

AFTER ONE OF THE

MOST THOROUGH TRIALS

Ever Had in the United States,

BETWEEN COMPETITORS

—OF—

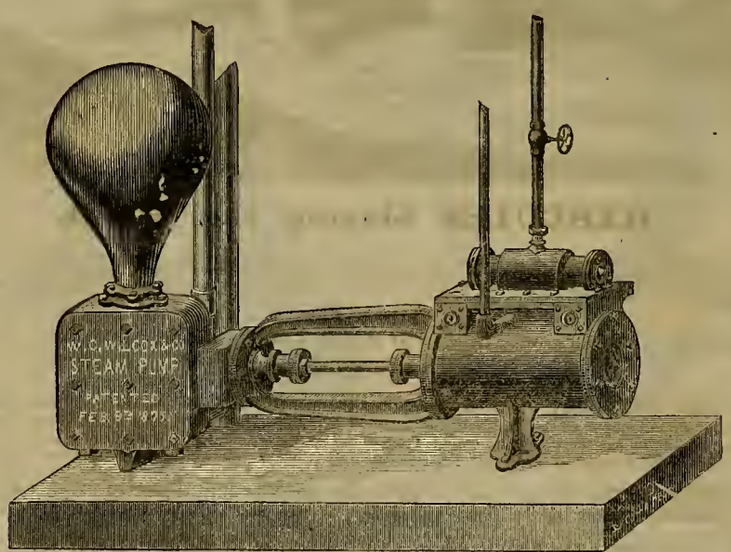
Best Established Reputation,

In which, at great expense, the different Steam Pumps were tried under every test known to experts, the Examining Committee of the Tenth Industrial Fair of the Mechanics' Institute have awarded to us their

GOLD MEDAL

—FOR—

Best Steam Pumps on Exhibition.



We are prepared to furnish PUMPS UNDER CONTRACT, guaranteeing their ability to perform any specific work for which these pumps are adaptable, such as

RAISING WATER FROM MINES

FOR WATER WORKS,

FEEDING BOILERS, RAISING WATER FROM WELLS; STEAMER AND SHIP PUMPS, ETC.

We would also call the attention of those interested, to our Direct Acting Deep-Well Pumps for raising water from

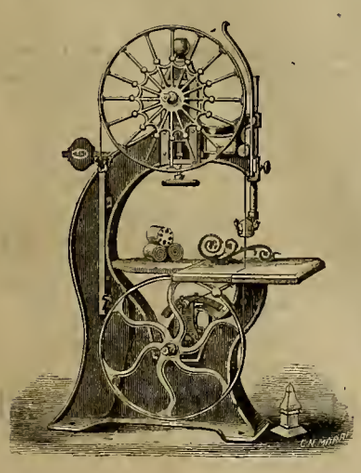
Any Desired Depth.

Also to our Especial Construction of Pumps FOR HANDLING QUICKSILVER or heavy liquids.

We claim that our Pumps are the **best** ever made in **simplicity** of construction, economical use of power, **durability** and perfect adaptability for general uses, and we ask all persons interested to investigate **our title to this claim.** Salesrooms at our Machine Shop, 114 and 116 BEALE STREET, SAN FRANCISCO.

W. C. WILCOX & CO., Proprietors.

PACIFIC MACHINERY DEPOT,



H. P. GREGORY & Co., Nos. 14 & 16 First Street,

P. O. Box 168. **San Francisco, Cal.**

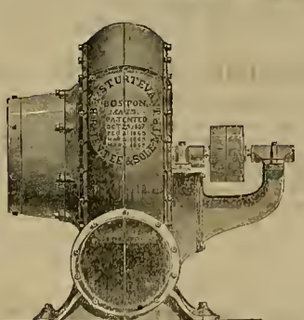
SOLE AGENT FOR THE PACIFIC COAST FOR

J. A. Fay & Co's Wood-working Machinery,

Blake's Patent Steam Pumps,

Tanite Co's Emery Wheels and Machinery,

Fitchburg Machine Co's Machinists' Tools,



Sturtevant Exhaust Fan for Removing Shavings and Sawdust from Machines.

Sturtevant's Blowers and Exhaust Fans,

J. A. Roebling's Sons Wire Rope,

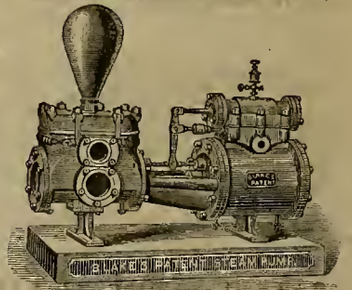
Pure Oak Tanned Leather Belting,

Perin's French Band Saw Blades,

Planer Knives,

Nathan & Dreyfus' Glass Oilers, and Mill and Mining Supplies of all Kinds.

BLAKE'S PATENT STEAM PUMP.



Over 8,500 in Successful Use in the Unite Statss.

HERCULES POWDER.

HERCULES Slaying the Giants.

Hercules, the son of Jupiter and Alcmena, was descended directly from the Gods. He performed more wonderful deeds of strength than any of the heroes of old. On one occasion, he was sent by Eurystheus to execute a very great task, when he found himself opposed by several Giants, among whom were the powerful Gisut Geryon, Eurytion, a Monster with three heads and six arms, and the two-headed dog, Orthus. All these he slew with his club. He then came to a high mountain, which, with one blow of his club, he broke from summit to base, and thereby made an entrance into the Mediterranean Sea, through the Rock of Gibraltar, the Straits of which are known to this day as the Pillars of Hercules.]

We wish to call the attention of Miners and others to a few points of the superiority of **Hercules Powder** over all other strong Explosives:

1. Its strength is greater than that of any other in use. The materials of which it consists are compounded upon strictly scientific principles, and are not a simple neutral absorbent employed that will hold a quantity of Nitro-glycerine. It is the opinion of the best chemists to whom the matter has been submitted that no mixture has been employed that so thoroughly promotes the whole tremendous force of the explosives employed, and at the same time neutralizes the offensive gases caused by the explosion. With this powder one-half the time is saved that is lost by using any other strong Powder, before you can resume work after a blast.

2. UNIFORMITY.—The materials of the mixture are chemically prepared, and therefore, great uniformity can always be depended upon and the best results obtained. This is a great advantage over any that varies in its strength as those must which are mixed with any natural earth.

3. SAFETY—So perfect is this mixture that no accident can happen with it from premature or accidental explosion, if persons will half follow the rules laid down for its use. No Powder has ever been invented where so few accidents have happened with it in proportion to the quantities which have been used.

4. CARTRIDGES.—It is well known that nitro-glycerine has a tendency to decompose by volitilization. These are the "fumes" that are smelled on going into a close warm drift, or room where nitro-glycerine powders are stored. To prevent the escape of these "fumes" an almost hermetically sealed cartridge is employed, and so effectually is it, that some cartridges filled with Hercules were exposed to a blazing California sun for six months in summer, with no perceptible loss of strength. This is a great advantage over the open porous paper generally used for cartridges.

5. ECONOMY.—We believe that any miner who will take the trouble to investigate the matter will satisfy himself that full 15 per cent. is saved by using the HERCULES over any other strong Powder manufactured.

Query. Is this worth saving? We should think so. Try it. { Hercules X X No. 1, for extreme hard rock. / Herculee X X No. 2, for medium hard rock.

The GREAT SUCCESS of the HERCULES POWDER naturally aroused a strong opposition to its use, and litigation in defense of its rights become necessary. We would therefore call the attention of the public to the FINAL DECISION in the U. S. Circuit Court of the whole matter in favor of the California Powder Works, *which explains itself:*

DECISION OF THE COURT.

At a stated Term of the Circuit Court of the United States of America of the Ninth Judicial Circuit, within and for the District of California, held at the Court Room thereof, in the City and County of San Francisco, on Wednesday, the sixth day of October, A. D. 1875.

Present:—Honorable Stephen J. Field, Associate Justice of the U. S. Supreme Court; Honorable Lorenzo Sawyer, Circuit Judge.

THE GIANT POWDER COMPANY vs. THE CALIFORNIA POWDER WORKS, ET AL., *In Equity, No.* 1,233.—The Court having, on the 22d day of September, A. D., 1875, being a day in the July Term, A. D., 1875, of said Court, sustained the demurrer of the defendants to the complainant's amended Bill of Complaint herein, will leave to complainant to amend its said bill on or before the next succeeding rule day, and the said time granted complainant within which to amend its said bill having expired, and the default of said complainant to amend its said bill having been duly entered, and the Court having on the sixth day of October of the said term and year, on motion of C. R. Greathouse, Esq., solicitor for defendants, M. A. Wheaton, Esq., Solicitor for complainant, being present, in open Court, and declining to amend his said bill of complaint, he having elected to abide by his said bill of complaint as filed in this cause, ordered that a decree be entered herein dismissing said bill.

Thereupon, upon consideration thereof, it is ordered, adjudged and decreed, that the complainant's said bill be, and the same hereby is dismissed, and that the said complainant pay the said defendants their costs in this behalf expended.

October 18th, 1875.

(Signed) LORENZO SAWYER,
U. S. Circuit, Judge Ninth Circuit.

ENDORSED:—Filed and entered, October 18th, 1875.

L. S. B. SAWYER, Clerk.
By J. F. O'BEIRNE, Dep. Clerk.

Sold by THE CALIFORNIA POWDER WORKS, 314 California Street, San Francisco, Cal.

Also, all grades of Black Powder, Fuse, Shot, Caps, Etc.

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, JULY 29, 1876.

VOLUME XXXIII Number 5.

Improvement in Condensers.

We give on this page a sketch of a patent condenser for cooling heated vapors or fumes, invented by Charles B. Dahlgren. The principle consists in constructing the condensing chamber either partially or wholly of an absorbent material, which is kept constantly saturated with water so as to produce a refrigeratory effect inside of the chamber by the evaporation of the water from the surrounding surfaces. An application of the improvement may be made in connection with an ordinary retort for separating quicksilver from gold and silver amalgam.

In the base of the retort, which can be constructed in various ways, is an open basin or retort, in which is the amalgam to be retorted. Under the basin is the furnace, etc. Upon the base is constructed a simple framework which is capable of supporting a housing, which is made of canvas or other absorbent material. In the base is a channel which extends entirely around the retort, and this channel is kept filled with water. The housing is so suspended or adjusted that its lower edge will enter the water in the channel and thus prevent the escape of any of the vapors. Above the housing are perforated water pipes arranged so as to allow a constant spray or stream of water on the housing and thus keep it saturated. The surplus water will flow down the sides of the housing and be caught in the channel into which the lower edge of the housing dips. A waste pipe carries away the surplus water.

The evaporation of the moisture from the housing will make a refrigerating action inside the chamber, inside of which the fumes are generated or delivered, so that they will be condensed inside of the housing and flow down its sides into the channel. A condenser of this kind can be applied wherever it is desired to condense vapors or fumes. It can be cheaply constructed, while it is claimed that its action will be superior to that of any of the ordinary methods of condensing vapors.

Quicksilver.

Quicksilver is a little firmer this week than last, when it fell to 41 cents per pound, the lowest price for some years. This week it may be quoted at from 43 to 45 cents. The continued depression in the price of this article is a very good thing for the ordinary metal miner, but not for the one who delves for quicksilver. In fact, a number of small quicksilver mines have been compelled to shut down entirely on account of the low price of the product.

The large mines, however, with their complete equipment for reducing the ore on a large scale, continue to keep up their production, and some of them are even putting up new furnaces, etc., showing that at the present price they are able to make some profit. The mines, however, which were run with a few retorts when quicksilver was high find it difficult to keep up expenses, and many of them have shut down. At the same time the excitement of prospecting for quicksilver has entirely passed over, as the inducements held out are now not as great as they were when not many months since, quicksilver was $1 65 per pound. In Napa, Sonoma and Lake counties there was for a year or so an excitement on the subject which took even the farmers away from the plow, and everybody was wild on cinnabar. At that time it was thought that quicksilver would go to $2 per pound, and some of the tailings mills in Nevada were compelled to shut down. Now, however, the gold and silver miners have the best of the situation, as the production of quicksilver became so great as to reduce the price greatly. It can be bought now for less than one-third the price it sold for one year ago. When at a dollar and a half a pound many mines were working on one per cent. ore, or even less, but at the present price ora must be better than that unless everything is on a large scale.

Owing to the depreciation of silver and the want of plenty of trade dollars in Pioche, business matters are very dull.

The Harbor Commissioners' New Tug-Boat.

The 21st of this month witnessed the launch of the last new tug-boat built by Messrs. Hanson, Ackerson & Co., the machinery for which was made entirely in the East, brought here and placed in the hull, which was built here. As an agreeable contrast to this undertaking, as far as home industries are concerned, we present some particulars of the machinery for the new tug shortly to be built for the Harbor Commissioners, the designs of which were prepared in this city, and the whole work of which will be done here. Estimates are shortly to be called for in this work, so that the details given herewith will be of interest to our machinists, who will soon have an opportunity to compete for the contract.

A three-bladed gun metal propeller is required, driven by a pair of high pressure, direct acting engines, fed by a tubular marine boiler, so arranged as to be entirely operated and controlled from the deck—an obvious improvement upon most of the tugs now at work in our harbor.

The steam cylinders are 18 inches in diameter and two feet from center to center of engines. The valve boxes are cast solid to the cylinders, with stuffing boxes, through which the rod operating the slide valve and the expansion blocks works. The cylinder is bolted on to the top of the upright frame, which is turned up, with a stuffing box cast on, and thus forms the bottom cover of the cylinder. All parts are solidly bolted to this frame, which, with the bed plate and crank sheft journals is solidly bolted to the foundation timbers of the boat by four one and one-half inch bolts and six one and three-quarter inch bolts.

A CHEAP CONDENSER.

The expansion cut off attachment to the valves is one of the most noteworthy points in the design of the engines. This is operated by an independent eccentric. The adjustable blocks on the rod working on the back of the valve enable the steam to be cut off at one-tenth of a pound stroke, and worked expansively on any intermediate grade up to full steam. In carrying out this most desirable economy in the use of the steam, the most serious objections to similar arrangements for this purpose are here overcome, the most important being the great friction almost always accompanying one valve surface working upon another, overcome in this case by admitting steam on each side of the valve, termed the equilibrium adjustment; the other point being the great necessity for all work of this class to be as simple and durable as possible. However, by a compact arrangement as explained on the detail plan, the three eccentrics for each engine are brought into a comparatively small space, and the reversing gear, the most formidable arrangement to those uninitiated with the details of marine engineering, is brought under perfect control by a single hand lever operated from the deck.

The engine frame is cast iron, including in one casting the bed plate, boxes for crank shaft, bottom of steam cylinder, to which the cylinder is bolted, and the upright frame.

The crank shaft, crank pins and cranks are forged in one solid piece of wrought iron. The links, levers, pins, etc., forming the operating and reversing gear for the valves, are of wrought iron, the working parts being steeled. Piston rods, iron. Piston six inches wide with six grooves turned in for steam-tight rings. A powerful force pump is attached to each engine. The cranks are at right angles. The working surfaces of the main portions of the engines are of solid gun metal, and the boxes for the levers and pins are lined with Babbitt metal. The steam supply pipes are eight inches in diameter and the exhaust pipes seven inches in diameter, and are coupled to the steam chests close in to the cylinders, forming a very compact arrangement, and also acting as a stair and connection for the two cylinders, coupling them firmly together.

The designs are unique and well proportioned throughout, and the uniformity observed in having all similar pieces of the same construction, forms a great saving when repairs are necessary, as may be remarked on many of the tugs running in the harbor where scarcely

INDIAN STONE IMPLEMENT.

any two pieces are alike. In the present case, for instance, either of the cylinders may be substituted for the other, or the top may be used as the bottom, thus simplifying considerably the work of pattern making, the first cost for construction and that which may eventually occur for any alterations or repairs at any future time. Ample space is provided for coal bunkers and water tanks under and on each side of the engines and boilers. Convenient accommodation is provided in the cabin arrangements, which may be used as temporary quarters at any time by the engineer and crew.

The proportions and capacity of this new tug warrant the belief that it will prove the equal if not the superior of many of the powerful craft of this class which form the working power around the wharves and along the water front. Those immediately interested in the machine business in this city, and who feel the pressure of the somewhat slack season, should go and examine these plans and stipulations for themselves as soon as the advertisement from the board calls for estimates and bids, which will be shortly. It is understood that the terms of payment will be 75 per cent. as the work progresses, or the certificate of the supervising engineer, and the balance on completion of the work. The boat will be used in the service of the State Board of Harbor Commissioners.

Stone Implements.

We give on this page representations of two of the stone implements found in the Bridger basin of Southern Wyoming, to which we referred in a recent issue of the Press. Two views are shown, half size. This is a modern stone implement of gray quartzite, a simple flake from a drift-pebble of the Uintahs. It is called by the Shoshone Indians a "teshoa" and is used by them as a scraper in dressing skins.

Machinery at the Fair.

Although the social features of the Mechanics' Institute fair are the most attractive to a majority of people, the industrial features are of vastly more importance. While the attractions of the art gallery, the music, etc., draw their crowd, the machinery in motion has an interest to many others which they seldom have an opportunity to gratify. The periodical occurrence of these exhibitions affords to many of our citizens the only chance they ever have to examine the details of various mechanical devices, and without this feature they would care little for the fair.

A laudable curiosity of this sort should be gratified, and it rests with our manufacturers and those engaged in industrial pursuits to fulfill the desires of the managers and the public and make as full a display as possible. The foundry and machine shops have not this year the excuse of last, busy times, to offer, as work has slackened up in many of them, and a fine opportunity is now offered to exhibit to the public, where they can be examined, samples of the handiwork of our artisans.

We have no means of knowing, as yet, how much of a show will be made at the fair by our mechanics, but trust it will be a good one. If they neglect the opportunity here offered it is to their discredit and disadvantage. Agents of Eastern ready made machinery of all kinds, who can exhibit at comparatively little expense, will, no doubt, take care to make as good displays as possible, and as many persons form their opinions more on what they see than what they hear, the impression will be formed that our own mechanics cannot compete with the Eastern ones.

This is far from being the case, but our mechanics should see to it that no such false impression should get abroad. It is impracticable to put up heavy mining machinery in the pavilion, as none of it is made except to order, and the owners want it as soon as it is made. But machinery of ordinary kinds could be manufactured, finished neatly and displayed at the fair, which would show visitors what we can do here. This could be sold afterwards, and even if it does bring a lower price than when new, the advertisement of the particular firm who made it will more than compensate for any loss occuring in that way.

Last year visitors at the fair had no cause for complaint in the exhibit of machinery, as nearly if not all the space allotted to it was filled. This year it will be more of a special department than heretofore, as it is to be partitioned off from the main body of the pavilion.

We take occasion to urge our foundrymen and machinists to do all in their power to make the mechanical department of the exhibition a credit to the city and State. They are abundantly able to do it if they put their shoulders to the wheel. Friendly competition is beneficial to all concerned, and it looks discreditable to see a single exhibit of any special article where half a dozen similar ones should be. Industrial fairs require support, not only from the general public but from those in whose interest they are held. When the mechanics get up a good display the visitors are always forthcoming, and we hope the exhibit in this line this year will be equal, to if not better than the last.

Postage on Printed Matter.—The bill restoring the old rates on printed matter has become a law, and is already in operation. Third-class matter is partially defined to be "transient newspapers and magazines, regular publications designed primarily for advertising purposes, or for free circulation at nominal rates," which is subject to postage rates of one cent for every two ounces, and one cent for each additional fraction of two ounces. So far as transient newspapers, magazines, etc., are concerned, the law is the same as before the change made two years ago, i. e., one cent for two ounces or any fraction thereof; but the increased postage on the portion of third-class matter which comes under the denomination of merchandise is retained in the bill as established by the previous law—one cent for each ounce or fraction thereof.

CORRESPONDENCE.

Placer County Mines.

[By our own Correspondent.—No. 4.]

On Roach hill there are a number of good claims, among which the Phillips seemed to rank high in the estimation of some of the neighbors.

The Columbus is a good paying claim, having from three to four feet of cement, which is drifted ont and crushed. The front portion is good hydraulic ground. When visited only 10 out of 20 stamps were occupied, crushing about 30 tons per 24 hours, and paying somewhere in the neighborhood of $4 per ton.

The Strawberry Claim

In the flat above is said to have paid well formerly for drifting. It had recently been opened and worked by hydraulic. Watts & Co., the present owners, were well satisfied with the prospect. On the opposite side of Roach hill, Messrs. Burwell, Fuller & Pritchard have a gravel bank of 140 feet in hight, that has been hydrauliced altogether in the past two seasons only about four months, owing to scarcity of water. The claim is 1,400 feet square, with a front face of 500 feet, working from eight to 10 men. When on the ground, the bedrock had not been fully cleaned up, but judging from the way the undercurrents had paid, they were looking for a fine return.

Ont of the 25 claims that have been running, to say nothing of the large field of unoccupied ground, enough has been selected from which to form an idea of the vastness of the deposit here exposed for future industry, enterprise and capital.

I understand that Merrill & Co., of San Francisco, had located

An Asbestos Claim

Of some 6,000 feet in length, within one mile of Iowa Hill, three and one-half tons having been taken to the city and fully tested. Owing to the fact that it is one of the best known nonconductors of heat, they use it for felting, roofing, fire brick and some other purposes.

It is found here in much larger masses than usual, running in veins smaller or larger through the serpentine, and bulging out occasionally in bodies of considerable size, where it can be had in quantities, for shipment.

Besides the silken, fibrous form, from six to 12 inches in length, there are other varieties, grading off into the earthy common spar, or some form of talc or steatite.

Some fine specimens may be seen below Cape Horn, near Colfax, but whether sufficiently abundant for mining is yet to be determined.

Near this on the trail is a conglomerate rock, containing washed gravel that must be of very ancient date, for it has the appearance of having been tilted up, after stratifying similar to the slates and other stratified rocks.

The Rising Sun

At Colfax, had just made one more successful run about the time I was there, taking out about 400 ounces within 15 or 20 days. For the past few months it has not paid its regular dividend, but no assessment has been necessary, as it has been able to supply the means for running expenses while the mine was being put in shape for future profitable working.

Gold Run and Dutch Flat Mines.

As the Gold Run and Dutch Flat mines had recently been so fully and favorably written up, special notes from these points were deemed almost superfluous. They cannot be said to suffer from lack of capital. There were many vast enterprises going forward that were either rich in present results or full of promise for the future. When these, and others contemplated for properly working along these deep, rich channels from bedrock upwards are fully completed, the gross yield will be enormous, and the net profit on investments increased in even a greater ratio. It is true that much of the surface has been skimmed, but the richest of the cream is believed to be left.

Mr. J. J. Brady, of Dutch Flat, has made an

Improvement in Operating Derricks,

Which appeared worthy of a place in a journal so generally read by miners and mechanics. The principal object is to save the wear and tear of ropes over the boom-arms. A hole is bored three inches in diameter from the foot of the mast centrally for 12 feet in length, and another obliquely eight feet long from the face of the mast, connecting with the former, a sheave being fixed at the connection of the two and also a carriage with a sheave in it, placed on the face of the mast for the purpose of directing the ropes centrally through the oblique hole. From the carriage sheave, as I understand it, the rope works as in any other derrick. The spindle on which the mast turns is five and three-fourth inches in diameter, with a hole through the center of the same size as that in the mast, and works on a foot block of cast iron, through which the rope passes on to the foot block sheave. Much time is said to be saved by the appliance. For instance, in the form in general use, after unloading from one point two-thirds of the distance has to be retraced to receive a load from the opposite point. In this arrangement no retracing of steps is necessary, but the derrick continues after unloading directly on the same course to any place required.

The Green Valley Mines.

About three miles from Alta, and nearly 2,500 feet below the track of the C. P. R. R., on the North fork of the American river, there is a narrow little valley, a mile or so in length, in full view from the passing cars.

Early one bright morning I let myself down into this deep gorge by a comparatively good winding trail of some two miles in length, to find the miners all busy at work.

The first claim reached was that of the Green Valley blue gravel company, incorporated in San Francisco, and holding a U. S. patent for 90 acres of gravel deposit, some of which seemed to be of recent date, and other portions perhaps much more ancient. There has probably been a slide at one time from the mountains, forming a dam in the river and also a bar, at the same time changing the course of the channel once at least, if not oftener.

On a large bar with a depth of gravel from 60 to 80 feet, reminding me much of Gold bar on the Middle fork, the company were sinking a well timbered shaft 4x8 feet, and, as informed by Mr. S. V. Souder, the superintendent, were passing through quicksand and would soon reach the gravel near the bedrock.

It is stated that some strata of this deposit prospect well and that as high as $10 per carload had been taken out at the lower part of the bar, so that very fine results are anticipated on completion of shaft. In the meantime a tunnel is being run from near present workings through the outer rim rock with the view of striking another and possibly an older channel believed to be not more than 150 feet distant. Connected with the property is a saw mill run by water—turbine wheel—also a flume and ditch four miles in length, with a capacity of 3,000 inches of water.

The St. Louis,

At the lower end of the valley, is a good drift and hydraulic claim, the property of Messrs. Nova & Christian. They were drifting on a layer of gravel 30 feet above bedrock that was paying $2.50 to the wheel-barrow load. Some of the dirt in this claim prospects from 50 cents to $1 to the pan. Mr. Opel had just began work on a claim that had formerly paid well. He informed me that the Hayden Hill, on the opposite side of the river, had paid fully up to his expectation for the season, paying usual regular dividends, which vary from $600 to $1,200 every year, according to time of run or supply of water.

The "76" mine, a drift claim 1,100 feet front and half mile in linear extent, is located at

Shady Run,

Five miles above Alta. They struck good pay gravel last February, since which time it has paid expenses and good wages. They have a good and extensive deposit of quartz gravel, with some rich spots that yield as much as an ounce a day to the man, or $5 per carload. Prospect for the future promising. The Wild Yankee, a consolidation of 30 claims of 900 square feet each, near the above but supposed to be in a different channel, has been opened by a tunnel 900 feet, and has turned out its thousands annually for 20 years. The latest run of three weeks paid Messrs. Wedgwood, Corlett and Brinks, the three owners, $480, in way of dividends over all expenses.

At Lost Camp,

In the neighborhood of Blue canyon, there is a deep channel of gravel 300 feet in width, that is said to be very rich, widening out in places to 2,500 feet. Mr. G. T. Bartlett ran two hydraulic claims here last season, but owing to its shortness the yield fell a little short of the usual average. Messrs. Bellows and Rathburn are drifting on the Boston, and they say their prospects are flattering. This claim has averaged in the past about $40 per day. No reason can be assigned why it may not do so again.

Some attention will now be given to the

Immense Lumbering Business

On or near the line of the C. P. R. R., from Dutch Flat as far as the summit of the Sierra Nevada mountains. Messrs. Towle Bros. turned out last year from two mills upward of 10,000,000 feet, and are cutting at present with three mills 60,000 feet per day. At their new Kearsarge mill, nine miles from town, two gang edgers are used, six saws each, Dicey's patent, which are easily regulated by lever and screws to divide the broad plank into the proper number and width of smaller sizes to economize the lumber. A narrow gauge railway had just been completed of 45 pound iron, operated by steam, reminding one of Clay Street hill in your city, about one-half mile of inch steel wire being employed. The cars, loaded with lumber from the mill, arise to the summit on a grade of three feet to the rod, and passing under the spool are lowered down a similar incline, 1,400 feet, to their main track, some seven miles long, which connects all their mills with the Central Pacific at Alta wood shed. In addition there is a large planing mill, completely fitted up with all the necessary machinery, among which of home invention may be mentioned two I. H. Small's planers, one of O. Bonney's band saws, and one of F. A. Huntington's shingle machines—all giving good satisfaction. This firm gives employment in their entire business to about 200 men.

The Bear River Mill,

Tillson & Carlin, owners, cuts with a Spaulding saw 16,000 feet daily, and for season of eight months usually about 2,500,000 feet. It is within a mile of Alta station. Some lumber is also dressed here, as one of Small's planers was seen on the premises. The Damsgard mill, two miles from Alta, manufactures per season about 1,200,000 feet.

S. Putnam, at Emigrant Gap, cut last year, with one mill, 750,000 feet, and 1,500,000 feet with another. In connection with the mill now running there is a planer and also

A Box-Making Machine,

or resawer of his own invention and construction, likely to prove valuable. I understand that the necessary preliminary arrangements have been entered into through the patent agency of Dewey & Co., with the view of soon taking the final proceedings for securing a patent. It is simple, safe and rapid. Boards, say of inch lumber, are first sawed the proper length for boxes, and then split into half-inch boards, by the new resawer, at the rate of 20,000 in ten hours, saving much time and labor. It seems to promise another stride in the right direction.

The Monumental Mill,

the property of Mr. I. Avery, of Emigrant Gap, and five miles distant, runs two large planers, manufacturing of flooring, rustic, ceiling and siding, altogether for season about 750,000 feet; daily cut of lumber, 20,000 feet; annual, 2,500,000. Messrs. Taylor & Pickins, of Alta, have also a mill six miles from the Gap, where there is usually turned out a million and a half feet every year, principally of sugar and yellow pine, and Mr. Geisendorfer, four miles above Cisco, supplies the C. P. R. R. company with ties and shed lumber, probably with an equal amount, making a total aggregate from Dutch Flat to Summit of about $20,000,000 feet.

I made

A Short and Pleasant Stay

With Mr. Hill, of the Summit house, its hospitalities being freely tendered, *pro bono publico*, or rather, as I imagine, through personal regard for Mr. A. T. Dewey, your energetic business manager. Here I breathed, for a brief period, the pure air, and reveled in the grand and delightful views from this aerial elevation, being, in more senses than one, nearer heaven than I soon expect to be, and then darted at lightning speed down an easy, winding grade, in full view of snow-capped peaks or grove encircled lake, some 14 miles to the rapidly rolling Truckee, and the flonrishing new town of the same name, situated in a beautiful little valley on its banks. You will probably hear something of its mills and manufactories in my next.

K.

Gems and Precious Stones.

[Written for the PRESS by HENRY G. HANKS.]

I. Tourmaline, Rubellite, Indicolite.

The above are the varieties of tourmaline which are regarded as gems. Tourmaline is found assuming a variety of colors. Black and blue black are the most common—more rarely blue, green, red, brown and white or colorless. Some varieties are red internally and green externally. Sometimes one end of a crystal is red and blue, green or black at the other. Dichroic; streak uncolored, transparent, opaque, fracture sub-conchoidal, uneven, brittle, pyroelectric; crystalline form rhombohedral. Hardness, 7—7.5; specific gravity, 2.94—3.3; luster vitreous.

Some varieties fuse easily B. B., others are infusible, with fluxes. Some varieties give to the beads the characteristic color of iron. They all give the reaction of boracic acid. This reaction is obtained by finely pulverizing the mineral in an agate mortar, mixing with equal parts of a mixture of fluor spar and bi-sulpbate of potash; grinding the whole together until thoroughly mixed, and heating a small portion in a loop of platinum wire. By urging against it, by means of the blowpipe, the flame of an alcobol lamp, a green color will be imparted to the flame, characteristic of boracic acid. The experiment should be made in a dark room. Not decomposed by acids, but if freshly ignited, is wholly decomposed by sulphuric acid.

It is difficult to give the composition of a mineral which takes so many forms as tourmaline. In general terms it may be said to be an anhydrous silicate of alumina with various other bases, and always containing boracic acid.

Mineralogists have divided the varieties into several groups as follows: 1, magnesia tourmaline; 2, iron magnesia tourmaline; 3, iron tourmaline; 4, iron manganese, litbia, tourmaline; 5, lithia tourmaline. The black varieties are called tourmaline, schorl and aphrizite. The name tourmaline is probably derived from the name tounamal, given to the mineral in Ceylon, where it was first known. The red tourmaline is called rubellite from its color. The blue variety is named indicolite from a Latin and Greek work signifying indigo and a stone (indigo stone). Rubellite was called "lychnis" from the fact that its color was brightened by the light of a lamp.

A violet red specimen of rubellite from Siberia was analyzed by Vauquelin, and found to contain the following composition: Silica, 42; aluminum, 40; soda, 10; oxide of manganese and iron, 7. Total, 99.

Tourmaline possesses some remarkable optical properties. The transparent varieties are much prized for the manufacture of polarizing apparatus.

If two thin slices of tourmaline cut parallel to their axes are laid one over the other in one direction, they are transparent; if rotated on each other a point will be reached when they will be opaque. This property is taken advantage of in studying the nature of crystals.

Tourmaline is not considered a very valuable gem, but under certain circumstances it commands a high price. The value depends on color, purity and size. A crystal of rubellite in the British museum from the kingdom of Ava is valued at £1,000.

There are many locations of this mineral. The black is common in many parts of the world. In California, it is found black and green in the foothills and in the Sierra Nevada mountains. A remarkable locality is in the mountains between San Diego and the Colorado desert, where crystals occur six to eight inches in thickness. I have myself picked up fine specimens in the high sierras, near Mount Whitney.

Rubellite is found at Parie, Maine, in very fine transparent crystals, quite equal to any known. Fine specimens are found in Siberia and Brazil, the latter called sometimes Brazilian ruby, found also in Ceylon and Ava.

Indicolite is rare. That from Brazil is called Brazilian sapphire. A few specimens have been found in Siberia.

Fine specimens occur in New York, on Harlem hights, and at Goshen, Mass., in coarse granite.

Tourmaline may be looked for in granite, gneiss, syenite, mica, quartz, in dolomite, and in granular limestones.

II. Iolite, Syn., Cordierite, Dichroite.

This mineral is a silicate, of which the following is an average analysis:

Silica 49.62, alumina 28.72, oxide of iron 11.28, oxide of manganese 1.51, magnesia 8 94, lime 23.=100.30.

Crystalline form orthorhombic; hardness 7.75, specific gravity 2 56—2.596; color, various shades of blue, light, dark, sometimes smoky blue; streak uncolored, transparent, translucent. Fracture sub-conchoidal, shows pleochroism in a remarkable degree (pleochroism is the property of appearing of different colors when held to the light in different positions).

B. B. becomes opaque and fuses with difficulty. Only partly decomposed by acids, but wholly soluble after fusion with a mixture of carbonate of soda and potash. Becomes electrical by friction, and if heated assumes polarity.

Found at Cape de Gate in Spain, in an altered greenstone; in Greenland, in granite; at Arundal, in Norway. In Finland. A variety from Ceylon is found in small rounded masses of an intense blue color. Found also at Haddam, Conn.

This mineral is sometimes set as a gem but does not find many admirers. When cut to show its dichroism to advantage it is a noticeable stone and attracts some attention, more as a curiosity than from its beauty. A good specimen is worth from $10 upward.

Blue quartz is sometimes sold for iolite, but may be distinguished by its want of dichroism, its inferior hardness and electrical properties.

The name iolite is derived from two Greek words signifying "violet stone." Cordierite and dichroite, other names given to iolite, are called, the first from Cordier, a geologist, who first called attention to some of its optical peculiarities, and the latter from its dichroism.

The Silver Bill.

Following is the full text of the joint resolution for the issue of silver coin which has passed both houses of Congress and now goes to the President for his signature:

Section 1. That the Secretary of the Treasury, under such limits and regulations as will best secure the just and fair distribution of the same through the country, may issue the silver coin at any time in the Treasury to an amount not exceeding $10,000,000, in exchange for like amount of legal tender notes, and the notes so received in exchange shall be kept as a special fund separate and apart from all other money in the Treasury, and be issued only upon the retirement and destruction of a like sum of fractional currency received at the Treasury in payment of dues to the United States; and said fractional currency, when substituted, shall be destroyed and held as a part of the Sinking Fund, as provided in the Act approved April 17th, 1876.

Sec. 2. A trade dollar shall not hereafter be a legal tender, and the Secretary of the Treasury is hereby authorized to limit from time to time the coinage thereof to such an amount as he may deem sufficient to meet the export demand for the same.

Sec. 3. In addition to the amount of subsidiary silver coin authorized by law to be issued for the redemption of fractional currency, it shall be the law to manufacture at the silver mints and issue through the Treasury and its several offices such coin to an amount that, including the amount of subsidiary silver coin and of fractional currency outstanding, shall in the aggregate not exceed at any time $50,000,000.

Sec. 4. Silver bullion issued for the purpose of this Act shall be purchased from time to time at the market rate, by the Secretary of the Treasury, with any money in the Treasury not otherwise appropriated; but no purchase of bullion shall be made under this resolution when the market rate for the same shall be such as will not admit of the coinage provided without loss to the Treasury; and any gain or seignorage arising from the coinage shall be accounted for and paid into the Treasury as provided under the existing laws relative to subsidiary coinage; provided, that the amount at any one time invested in such silver bullion, exclusive of such resulting coin, shall not exceed $200,000.

MECHANICAL PROGRESS.

How to Build a Machine Shop.

The perfection of the shop often exerts a marked influence upon the quality of machine work. As all owners and workmen are interested in securing good shops, we extract a few points on shop building from a communication on the subject written to the *American Manufacturer* by J. H. Carpenter, a constructing engineer. He says: The lighter the machinery often the greater strength required; for instance, the vibratory motion of looms will throw a strong building which will be suitable for a large machine shop; reciprocating machinery will toss the walls off their foundations, which the heaviest weights and revolving machinery would not disturb. So it will be perceived that ponderous strength is not always the requisite; yet we see shops heavy enough for a bonded warehouse, which shake like a reed, notwithstanding their strength.

First, build walls of suitable strength for the weights; light walls, properly balanced and bonded, hold more than ponderous walls full of hats; have the walls, as far as possible, thrown in panels, using pilasters under the parts bearing the roof trusses; strengthen all large piers in the same manner. Now it is usually accounted that walls with pilasters are just as strong without them; this is truly the fact, as far as the bearing of the weights and superstructure is concerned; but they break all vibratory motion. Avoid ornament for the sake of ornament, for it is a blemish; but construct for strength, and if it makes a pleasing feature, use it to the best advantage. This is for the general form of the building; but ties, both ways, to a shop are as necessary as the walls, and can readily be arranged for in the tiers of beams.

The foundation is not the least part of a structure of this kind; it should be built so the bearings are perfect on the best of bottom, and the upper walls to rest on the centers of the foundations, securing a better both ways.

As to the roof and inner framing, it is far better to arrange to throw the weights to concentrated bearing than to scattered distribution, as this tends to break the effects of vibratory forces. Beams may be thrown over long spans by trussing them, and this I invariably do; putting them good distances from centers, in couples, and bracing them. This distance is governed by the class of machinery, but the beams generally come directly under the bearers of the machine, and render them solid, and keep them perfectly level; but to have one side of a machine on a beam and the other between the beams is very wearing to some machines, and they are never steady. Beams of this class seldom split, or settle, or vibrate when supporting machinery.

Another important item is the roof; this, if not balanced and supported on the walls properly, will produce vibration and bulging of the walls below, when in motion. Roofs are, as a general thing, too heavy for the walls supporting them; and it is best to use as little timber as possible, and substitute iron wherever possible, it being cheaper and many times better.

Shops need to be well lighted and ventilated; the windows wide and long. I make it a rule to arrange the radii of light so that machines in the center of the shop will receive as much light as those near the windows, and care should be taken to attain this. The remark, this is well lighted, by the superintendent of the works, shows his pleasure better than anything else. Dark shops spoil more work and good workmen than any other evil.

A NEW WEAPON.—The *Times of India* says: "A pistol that can kill at 500 yards has been patented by Captain Burton. The butt is that of an ordinary pistol; the barrel is that of a good rifle, cut short, but leaving sufficient 'turn' to send the bullet on its errand with the proper spin. The chief object is to send a rifle bullet at an enemy or at game without having to use the shoulder, especially when on horseback. To accomplish this the barrel is fitted with a steel handle to be grasped by the left hand, while the arm is extended as in archery. The recoil is scarcely felt; it does not affect the firer so much as the kick to the shoulder would. The pistol can also be used with one hand like an ordinary pistol. The inventor has also provided a patent safety bullet which will explode as a shell when it crashes against the bones of large game, but will pass through brushwood or through the skin of a wild animal like an ordinary ball. It will not explode if let fall upon its apex, but if fired into a box of ammunition it will blow up everything."

BLOWN CAST IRON.—The *Moniteur des Interets Materials* says that considerable attention has been given of late, in Belgium, to a method for to some degree refining cast iron previous to puddling, put in practice by Mr. Fernand Hamoir, of Maubeuge. The process consists of submitting the cast iron, at the instant it is tapped from the blast furnace, to a current of air from the same blast that is being supplied to the tuyeres of the furnace itself; the process is very rapid, and the apparatus simple and inexpensive, while the advantage obtained is, that the pig iron is so far refined that one charge more per 24 hours can be worked in the puddling furnace.

TESTING THE STRENGTH OF CHAINS.—The Cleveland *Trade Review* describes a very interesting and satisfactory exhibition of chain testing at the chain works of Abbott, Brew & Co. The apparatus used for the test was a hydraulic pump capable of exerting a testing power of 68 tons, and is worked by four men. The first chain tested was 90 feet long, the links being one and one fourth inches in diameter and about three inches long, each provided with a stud that increases the tensile strength of the chain one-eighth. This chain was tested under a strain of over 27 tons, without indicating weakness in any part, and it was regarded as entirely satisfactory by all parties witnessing it. This test being completed, links of a chain one and one-fourth inches in thickness and measuring 11¼ inches in length were put under pressure, to ascertain at what strain they would break. The pressure was continued up to 52 tons, when the heavy iron pin used in the test gave way and the test was carried no further. It was found upon examination that with one exception the links were unharmed; one, however, showed evidences of weakening under the severe pressure, and it is probable it would have parted at 53 tons. The links under the pressure had been stretched fully an inch and a half.

"CENTENNIAL CHIMES."—At the Centennial exhibition the chime bells exhibited by the McShane bell foundry, of Baltimore, is the only chime in the exhibition, and is composed of 13 bells, representing the 13 original States of the Union. These bells are all large, the smallest weighing about 300 pounds, and the largest upward of 4,000 pounds, the 13 aggregating over 21,000 pounds. They comprise a full octave and one third, with a flat seventh and a sharp fourth, and possess clearness, richness of tone and great volume of sound, and are constructed in the most admirable and substantial manner. The bells are hung in the main tower, on the northeast angle of machinery hall, near the main entrance (Belmont avenue) to the exhibition grounds. They are the first chime of bells ever cast in the State of Maryland. The bells are hung in a heavy oaken frame, with the largest of the 13 in the center, and are "played upon" by two rows of levers and one row of pedals, by means of steel wires and cast iron elbows attached to the bell hammers, rendering manipulation remarkably easy. The chime was cast expressly for exhibition at the Centennial, at a cost of over $10,000.

STRENGTH OF IRON AND STEEL PLATES.—Experiments have lately been made by the South Wales institute of mechanical engineers to show the durability of metals by percussive force. Plates of equal thickness in iron and steel were operated upon by gun-cotton. A three-eighth iron plate being placed on a cast iron block dished out, having a charge of three pounds of gun-cotton suspended and fired just above it. In the experiment on the iron plate the percussive force could not be resisted, the plate being entirely blown through, and though dished in the center, or depressed to a segment of a circle four inches deep, the dish was blown out of the plate and was otherwise much torn and fractured. But in the case of the steel plate under similar conditions the plate was depressed or dished to the full extent of the block, and left entirely uninjured and with a perfectly clean surface, thus demonstrating the superiority of steel over iron plates for boilers and other manufactures.

AMERICAN LUMBER FOR ENGLAND.—The *Northwestern Lumberman* says: The shipment of Michigan lumber to Europe is becoming quite popular this season. Mention has already been made of large purchases of deals for the Liverpool market, to be shipped from the mills by vessel via the lakes, Welland canal and the St. Lawrence. It now transpires that a new route is to be opened up, whereby the first stage of the distance is to be made by rail. Parties have been negotiating during the week past with mill men on the east shore of Lake Michigan for first, second and third quality stuff, to be shipped by rail to Jersey City, N.J., and thence re-shipped by vessel to England. A White Lake (Mich.) firm are already loading cars under contract with the parties who have opened the new route. Only the extremely low rate of rail transportation could admit of such a course.

THE FASTEST CABLE TELEGRAPHY.—On a recent occasion, when all the Atlantic cables were interrupted except the Direct, the entire business for two days was done on this one wire, and the average speed maintained for 48 successive hours was 10½ words per minute, and the highest speed attained was 18 words per minute. Length of cable, 2,500 nautical miles. This is the fastest ocean telegraphy ever executed on a cable of equal length.

AN EASY RAILWAY CAR.—The new railway car of the French engineer, Giffard, is entirely free from oscillating motion, being entirely separated from the truck, and suspended from the springs by universal joints. With all this, the weight is only one-tenth more than that of an ordinary car.

ROTARY SAWS were first used in Holland, where they seem to have been known during the seventeenth century, a period when the Netherlands had placed themselves in advance of every other country in many branches of mechanic art.

SCIENTIFIC PROGRESS.

Apparatus for Demonstrating the Transformation of Force.

In a recent number of the *Journal de Physique*, M. Crova describes a convenient apparatus for showing the relations between heat, electricity, and mechanical force. The arrangement is as follows:

Two of Clamond's thermo-electric generators are connected in surface, and put in communication with a Gramme machine in such a way as to set this in action. In the circuit is inserted a sort of electric lamp, in which a platinum wire placed in the center of a small globe (which protects it from agitation of the air) can be raised to incandescence. The only difficulty of the experiment consists in so regulating the length and diameter of the platinum wire as that it may be raised to a red heat, while the thermo-electric current retains sufficient intensity to drive the Gramme machine. A circuit entirely metallic then is obtained, with which the following transformations can be effected:

1. The Gramme machine being excluded from the circuit, a portion of heat, transformed into electricity by the thermo-electric pile, reappears in the state of heat in the platinum wire.

2. The platinum wire being excluded from the circuit, and the Gramme machine introduced, a portion of heat, transformed into electricity in the pile, produces mechanical work in the machine, which acts as a motor.

3. The platinum wire and the machine being included in the circuit, a part of heat, transformed in the pile into electricity, produces heat in the wire and work in the motor. If we then stop the motion of the Gramme machine, we find the incandescence of the platinum wire increased. The machine being liberated, on the other hand, is set a-going again, and the incandescence of the platinum wire diminishes in proportion as the motion is accelerated. In this way is rendered sensible to the eye the expenditure of heat necessary to develop an increasing quantity of mechanical work.

4. Taking the handle of the machine, we turn it in the direction of the rotation the current produces, but with an increasing velocity. In this way a velocity is reached such that the incandescence of the wire completely disappears.

5. If the handle be turned in a direction opposite to that of the rotation the current communicates, there is considerable resistance, and the incandescence of the wire increases rapidly; on turning more quickly, the wire is fused. Thus, in the metallic circuit under consideration, the circulation of a given quantity of energy may appear exteriorly in the form of heat or of mechanical work, the one of these quantities being the complement of the other. If by an exterior force we introduce into the circuit an additional quantity of work, the increase of the quantity of energy put in circulation is rendered visible by the incandescence of the wire; any communication outwards from the circuit, of a certain quantity of energy which circulates in it, appears, on the other hand, in diminution, or even disappearance, of the incandescence.—*Nature.*

NEW TELEGRAPH APPARATUS.—A new apparatus, says *Iron*, for telegraphic signalling, has lately been brought before the Society of Arts. It is the invention of a Spanish gentleman, and its object is to provide a simple and inexpensive system by which any number of stations, houses, fire offices, police-stations, etc., may be able to communicate with a central station by the same wire, yet without interfering with one another. With any system of telegraphy now in use this cannot be done. The essence of the new system may be said to consist of the use of two independent wires, the earth being in each case used to complete the circuit. Of these one wire serves to carry the message, the other to set the instruments and connections in a condition to carry it. Any number of persons can telegraph simultaneously, and their messages are received at the central office in the order of their position, those nearest the office being taken first. The signals transmitted are capable of considerable variety, according to the complexity of the instrument. They are given by the movement of a pointer hand on a dial. The signals required are marked on the dial face; and on the hand being brought to any given signal, that signal, with the number indicating the house, is recorded at the central office. The receipt of the message is shown by the return of the hand to the zero point. The principal signals suggested are for giving an alarm of fire, summoning the police, or desiring the attendance of a doctor. Street stations might also be arranged, from which a fireman or a police constable might communicate with the central office.

ORIGIN OF PETROLEUM.—We learn from the Philadelphia *North American* that "eminent philosophers" have come to the conclusion that petroleum is a cod-fish product. We quote as follows: These fish were once plenty in the ocean which covered the place where Pennsylvania now is. They were caught by a sudden avalanche of land, and the millions of decaying codfish caused the petroleum oil. This accounts for the salt water found in oil wells, being the result of salt cod-fish. It also accounts for the resemblance of petroleum to cod liver oil, and the number of fish stories told of immense fortunes which were never realized.

How the Toughened Glass is Made.

We have formerly made note of the Bastie toughened glass. It now appears that the manufactura has fairly begun in this country, and our readers will be pleased to know tha process by which the glass is toughened. The *Iron World* has examined the works at Bellaire, Ohio, and we extract the in ormation on the method of toughening. The article manufactured is a lamp chimney.

The chimney is taken from the blower and heated to dull redness in a small furnace of peculiar construction. This furnace is heated with benzine and its proper construction proved a serious difficulty for a long time. Four men are engaged in holding the chimneys in the flame of this furnace, the proper and equal heating of the chimneys being the most delicate part of the process. Benzine is used to avoid the deposition of carbon or soot upon the surface of the glass, otherwise the oil bath would permanently fix the carbon in the glass and ruin it. The oil bath consists of three parts of linseed oil and one of tallow, and is heated at 360 deg. Fahr. The heat derived from the chimneys may, by rapid working, run it up to 400 deg., beyond which it is not wise to go. A test while present showed 390 deg. The temperature of this bath is a thing to be watched. It is contained in a rectangular iron tank of 5 bbls. capacity. Over this tank is a sheet iron hood in shape like the roof of a house and in each side of the roof is an opening for the admission of the chimneys. The gable end of the tank is set against the furnace. To each furnace there are two such tanks, into which the workmen put the chimneys as fast as heated. In each tank two iron baskets with perforated bottoms are placed. When one is filled an empty one takes its place, and after sufficient time (from 10 to 16 minutes) has passed to allow the last chimneys placed in the basket to get the full benefit of the bath, it is lifted out and immediately plunged into a cold water bath. Out of this water bath the chimneys are taken as soon as possible and put into a tank of benzine to free them of oil. They are then taken out, dried, rubbed with bran and are ready to ship. A chimney can be blown and got ready for market in 30 minutes. It takes no ordinary blow to break them. They may be thrown to the ceiling of a room of ordinary hight and allowed to fall upon a bare floor without breaking, though it is our opinion that repeated shocks induce a condition that renders them as easily broken as any glass.

HOW FRENCH COLORS ARE PRODUCED IN GLASS.—In the *Bulletin de la Societie d'Encouragement* M. Baccarat describes the mode by which the far-famed French rose and red shades of glass are produced—one of the most critical and beautiful of the arts of industry. In brief, a certain amount of auriferous glass is prepared beforehand and run in thin plates, and fragments of these plates are used by the glass blower to fuse upon his work, and thus give it a superficial coloration. It often happens that one and the same composition of auriferous crystal gives plates of very different shades—some colorless, others tinged more or less deeply with rose and red, and some almost black; these differences being due to two causes—namely, the temperature of the furnace in which the fusion has been effected and the temperature of the mold into which the melted metal is run. For light colored plates the temperature of the furnace is made low and the mold very cold. Blue plates are sometimes produced under the same circumstances, which, if reheated, take the normal color; as do also the colorless and very pale rose glasses. The curious facts thus developed in regard to the process in question and its results render it probable that the coloring matter is neither a salt nor an oxide, but a simple body. Crystal colored with gold is, therefore, merely a vitreous matter, holding in suspension a metallic gold in a state of very fine subdivision. It is stated that, on attentively examining the red plates, it is easy to recognize in the mass a multitude of most brilliant specks of metallic gold, forming a sort of adventurine.

MEASURING DISTANCE BY SOUND.—The old method of measuring the depth of a well or shaft by the time a stone is heard to reach the bottom, may be improved upon by taking into account the time required for the sound to reach the ear from the bottom of the shaft, a correction only of any consequence when the shaft is very deep, as half a second is all the time required for the sound to pass over a distance of nearly 550 feet. If we could appreciate small fractions of seconds, it would become possible to determine distances by sound with great accuracy. This is what has been accomplished by Major Le Boulanger of the Belgian artillery; on seeing the flash or smoke of a gun, he touches one key of an instrument, and the moment the sound is heard, the other key is touched; in the mean time the clockwork of the instrument has been set going by touching the first key, while it has been stopped by the second key, and the space passed over given the time within one-twentieth of a second, which corresponds to an accuracy to within 50 feet. The advantage of this in artillery, especially for coast defence against an attacking fleet, is expected to be very great, as it will enable the gunners to make the determination of the distance of a hostile ship the work of a moment—a problem thus far difficult and doubtful of solution, and of the utmost importance in regard to a successful defence.—*Builder.*

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 Wk to July 6.		1 Wk to July 13.		1 Wk to July 20.		1 Wk to July 27.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	11	....
Advance	....	....	....	....	....	....	11	....
Alpha	45½	47½	47	38½	41	34	41	37
Alta	....	....	....	....	....	....	3	....
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	....	....	....	....	....	....	....	....
Andes	2½	....	2½	2½	2⅞	2	2⅝	2½
Alps	1⅞	1¾	1¾	1¼	1½	1	1¼	1⅛
Amazon	....	....	....	....	....	....	60c	....
Balt'm'e Con	....	....	1¾	1½	2	1¾	2¼	2
Belcher	18	17½	18¾	17½	17¾	16⅞	17¾	17
Belmont	2⅜	....	2⅞	2⅜	3⅛	2⅞	3⅛	3
Best & Bel	47½	43¾	44¾	39½	47½	40	48	44
Buckeye	....	....	....	....	....	....	....	....
Bullion	44	....	44	40	45	40	43	41
Caledonia	....	....	7¾	7	9¼	8	9¾	9¼
Californie	74	68½	70¾	64¾	64⅜	55¾	61⅜	56¾
Challenge	....	....	4¼	4	5	4	4⅝	4¼
Chollar-Potsi	80	72	83	83	77	83	78	75
Confidence	18½	....	17	16½	17½	16¾	17	16¾
Con Imperiel	6⅞	5¾	6	5¼	5¾	4⅝	5¼	4⅞
Con Virginia	60¼	50½	52	46	61½	46¼	58½	53
Crown Point	10¼	9⅞	10	8½	10	9	10	9¾
Coso Con	....	....	....	65c	80c	30c	35c	30c
Dana	....	....	....	....	....	....	4	....
Dayton	....	....	....	4¾	4¾	....	....	....
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka (V)	....	....	....	....	....	....	....	....
Eureka Con	13¼	....	12¾	10½	12	10¾	12	10½
Exchequer	18½	16½	16½	14⅜	16	14	15	14⅜
Europa	....	....	....	....	....	....	....	....
Gila	....	....	87½c	1	1 62½c	50c	62½c	37½c
Globe Con	....	....	....	....	20c	....	....	....
Golden Char	1½	1	1	37½c	40c	37½c	40c	37½c
Gould & Cur	15⅜	15½	15	13⅜	15	12¼	16	14⅜
Hale & Nor	9¾	9	9¾	9	9¾	8½	10¼	8⅜
Ida Ellmore	....	....	....	....	....	....	....	....
Jefferson	....	....	....	1	....	....	1⅛	1
Julie	8½	7¾	8	5¾	8½	6¾	8	7¼
Justice	23	22¼	22¾	20¾	22	20	25	20½
Jeckson	3¾	....	4	3	2⅝	2½	3¾	3½
K K Con	....	....	....	....	....	37½c	45c	....
Kentuck	13	....	13	10	11¾	10½	11⅛	11
Knickerb'k'r	....	....	25c	....	25c	....	30c	....
Koesuth	1¾	....	1¾	1½	1⅝	87½c	1⅝	1⅜
Lady Bryan	75c	62½c	75c	70c	80c	75c	1⅛	1⅛
Lady Wash	....	....	2½	2½	2¾	2¼	2½	....
Lee	....	....	....	....	....	....	....	....
Leopard	7¾	....	8¼	7¼	9½	8¾	10	8¾
Leviathan	75c	....	75c	70c	70c	....	8 o	68c
Mahogany	....	....	....	....	....	....	....	....
Mansfield	....	....	....	....	37½c	35c	....	....
Meadow V'y	1½	....	1¾	1	....	....	90c	5 c
Mexican	30¼	28¾	30	25	30½	27½	34⅞	29½
Midee	....	....	....	....	....	....	....	....
Mint	....	....	....	....	....	....	28c	....
Monte-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	87½c	75c	87½c	75c	75c	62½c	1	75c
Niegara	....	....	....	....	....	....	....	....
North Belle	37	36	37	32	39	27	30	21
New Coso	2¾	2	2¾	2¼	2⅜	1⅜	2⅜	2
Occidental	....	....	....	3⅜	3½	....	3⅜	3
Ophir	52	47¾	48¼	45	47	40¼	47⅜	44
Or Gold Hill	....	....	....	....	....	....	....	....
Overmen	68	63½	68	60	63¼	55	73	65
Paul	....	....	....	....	....	....	....	....
Phil Sheridn	....	....	....	....	....	....	1¼	....
Ploche	....	....	....	....	....	....	....	....
Poorman	60c	....	30c	25c	60c	25c	....	....
Prospect	....	....	....	5¾	6	5¾	5¾	2¾
Prussian	....	....	1	75c	1¼	....	1½	1
Ray & Ely	9	....	10	8½	8½	8	8½	8
Rock Island	....	....	1	1¼	1¼	1	1⅜	1
Rye Patch	....	....	....	....	....	....	....	....
Savage	21	19	20¾	17	21¼	17	20½	18¾
Seg Belcher	72½	....	70	67	65	....	70	....
Sierra Nev'da	14¼	14	14	12¾	14⅜	13	15⅜	13⅜
Silver Hill	....	....	7¼	7	7¼	6¾	7½	6¾
Sth Chariot	90c	....	90c	82½c	....	....	90c	....
Succor	....	....	....	....	27½c	25c	25c	....
Union Con	11¾	10¾	11¾	10¼	11⅜	10¾	14⅜	11⅜
Utah	20c	....	18	15½	18	16¾	18⅜	17
Welle-Fargo	20c	....	15c	....	17½c	15c	14c	12½c
Woodville	....	....	1¼	....	1½	1	1¼	1⅛
Yel'w Jacket	31¼	29¾	30	27¼	27¾	24	26½	25

Sales at S. F. Stock Exchange.

FRIDAY, A. M., JULY 21.

210 Alphe.....37½@38
100 Amazon.....60c
50 Andes.....2¾
145 Best & Belcher.....44@45
75 Belcher.....17@17⅛
3725 Con Imperial.....5@5½
4615 Con Virginia.....54¾@53
3990 California.....58½@58¾
100 Challenge.....4¾
125 Chollar.....16@15
15 Challenge.....4¾
250 Caledonia.....9¼@9⅜
100 Derdanelles.....1
20 Echequer.....4¾
200 Gould & Curry.....14½@14⅜
430 Hale & Nor.....8⅞@8¾
410 Just.ce.....21@20¾
515 Julie.....7¼@7⅜
30 Kentuck.....11
29 Koseuth.....1¾
1235 Lady Eryan.....1⅛@1¼
350 Leviathan.....68c
440 Mexican.....29½@30
995 Maryland.....2½c
100 New York.....75c
250 N Con Vir.....75c
7225 Ophir.....46¾@46¾
185 Overman.....65@66c
40 Phil Sheridan.....1¼
200 Savage.....18¾@18¾
120 Sierra Nevede.....13⅜
300 Succor.....25c
260 Union.....11¾@11⅝
200 Virginia.....21¼
100 Ward.....57½c
50 Woodville.....1⅛
705 Yellow Jacket.....50@54

AFTERNOON SESSION.

225 Alps.....1¼@1⅜
20 Best & Belcher.....44
550 Belmont.....3¼
630 Con Imperial.....5@4¾
385 California.....57½@57⅝
250 Coso Con.....30@35c
355 Con Virginia.....52½@53¼
150 Gila.....55c
1030 Gen Thomas.....2¼@2½
420 Golden Chariot.....37½c
50 Hale & Nor.....9¼
440 Hussey.....50@55c
320 Jackson.....3½
130 Jefferson.....1@1 15
20 Justice.....20¾
475 Leopard.....8¾@8¾
300 Lady B.....1 40@1 50
90 Mexican.....29¾@29¾
100 Modoc.....3
100 New Coso.....2
325 Northern Belle.....29½@30
150 Meadow Velley.....75c
115 Ophir.....44@44½
100 Proepsct.....5¾
300 Prussian.....1
45 Raymond & Ely.....8¾@8
160 Savege.....1⅞
20 Yellow Jacket.....25¼

SATURDAY, A. M., JULY 22.

390 Alpha.....3@3¼
70 Andes.....2¾@2⅝
150 Best & Belcher.....44@45
205 Belcher.....17½@17¾
100 Baltimore Con.....2
2235 California.....57@56¾
35 Choller.....18
115 Crown Point.....9⅝@10
1200 Con Virginia.....53½@54⅛
280 Dardenelles.....1
30 Dayton.....1
10 Exchequer.....14¾
30 Eureka Con.....11@10⅝
80 Gould & Curry.....14¾@
450 Hale & Norcross.....9¼@
520 Justice.....21@21¾
400 Julia.....7¾@7⅝
420 Kossuth.....1⅝@1¾
25 Andes.....2¾
445 Best & Belcher.....47@47¾
30 Bullion.....43
115 Belcher.....17¾@17⅝
530 Baltimore Con.....2¼@2⅜
10 Chollar.....16¾
1650 Con Virginia.....55¾@56
145 Caledonia.....9¼
1598 Con Imperiel.....7⅛
125 Confidence.....16¾@16⅝
65 Crown Point.....9⅜@10
1080 California.....57⅛@58
100 Cosmopolitan.....51c
640 Exchequer.....15
1150 Gould & Curry.....15¾@16
830 Hale & Nor.....9¼@9¾
250 Justice.....21¾@21⅜
590 Julia.....1⅞@2
25 Kentuck.....11¾@11¼
1595 Lady Bryan.....1⅝@1⅜
330 Leviathan.....75@80c
650 Nth Con Ve.....10c
155 Overman.....67½@68
370 Ophir.....47⅝@47¾
1000 Potosi.....55½@53¾
475 Rock Island.....1¼@1⅜
475 Savage.....19⅞@20
330 Sierra Nevade.....15¼
10 Seg Belcher.....
415 Succor.....25c
170 Silver Hill.....7@6¾
525 Trojan.....60@62½c
40 Utan.....17
1425 Union.....13¾@14
200 Virginia.....24
375 West Belcher.....22½@23
100 Welle Fargo.....14c
50 Woodville.....1⅛
500 Werd.....1

AFTERNOON SESSION.

100 Alps.....1⅛
450 Belmont.....3
433 Con Virginie.....56@55¾
350 California.....58½@59
250 Coso Con.....30c
225 Chollar.....17½@17¾
1450 Gen Thomas.....1¾
80 Gila.....37½c
50 Golden Chariot.....37½c
100 Hussey.....95c
350 Justice.....22
220 Jackson.....3¾
80 Jefferson.....1
515 Leopard.....9¼@9⅜
50 Meadow Valley.....50c
1300 Northern Belle.....24@22½
50 New Coso.....2
180 Ophir.....47½@47¾

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., JULY 20. THURSDAY A. M., JULY 27.

45 Andes.....2¾
160 Alpha.....33@39¼
445 Best & Belcher.....45@45¾
150 Baltimore Con.....1⅝@2
170 Belcher.....17½@17⅝
40 Bullion.....40@41
135 Crown Point.....10@9¾
1875 Con Imperial.....8¾
20 Caledonie.....9¼
120 Confidence.....17
130 Chollar.....17@18
1060 Con Virginia.....56¾@57
1625 California.....60¼@61
30 Exchequer.....14¾@15
285 Gould & Curry.....14¾@15
1215 Hale & Norcross.....8¾@9¼
820 Justice.....22@21¾
310 Julia.....7½@8
60 Kentuck.....1
540 Kossuth.....1
450 Lady Bryan.....75@75c
80 Lady Wash.....2¾
100 Leviathan.....75c
365 Mexican.....29¾@29¾
230 Ophir.....44¾@45
60 Overman.....66
140 Sil Hill.....7¼
370 Savage.....18¾@19
850 Succur.....25@27½c
230 Sierra Nevada.....13¾@14
450 Union.....11¾@12
60 Woodville.....1¼
470 West Belcher.....2½
60 Ward.....
250 Yellow Jacket.....25¼@25¾

AFTERNOON SESSION.

225 Alps.....1⅞@1¾
125 Alpha.....47@47¾
50 Belmont.....2½
315 Best & Belcher.....43½@45
2229 Con Virginia.....50½@51
1131 California.....68¾@68¾
100 Caledonia.....55@60c
100 Columbie.....1
230 Con Imperial.....5¾@5⅞
75 Eureka Con.....13
260 Exchequer.....17@16⅝
230 Gen Thomas.....2¼@2⅜
165 Gould & Curry.....15¼@15½
160 G Chariot.....1@1¼
400 Hussey.....75@80c
610 Hale & Norcross.....9¾@9¾
50 Jackson.....3¼
175 Justice.....22½@22¾
50 Meadow Valley.....1⅝
135 Mexicon.....28⅝@28
50 Northern Belle.....37
170 Leopard.....8¼@8⅜
100 Metallic.....1
169 Modoc.....1½
300 New Coso.....2@1¾
50 Ophir.....47¼@47½
100 Panther.....1¾
50 Poorman.....60c
50 Ray & Ely.....8¾
70 Savage.....19¼
145 Sierra Nevada.....14¾
330 Yellow Jacket.....31¼@31½

Pacific Board—Latest Sales.

WEDN'SDAY, A. M., JULY 26.

200 Gest & Bel.....46
50 Crown Point.....10
780 Con Im erial.....5 a⅛
770 Con Virgiue.....55@55¾
420 California.....58¾@57¾
60 Caledonia.....9½ ⅜9¾
1700 City of B eton...t@37½c
120 Exchequer.....14¾
100 Gould & Curry.....15¾
100 Globe.....20c
150 Bale & Nor.....9¾@9⅝
40 Julia.....1⅞@1¾
40 Justice.....23¾@24
250 Kentuck.....11@11¼
100 Kos uth.....1⅝ a 1¾
50 Knicke.....9c
600 Mexican.....32¾
60 New York.....75c
30 Ophir.....46@47
230 Rock Island.....1¼
200 Savage.....19¾@19¾
75 Sierra Nev de.....15¾@15
150 Trenton.....1¾
195 Union.....13½@13¾
75 Woodville.....1½
200 West Belcher.....23¾
160 Yellow Jecket.....25½@25¾

California Board—Latest Sales.

WEDN'SDAY, A. M., JULY 26.

60 Alpha.....3½
100 Andes.....2⅝@2⅞
100 Baltic.....1
100 Baltic.....3 c
10 Bes & Bel.....46½
245 Coso Con.....30c
50 Caledonia.....9¼@9¾
240 California.....58¼@ 8
10 Con Imperial.....7¾
150 Crown Point.....9¾
250 Columbia.....75c
120 Con Virginia.....55¾@55

10 Raymond & Ely.....8¼
160 Yellow Jacket.....24

WED'SDAY, A.M., JULY 26.

275 Andes.....2¾@2⅝
100 Alta.....3
630 Alpha.....38¼@37¾
245 Belcher.....17⅜@17⅝
295 Best & Belcher.....47@45½
100 Bullion.....42¾
200 Beltimore Con.....2¼@2¾
40 Choller.....16¾
610 Caledonia.....9¾
1780 Con Virginia.....55¾@54¾
130 Crown Point.....10@9¾
1140 California.....58¾@58
2540 Con Imperial.....4¾@5
15 Dayton.....4
160 Exchequer.....14¾@15
115 G & Curry.....15¼@15¾
75 Hale & Nor.....8¾@8¾
835 Julia.....8@7¾
570 Justice.....22¾@23
140 Koseuth.....1¾
250 Knickerbocker.....80c
1040 Lady Bryen.....1⅝@1¾
300 Mint.....25c
2720 Mexican.....33@32¾
250 New York.....87½@75c
600 Ophir.....46¾@45¾
246 Overman.....64@65
580 Savage.....19@19¾
240 Sierra Nevada.....15@15¼
35 Silver Hill.....7¼
10 Utah.....17
1280 Union Con.....13⅞@13¾
20 Woodville.....1¼
700 Wells-Fargo.....14c
550 Yellow Jecket.....25¼@25½

AFTERNOON SESSION.

350 Best & Bel.....46½
150 Con Imperial.....5
1110 Con Virginia.....55¾@55½
1320 California.....58@58¾
200 Ophir.....46¾@47
35 Chollar.....76½@77
80 Crown Point.....9⅞@10
115 Eureka Con.....11¾
100 Exchequer.....14¾
285 Gen Thomas.....1⅞@1¾
150 Goldeu Chariot.....40c
105 Gould & Curry. .16@15⅞
75 Jefferson.....1
350 Justice.....22¾
475 Leopard.....9@9⅝
1190 Mexicen.....33¾@ 3¾
710 Northern Belle.....23½@23
50 New Coso.....2
145 Ophir.....46¾@46¾
60 Panther.....1¾
520 Union.....13⅞

AFTERNOON SESSION.

100 Advance.....11
50 Alta.....3
150 Best & Belcher.....45¾@46
415 Belmont.....3⅜@3
2060 Con Virginia.....55¾@55¾
790 California.....61@61¾
400 Coso Con.....30c
85 Eureka Con.....12
100 Gila.....50c
140 Gen Thomas.....2¼@2½
105 Gould & Curry.....15¾@16
380 Hale & Norcross.....10@10¼
100 Jackson.....3¾
570 Julie.....8
455 Justice.....24¾@25
100 Kentuck.....9¾@10
280 Meadow Valley.....50@52½c
1125 Mexican.....31¾@34¾
670 Northern Belle.....21¾@2
133 New Coso.....2¾@2¾
50 Ophir.....47¼@47⅝
740 Raymond & Ely.....8@8¾
150 South Chariot.....30c
530 Savage.....20
50 Sierra Nevada.....15¾
580 Union Con.....14¾@14¾
500 Yellow Jacket.....26¼

50 Mexican	33¾	5 Con Virginia	55
1000 Nevada	37½c	200 Con Imperial	4¾
100 Niagara	20@25c	100 Con Barcelona	8¾
200 North Mon	50c	200 Ely	2¾
100 N Coso	2	100 El Ophir	1½
100 Oregon	1½	50 Gila	4 u
250 Phoenix	87½c	360 Gen Thomas	1¾
50 Phil Sheridan	1¾	350 International	62½c
700 Plotou	1¼@1⅝	70 Jefferon	1
100 Rock Island	1	160 Justice	23¾@23¼
50 Savage	20	100 K K Con	1½
1015 Superior	15@11o	20 Leviathan	75c
20 Sierra Nevada	15	100 Leopard	9¼
500 Trojan	67½c	1440 Lady Bryan	1⅛@1⅜
250 Union Flag	2½@2⅝	100 Mint	25o
100 Ward	1	10 Mexican	33¾
56 Yellow Jecket	25⅜	300 Mahogany	15@37½c
AFTERNOON SESSION.		500 Niagara	22½c
45 Alps	1¾	500 N Coso	2¼
99 Andes	2¾	300 New York	80c
300 Amazon	61c	100 Panther	1.70
80 Californie	58½@58	20 Phil Sheridan	1¼
4550 Rising Star	2¾@3c	1440 Lady Bryan	1⅛@1⅜
100 Mercy Creek	1	2415 Superior	12½@10½c
20 Crown Point	9¾	760 Trojen	62 @75c
20 Caledonia	9½		

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thureday from Advertisemente in the Mining and Scientific Preee and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Deling'nt.	Sale.	Secretary.	Place of Business
Chollar Potosi M Co	Washoe	10	5	June 26	July 28	Aug 16	W E Dean	419 California st
Con Imperial M Co	Washoe	1	25	July 25	July 28	Sept 19	W E Dean	419 California st
Emops M Co	Washoe	6	25	June 19	July 25	Aug 15	R B Hoyse	419 California st
Florida S M Co	Washoe	5	25	June 19	July 27	Aug 23	L Hermann	220 Sansome st
Geddes & Bertraud M & M Co	Nev	1	50	July 24	Aug 30	Sept 23	J A Vance	Steveneon's Bldg
Gila S M Co	Nev	1	25	July 10	Aug 19	Sept 14	W A Knapp	309 Montgomery st
Golden Chariot M Co	Idaho	17	20	July 11	Aug 26	Sept 8	L Kahlan	Merchants' Ex
Ida Elmore M Co	Idaho	20	1 00	June 26	July 31	Aug 21	W Willis	309 Montgomery st
Lady Washington M Co	Washoe	8	50	July 26	Aug 29	Sept 16	D L Thomas	419 California st
Newark S M Co	Ely Diet	13	25	July 26	Sept 1	Sept 23	J A Fairweather	306 Pine st
N Con Virginia M Co	Nev	3	25	June 3	July 7	July 29	J Maguire	419 California st
Niagara G & S M Co	Nev	2	15	June 13	July 13	Aug 1	W R Townsend	Nevada Block
North Dayton M Co	Nev	2	10	June 21	July 31	Aug 18	R S Cuiverwell	320 Pine st
Overman S M Co	Washoe	35	3 0	June 26	July 31	Aug 21	G D Edwarde	414 California st
Piceau M Co	Washoe	11	10	July 13	Aug 15	Sept 2	S Phillips	408 California st
Rock Island G & S M Co	Washoe	11	50	June 26	July 31	Aug 22	J W Clark	418 California st
Silver Hill M Co	Washoe	8	1 00	July 15	Aug 22	Sept 12	W E Dean	419 California st
Succor M & M Co	Washoe	15	50	July 11	Aug 14	Sept 1	W H Wa son	302 Montgomery st
Trojan M Co	Washoe	2	30	June 14	July 20	Aug 10	D Wilder	328 Montgomery st
Utah S M Co	Washoe	13	2 00	July 11	Aug 16	Sept 4	G C P att	309 Montgomery st
Yellow Jacket M Co	Washoe	23	1 00	July 18	Aug 22	Sept 22	G W Hopkins	Gold Hill

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Albany G M Co	Cal	2	3	July 7	Aug 11	Aug 28	W H Widman	414 California st
Antelles M Co	Cal		20	July 7	Aug 8	Sept 8	H M Morgan	204 Sansome st
Arreola G & S M Co	Nev	1	10	June 17	Aug 5	Aug 25	T S Priest	240 Montgomery st
Brooks G & S M Co	Nev	2	1 00	July 10	Aug 16	Sept 5	E T Allen	535 California st
Cherokee Flat Blue Gravel Co	Cal	36	5	June 8	July 18	Aug 5	C H Bogart	328 Montgomery st
Coos Bay Coal M Co	Oregon	4	40	June 20	July 27	Aug 15	T P Beach	424 Montgomery st
Coquille River Sand M Co	Oregon	1	20	June 24	Aug 6	Sept 21	F F Reynolds	111½ Leidesdorff st
Defiance M Co	Coso	Diet	Cal	1	July 17	Aug 26	Sept 16	W G Hughes	314 Montgomery st
Eclipse & Lee M Co	Cal			25	June 22	July 22	Aug 5	D Buck	309 Montgomery st
El Dorado Water & D G M Co	Cal		14	1 00	July 22	Aug 22	Sept 7	H Elias	521 Sacramento st
Enterprise Con M Co	Cal		8	15	June 2	July 15	Aug 3	F J Hermann	418 Kearny st
Glenore Con G M Co	Cal		1	5	June 12	July 14	Aug 9	C Lewis	309 Montgomery st
Great Eastern Con Quick M Co	Cal		4	20	July 21	Aug 21	Sept 9	W H Widmen	415 California st
Hayward Con M Co	Nev		1	5	July 24	Aug 27	Sept 18	J Gilroy	27 Drumm st
Hurricane M Co	Cal			25	July 7	Aug 8	Aug 26	W C M Berry	240 Montgomery st
Kearsarge Con Quick M Co	Cal			15	July 1	Aug 28	Sept 16	Jas McHaffee	Stevenson Block
Kelsey G & S M Co	Cal		16	10	July 7	Aug 11	July 31	H Hagen	320 Pine st
Maripose L & M Co	Cal		6	1 00	July 6	Aug 7	Sept 2	L Leavitt	309 Montgomery st
Montezume M Co	Cal			25	July 7	Aug 8	Aug 26	W C M Berry	240 Montgomery st
New England T & S Co	Cal		2	10	June 10	July 20	Aug 10	C O Tripp	401 California st
Occident al R, E & M Co	Cal		2	25	July 24	Aug 24	Sept 11	A C Hammond	401 California st
Omega Table Mt M Co	Cal		11	5	June 23	July 31	Aug 21	David Wilder	32 Montgomery st
San ose M Co	Nev		12	5 00	June 14	Jy 17	Aug 2	A Carrigan	107 Front st
Santa Rosa G & S M Co	Washoe		22	28	July 15	Aug 22	Sept 14	J M Gillam	113 Davis st
Ora Fino M Co	Idaho		2	75	June 6	July 11	Aug 8	W H McGlintock	419 California st
Renton Coal M Co	Washington Ter		2	1 00	June 5	July 29	Aug 24	T E Herferson	24 Sacramento st
Silver West Con M Co	Nev		6	10	May 24	July 8	Aug 5	F R Bunker	608 Montgomery st
South St Louis M Co	Nev		1	10	June 6	July 13	July 30	R B Noyes	419 California st
Table Mt Alpha M Co	Cal		11	10	July 13	Aug 15	Sept 5	L Leavitt	309 Montgomery st
Umpire Tunnel & M Co	Utah		3	5	June 23	July 24	Aug 14	W W Davis	605 Montgomery st
Wild Beet Q M Co	Cal		2	20	July 11	Aug 14	Sept 4	D K Tripp	401 California st
Washington Blue Grevel Co	Cal		1	60 00	June 1	July 15	Aug 15	H Steinegger	Britton & Rey
Woodside M & M Co	Cal		5	25	June 6	July 17	Aug 17	S M Cutler	226 California st
Young America M Co	Nev		4	10	July 18	Aug 21	Sept 9	R H Brown	426 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
American Flat M Co	Nev	C A Sankey	331 Montgomery st	Annual	Aug 2
Carrie Hele Hydraulic M Co	Cal	F W Van Reynegom	531 California st	Annual	July 31
Dayton G & S M Co	Nev	W E Dean	309 Montgomery st	Annual	July 29
Defiance M Co	Cal	W G Hughes	314 Montgomery st	Annual	Aug 7
Eagle S M Co	Nev	H L Payne	332 Pine st	Annual	Aug 1
Julia Con M Co	Nev	A Noel	419 California st	Annual	Aug 9
Kennedy M Co	Cal	A Wiesel	Jackson Amedor Co Cal	Annual	July 31
Monitor Belmont M Co	Nev	B B Minor	309 Montgomery st	Annual	Aug 7
New York Hill S M Co	Cal	H Hermann	418 Kearny st	Annual	July 29
South Comstock G & S M Co	Nev	J M Buffington	311 California st	Annual	Aug 21
Tintic M Co	Utah	H Clay Miller	310 Sansome st	Annual	Aug 14
Trojan M Co	Nev	D Wilder	328 Montgomery st	Speciel	Aug 5

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	C D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	June 19
California M Co	Washoe	C P Gordon	309 Montgomery st	2 00	July 11
Consolidated Amador	Cal	F B Latham	426 California st	25	July 8
Con Gold Hill Quartz M Co	Washoe	R Wegener	414 California st	25	April 17
New Virginia M Co	Nev	Chas H Fish	401 California st	2 00	July 11
Comanche M & M Co	Nev	W W Traylor	Nevada Block	25	June 19
Empire M Co	Nevada Co	D A Jennings	401 California st	2 40	April 11
Empire M Co	Sierra Co	Chas Collichoun		5 00	Mar 15
Empire M & M Co	Washoe	W E Dean	414 California st	25	April 17
Imperial S M Co	Washoe	W E Dean	414 California st	25	April 17
Northern Belle M & M Co		W Willie	309 Montgomery st	1 00	July 15
St Petrick M Co	Cal	D F Verdenal	409 California st	30	Mar 10
West Comstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Feb 24

The Mining Share Market.

The stock merket hae been of late so peculiar end so sensitive to the eligh teet preeeure, that operetore heve been ntterly at a loss, end the prophets who ere so numerous ehout the hoard rooms heve found their gift deceptive and themeelvee completely at eea. Mining sharee heve in the pest few weeke fluctnated in a most etartling manner. It is sefe to eay that there are few, not even excepting the ineide manipulatore, who have not been caught in some nue of the sherp turns which have been so common. The market hae, however, been grednelly hecoming more and more eteady, end the close of the week under review showe it to be again in a healthy condition. Prices are now low, compared with those ettained during the epring months, but the panicky feeling which prevailed a short time ago seeme to have altogether disappeared, and the market stands at last on a freeh and apparently sound baeis. A large unmber of persone, principally those who do not make a prectice of habitually dealiug in etocks, are elways induced in eeesone like the present to take in a supply of sharee for the winter market. This gives rise to a elow and steady npward movement, until it becomes evident that the managers of the market are not ready for a riee and that the strength is the reenlt of outeide purchases. Thns it is a common thing to note e falee ertert in summer. However, for the present the market ie well snsteiued and shows no signs of e eerions relepse—at least for the present. The wreoks of the late penio ore oleared awey end the majority of unsound accounts eliminated.

How to Use a Grindstone.—1et. Don't waete the etoue hy ruuning it iu weter, nor allow it to stand in water when uot iu use, as this will cause a eoft place. 2d. Wet the stnue hy dropping water on it from a pot snspended above the etone, and stop off the weter when not in nee. 3d. Don't allow the stone to get ont of order, but keep it perfectly round by the nse of a piece of gae pipe or a hacker, or use e peir of the double hung etones, which keep eech uther in order. 4th. Clean off all greasy tools before sharpening, es grease or oil destroys the grit. 5th. Observe—When you get a stone thet euits your purpoee, send a sample of the grit to the dealer to eelect by; half an ounce sample ie enough, and oeu he sent in a letter by mail.—*Iron Age.*

The Senete hae paeeed the bill for the completion of the Weshington mouument. It approprietee $100,000 to coutinne the work after the Waehiugton eociety shall treuefer to the United Statee all its rights and privilegee, and providee that the work shall he under the direction of the President of the United States, the Snpervising Architeot of the Treasury and the Architeot of the Cepitol.

A Washington epecial to a Chicago peper thinks Secretary Robeson will escepe impeachment. Nothing will be done in the matter heyond preeenting the evidence to the Houee and having it referred to the Judiciery Committee to report next eession.

The emonnt in the River and Harbor bill for the improvement of Sacramento and Feather rivers is $15,000, not $75,000.

The weather has moderated greatly in New York, end the deeth rate hee correspoudingly deoreased.

With a cake of Glenn's Sulphur Soap and e oom modious beth-tub, the victim of chronic cutaneous eruptions can improvise a sulphur bath, which no professed bathing establishment can supply. Give it a trial. It is sold everywhere.

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE.

Will Start Up.—Alpine *Chronicle*, July 6: Work on the I X L mine, near this town, will be resumed on Monday next after a rest of about two years. The new foreman, Mr. Ferguson, arrived last evening from Grass Valley.

Bonded.—We learn that the Rippon mine, now called the Occident, has been bonded to an English company who propose purchasing it within three months for $50 000.

New Pump.—This week a powerful pump was sent up to the I X L mine, work upon which will be resumed next week.

Brick.—Brick making for the new furnace at the Exchequer mill has commenced.

Hauling Ore.—Ore is being hauled from the Exchequer mine to the mill.

Inspecting.—Messrs. Williamson, Hendrickson, Folger, Rice and others are engaged this afternoon in inspecting the tunnel and works of the Mountain mine, work upon which will shortly be resumed, after a resting spell of about eight years.

AMADOR.

Phenix Mine.—Amador *Ledger*, July 22: The additional 20 stamps which have been put in the Phenix mill will be started some time next week. The mill will then be equal to crushing 120 tons per day—about two tons to each stamp. The ore body in the mine is so vast that there is a report to the effect that 20 more stamps will be added at no remote date, making the mill 80 stamps—the largest in the county.

BUTTE.

Heavy Gold Shipments.—Oroville *Mercury*, July 21: Last Sunday morning Wells, Fargo & Co.'s express took from their office in this town a little over $130,000 worth of gold dust and bars, to be shipped to the mint for coinage. Lest our readers may suppose that it has taken some time to get in this large amount, we will further add that within the last ten days almost a quarter of a million of dollars' worth of dust and bars have been shipped. These figures we get from the express office, and they are correct. They only serve to show that more gold is being taken out the present year in this part of the State than ever before. They explain, too, the reason that while all the rest of the State is suffering greatly for the want of money, the people in this part of it have some money by them all of the time. All this gold comes back in coin, or rather a great part of it, and passes into circulation. Every man that works for a company gets his pay regularly.

CALAVERAS.

Quartz Mining Items.—Calaveras *Chronicle*, July 22: At the Gwin the sinking for the 1200-ft level is completed with the exception of the sump. It will be finished up entirely by the first of August. The batteries are still kept employed on rock from the 1100-ft stopes, the yield continuing fully as good as heretofore. The idea of sinking the middle shaft has been abandoned, and it is contemplated to run a level north, at the depth of 1200 feet, with a view to prospecting for a chute of ore in that direction. The new machinery at the lower or Alexander mill is not yet completed. Very encouraging developments are being made in the Quaker City mine, at the Junction. A compact vein of fair milling ore, five feet and a half wide, has been uncovered. A level is now being run at the depth of 200 feet, to determine the length and extent of the ore body. The level is being driven through the gangue, parallel with the ledge, the vein itself being so compact and hard that but little progress could be made in it. The lode will be prospected by cross-cutting from the level as work progresses. The outlook for the mine is altogether favorable. At the Lamphear mine the work of putting in a pump is being urged forward as fast as practicable. All the new machinery is now upon the ground, and it is expected to have it in position and ready for running next Wednesday. As soon as the pump is in and the mine freed of water, sinking will be commenced, the intention being to put the shaft down 100 feet deeper. Its present depth is about 100 feet. The company that recently purchased the Mount Tmolus mine, Jesus Maria district, have commenced work. A contract has been let for putting the shaft down 50 feet deeper, labor upon which is being prosecuted. The purchasers of the mine mean "business" and have abundant funds to conduct operations upon as extensive a scale as they choose. There is not a more promising piece of mining property in the county than the Mount Tmolus.

Upper Country Mining Splinters.—The chute of pay ore recently discovered in the Mina Rica, at West Point, is developing splendidly. The ledge is about 15 inches wide, very rich and increasing in size. It is thought to be a continuation of the ore body discovered and worked in the mine several years since, trace of which was lost. Rock of extraordinary richness continues to be taken from the Champion. The mine is looking better than ever, and it has proved itself to be one of the best in the county. Reports from the Josephine continue favorable. The mill being erected on the mine will be ready to run about the first of August. Williams & Chick have lately discovered a promising vein of quartz in Soaproot gulch, near West Point. Garland's mill, at Mosquito, is employed crushing rock from Sundermier & Co.'s mine. 300 tons of ore are on the dumps of the mine owned by Drs. Clark & Langdon, of Stockton. The mine is located near Albers' ranch, a short distance from Mosquito. They have contracted for hauling the rock to Garland's mill.

Rich Strike.—*Mountain Democrat*, July 22: Wm. P. Nichols has made a rich strike in the northern extension of the Naper mine, Poverty Point, near this city. Mr. Nichols has been patiently prospecting this claim most of the time for three years. Single handed he ran a tunnel about 35 feet, when he struck the ledge. Then he drifted south 30 feet, but failed to discover any paying ore. Then he drifted north 30 feet, when he struck a fine deposit of excellent rock, from which he has been extracting good pay for about 10 days, and the quality and quantity constantly improving. Another instance of industry and perseverance rewarded! It is well.

INYO.

Lee District.—From Mr. Peter Taylor, superintendent of the Emigrant company's mines, at Lee district, who came in last Wednesday, we learn the following: The Cactus mine is opening up beyond all expectations, both as regards quantity and quality of the ore. The main ore channel, as far as is shown by sinking and cross-cuts run, is fully 22 feet wide, all fine milling ore that will pulp from $80 to $100 per ton. On the foot wall a fine clay selvage of three inches has been found, showing beyond a doubt the true fissure character of the vein. A new shaft, started one week ago on the Cactus, is now down seven feet, and is all the way through a splendid body of ore, its width at the bottom not determined, but it is thought it will, when cross-cut, be not less than 20 feet in width. The ore in this shaft is of the very finest character, and of higher grade than that found in any other part of the mine. On the Valentine a new shaft has been sunk between the old openings heretofore reported, and is now down 30 feet, and discloses a fine body of rich chloride ore, interspersed with free gold. The vein at this depth is fully four feet in width. The ore will pain at least, as shown by assays taken, $250 to $260 per ton. The mill has been running some 10 days altogether, and of course experienced the difficulties attendant upon new machinery, but yet, although running upon the lowest grade ore to be had from the mine, has turned out six bars of very fine bullion, valued at $6,500. Mr. Taylor thinks he will be able to reduce six to eight tons per day. It must be understood that these ores are free milling, and no trouble whatever is found in working them up to 80 per cent. of their assay value.

LAKE.

Valuable Discovery.—Lake County *Democrat*, July 22: Wm. Barton, of Lower Lake, has recently discovered a very valuable quicksilver mine, on old Konokti, adjoining the Uncle Sam, of which it is an extension. It is being thoroughly prospected, and already gives indications of the development of as rich a mine as the Uncle Sam.

Another Mine.—About a mile due west of Thurston lake, between that lake and the Uncle Sam mine, H. B. Callahan has just discovered a very rich ledge of cinnabar, which can be traced for 3,000 feet. It is located by Messrs. Callahan, Crigler, Snow, Bertou, Adams, Whits and Marshall, and work will be commenced on it on Monday next.

New Furnace.—Napa *Reporter*, July 22: Two new furnaces are nearly ready for firing up at the Sulphur Banks quicksilver mining company's works, in Lake county, either of which will yield, according to estimate, 16 flasks daily, or 960 flasks monthly. This will make the current monthly yield of the works, when the new furnaces are set agoing, nearly 2,000 flasks monthly. Other new furnaces are to be erected, until 3,000 flasks per month are turned out.

NEVADA.

Greenhorn.—*Foothill Tidings*, July 22: The Greenhorn mine, which was abandoned some time ago and the machinery taken away, has lately been worked upon with such success as to develop a good looking ledge four feet thick.

Fire at the Pittsburg mine—the old Whigham—near Nevada City, on Monday night last, destroyed the hoisting and pumping works. Loss estimated at $30,000. Supposed to be incendiary work.

A tunnel under Osborne hill would be a good work and it is believed a paying property. We hope the talk now heard about such a tunnel will result in some systematic plan of operations which shall be carried out by actual work.

Ledge Cut.—We understand that Mr. Berry, who has been driving a tunnel in down below Allison ranch, between there and Forest springs, cut into and through a fine 3-ft ledge, on Thursday afternoon of this week. We will try and give more particulars next week.

Omaha.—This mine is now sending up splendid quartz—sometimes pieces which contain more gold than quartz—and she will be up at to give a good account of herself this month, as the 18 stamps are at work regularly. We hear the most flattering reports about this valuable mine.

Yuba.—This company are putting up some fine improvements at their mine above Washington, consisting of a new overshot water wheel—36 feet in diameter and six foot breast—two new mortars, with rubbers and pans for the mills. The mine is looking, we are told, as well as ever.

Franklin Allison.—The shaft on this mine is still going down and the ground getting harder. Drifting on the ledge above continues, and the quartz taken out looks fine, showing gold and sulphurets. The dirt around the ledge is said to turn out from 25 cents to $1 to the pan.

On the South Yuba, in the vicinity of the Yuba mine, there are several claims which give promise of excellency soon. The Linsey has lately resumed operations and, if properly managed, ought very soon to enter upon the list of paying properties. The Canyon Creek mine has changed hands and started up under quite favorable auspices. The Last Chance, which has given indications from the croppings of a rich ledge, is being opened up by tunnel, Mr. J. F. Smith having the contract. Mr. Jones, former owner of the Yuba, is the owner of the Last Chance.

PLACER.

Mining Items.—Dutch Flat *Forum*, July 20: Since our last issue there has been but little change. The various claims then washing have continued without interruption, excepting the Elmore Hill claim, which is idle, pending some repairs to the derrick, which will take four or five days. The derrick has become such a necessity that the superintendent of this property preferred to suspend washing rather than attempt to run without it. The Yankee has resumed washing again, but is using water only about six hours per day, the balance of the 12 hours being devoted to the removal of the surface rocks, of which this claim can produce more than any piece of mining ground of the same size in the State of California. The gravel, however, is rich, and were it not for the immense slide above, this claim would produce a wheelbarrow load of the precious metal every month. The Polar Star continues washing and is removing the hank very fast considering the character of the gravel. This claim cleaned up on Tuesday after a short run. From the quantity of amalgam we saw the superintendent cleaning yesterday we should conclude that the result was satisfactory. The Franklin, Boston, Snmmersett, Pacific, Central and Dunning claims continue washing.

Water Ditches.—Our water ditches hold up well. As we write they are conveying nearly a full head of water. It is expected, however, that in a day or two the Yuba will be so low that the Miner's ditch will be dry.

The Yankee tunnel is being driven with vigor. During the week ending last Saturday night, the tunnelers fired nine face shots and advanced 38 feet, being an average of 4.22 feet per shot.

SAN BENITO.

Antimony and Quicksilver.—Santa Cruz *Courier* July 21: The tunnel of the Salinas quicksilver mine has been carried in 125 feet, and a solid vein of antimony, 12 inches thick, has been struck. Veins of quicksilver run through the antimony and all over the face of the tunnel.

SAN DIEGO.

Banner District.—San Diego *Union*, July 20: Nearly all the mines are being actively worked. The people are all busy, and a cheerful feeling prevails. We may mention the mines now being worked as follows: The Medden mine, owned by Joseph Coyne and Murray, and leased by Messrs. Cooper, Clyde, Ellis and Smith, has just had a clean-up, averaging $65 to the ton. The Hidden Treasure, run by Brittain and Woods, has just cleaned up $90 per ton. Messrs. Bailey and Bralley, on the Kentuck, have lately had a crushing, and have cleaned up $50 per ton. The Hubbard mine has made a good showing. It is being worked by Messrs. Woodruff, Allen, Jones and Woods. They have recently had a clean-up, the ore running $35 per ton. The sterling old Ready Relief mine is now leased by Messrs. Shoup, King, McDowell and Edmunds, who will work it during the absence of Mr. Neyhart in the East. The last clean-up of this mine, just before the Fourth, averaged $35 per ton. At the El Dorado mine, Messrs. Murray, Atkinson and Robinson have lately had a crushing, averaging $50 per ton. This mine is owned by Mr. Courtney. It is regarded as an excellent property. Messrs. Pontney and Thomas Jones have discovered a new ledge, which has been patriotically named "76." They have taken out ore which runs upwards of $100 to the ton. Since January 1st there have been constantly employed in Banner district about 35 men, and they have taken out over $31,000. The average has been $120 per month to the man. This is certainly a good showing for our mines.

SIERRA.

Scales' Diggings.—Cor. *Mountain Messenger*, July 22: The water season this year was not much longer than usual, owing to the almost unprecedented heavy snow fall, causing the miners to lose over two months working time. All the diggings here, however, have yielded good returns. Boyce Bros. claims have paid exceedingly well this year. The gold could be seen in numberless places sticking out of the gravel. They have been rapidly opening the main channel, and the prospect for a rich harvest the next season is very promising. At the last clean-up of the Williams claims, the owners were happily surprised on penning out five instead of three thousand dollars, as was first anticipated. Williams and McChesney have gone below with their dust. No work is being done now at Poverty hill except on the Main tunnel company's tunnel (where two feet has been made during the past year) and some repairs in the mines.

Sierra City.—I believe that, as there are even now several claims which are worked with good advantage, there are undoubtedly others that well only for the searching picks of industrious prospectors to yield up to us again their hidden treasures. Without having any pretensions to being an expert in these matters, my opinion is, that miners in general are very easily discouraged, as they are easily excited, and having seen so many claims play out, they have lost faith in them, and either leave the diggings or don't work at prospecting with the will and perseverance they once had; but let us hope some big bonanze will yet be struck around our hills to relieve us from this lethargic condition.

SISKIYOU.

Mining Again.—Yreka *Union*, July 22: Mining has commenced again in the deep claims on McAdams creek, most of the claims having been to work for a couple of weeks. The miners were considerably later getting into the claims this year, on account of their being flooded with water last winter, and it took a long time to get the mines clear again. These claims paid very well last year, and there is no reason to doubt that they will do equally as well this year.

Prospecting.—We learn that a great many prospectors have fitted out at Sawyer's bar this summer, and gone prospecting for quartz and placer mines in the Salmon section. The mountains around there are almost alive with prospectors, and it will be something remarkable if some good mines are not found there this season. That section of the county is a fine field for prospectors—in fact, we know of no better.

SHASTA.

McCloud River Mines.—Cor. Shasta *Courier*, July 22: The McCloud river mines are attracting more and more attention daily. A considerable number of men are engaged prospecting the different ledges, and new ledges that have a fine appearance are being continually discovered. I understand that some parties have now gone to purchase a quartz mill, and will proceed to erect the same immediately in the neighborhood of Bivens' ledge, so as to thoroughly test the rock.

TUOLUMNE.

Mining Enterprise.—Tuolumne *Independent*, July 22: A mining expert, Mr. H. H Folinghy, of San Francisco, is here who is projecting a gigantic mining enterprise which, should his plans be matured and the theory which he advances prove correct, will create a new era in the mining interests of this county. He proposes through a system of shafts or inclines, or by tunneling, to develop what he terms an underground channel (subterranean river) which is believed flows in a southwesterly direction through the county. His theory is not new, as the same ideas were advanced years ago by scientific and practical miners who had become familiar with the geological formations embraced within the limits of what originally formed the several mining districts within the county. However, so far as our knowledge of what has been done in this respect towards proving the correctness of the theory, he is the first to have made an actual commencement in a practicable manner to demonstrate if or the fact of this much talked of underground channel existing. Mr. Folinghy has commenced sinking a shaft in Main gulch, on what was formerly known as the Cascade claim.

PLUMAS.

Ledge Found.—Plumas *National*, July 22: A short time ago two Spaniards found a streak of quartz crossing the road from Greenville to Round valley. The streak was about six inches thick, and they have run a tunnel into the hill about 30 feet and the ledge has "widened out" to about two feet. Ten tons of the rock was crushed, and yielded $57.50. This looks as though they had something which will develop into a valuable mine. That mountain seems to be a perfect network of rich quartz ledges.

Another Mining Venture.—We learn that O'Toole, Lathrop and some others have commenced operations and will put up machinery to develop the deep channel which is known to exist in the main canyon above Elizabethtown. It is the opinion of many old miners that this is the one that fed or furnished the Elizabethtown mines with their riches, and as long ago as 1856 an effort was made to open it. The tunnel run by the company was a long one, and was found to be too high. Several shafts were sunk from the tunnel, but each had to be abandoned before bedrock was reached, on account of too much water. One shaft got down into big boulders, and it was reported that a good prospect was obtained at the bottom. The present owners propose to sink to the bedrock by the aid of steam pumps and thoroughly prospect the channel. If they strike diggings a tunnel will be run to drain the ground. We believe this operation will be a successful one, and hope to see the new company strike it rich.

Change for Miners.—We heard an old miner talking about the country around Long valley the other day, and he expressed the opinion "that there were more good gravel mines in that range than would be worked out in the next 100 years." The same may be said of all parts of Plumas, and from the number of prospectors coming in, and the new locations that are being made, we should judge that the outside world was beginning to find it out.

Mine Sold.—We learn that Messrs. Green & Brewster, of San Francisco, have purchased the Gold Stripe quartz mine, on Wolf creek, of Mr. Augus McIntyre. The price paid was said to be a good one, but we have no figures. It is rumored that the new owners will put up a 40-stamp mill as soon as they can get the mine opened properly.

Big Chunk.—Not long ago, a Frenchman called "Big Larry" found a piece of quartz and gold in French ravine, a short distance below the Rich Bar quartz company's ledge, which weighed 64 pounds, and which was fairly "lousy" with gold. He refuses to have it broken up, and it is hard to tell how much it is worth, but it certainly is very valuable. We shall be glad when the company spoken of above get to work again. There is but little question that a little capital and well directed labor invested there would open a mine of fabulous wealth.

Nevada.

CORNUCOPIA DISTRICT.

The Mines.—Cor. Oakland *Transcript*, July 20: Most of our mining companies here are organized in San Francisco, or in your place, and sometimes great inconvenience is experienced by our different classes of business men, on account of the irregularity of pay days. All the money we get here is from the product of the bullion taken from the mines—and from the foreign corporations which are prospecting here. I hope no Oakland corporation will miss their regular pay day. That the mines in this vicinity are of inestimable value you would not doubt a moment could you once examine them. The Leopard is now shipping bullion regularly, and they are putting on more men every day. Their mill is in full blast, reducing about 25 tons per day, and although they are now working second grade ore, the bullion receipts come up to expectations. The Hussey, Panther and Alameda are working steadily. Of the latter I cannot say as much as I wish I could on account of the absence of Mr. Harry Harville, the superintendent, who is now in Elko on business—I suppose in connection with the mine—but from all that I can learn they will eventually have a good mine on their location. They are now down about 67 feet, are troubled with some water, but not enough to impede work. Everything indicates that they are in the right spot and will ultimately have another Leopard bonanza. There are undoubtedly many good claims on the same range, which are not yet developed at all, but will probably be this season.

ELY DISTRICT.

Furnace Meeting.—Pioche *Record*, July 18: The subscribers to the furnace enterprise met on the 17th inst. Mr. Bishop, in speaking of the resources of the camp, said: That this camp has placed in the arteries of commerce $60,000,000; spoke of the Raymond & Ely, Meadow Valley, Huhn & Hunt, Washington & Creole, Desdemona, Ward Beecher, Chief of the Hill, Havana, Ely mine, Chisholm, Clinton, Fer West, Highland mines, Bristol mines, Blind Mountain mines, as all producing plenty of bass ore and it became the duty of all business men as such and as financiers to build a furnace and give employment to 150 to 200 men, also to numerous men to develop and extract base ore. Mr. Bishop continued by showing that all mining camps had dull periods, and Pioche could not expect to be any exception; that until the Raymond & Ely and Meadow Valley were able to work below the water level the camp could not expect to see any better times; in the meantime people would starve if they did not stir in some way. Business as a whole was inclined to be stagnant. He stated that a responsible individual had agreed to build a furnace and put it in order to commence to run, for $5,000. That charcoal could be furnished for five cents a bushel, cheaper than what it was now sold at. He called on every one to subscribe, even if they could subscribe no more than $5. Mr. Bishop stated that he had started in on this business and was determined to see it through if he had to interview every individual in the town. He called on all to come up and subscribe at once.

EUREKA DISTRICT.

Rumors About the Richmond.—Eureka *Sentinel*, July 15: There are some pretty well authenticated rumors afloat to the effect that the Richmond company will suspend operations on the first of the coming month. Both the mine and the reduction works are to be closed down for an indefinite period. The great decline in silver is assigned as the reason for this step. How long work is to be suspended must, of course, depend wholly upon circumstances. We hear among other things that the management was inclined to continue in active operation provided all of the men in the employ of the company would stand a reduction of 50 cents a day each on their wages. Such a proposition, however, was not made to the men, for the simple reason that it was feared they would not accept the terms. In the meantime it is mooted by the head officers of the company that they expect that after the works shall have been closed down for a time the men will readily consent of their own accord to work for reduced wages, possibly $3 per day. At all events, it is asserted by those who should know that the Richmond, when once closed down, will not again resume until there is an advance in silver or a reduction of wages. There has been some talk among the managers of the company about attempting to secure a reduction of wages while the present low figures for silver shall rule, with the understanding that the price of labor should be advanced to the old rates whenever the silver market would warrant the change. It is hardly probable, however, that such an arrangement could be effected with the miners, for the simple reason that they well understand the difficulty of getting wages advanced when once they shall have been cut down. The determination of the Richmond to close down gives our town a bad name in a money aspect, for this company has given employment to a greater number of men during the last few months than all the others combined. We can see nothing but a dull season ahead of Eureka; not because our mines are not as good as ever before, but for the reason that silver is at such an enormous discount in the markets of the world. The most that can be hoped is for an early advance in silver to such a standard as will permit the working of our mines as in the past.

REESE RIVER DISTRICT.

Landen Hill Mines.—*Reese River Reveille*, July 22: Aside from the extensive and valuable mining properties of the Manhattan company, there are other companies working mines on Lauder hill, which are beginning to loom into importance. The Pacific mining company (limited) have now two shifts of men employed in prospecting the lower levels and in extracting ore, and developments are favorable to the employment of a largely increased force at an early day. The King Alfred company have completed their shaft to a depth of 300 feet, and will shortly commence the opening and development of their ledges, of which quite a number were cut by the shaft while it was being sunk. The mining outlook for this district was never so bright and encouraging as at present—barring the drawback of the discount on silver—and there are many reasons to hope that this will shortly be overcome, and that Austin will, before another year has passed, take rank among the largest silver producing districts in the State. We hardly like to say how rich and extensive we think the mines of Lander hill are destined to be, because so many erroneous reports have been circulated about the amount of silver to be produced by Nevada to have an injurious effect on the price of that metal, and the *Reveille* don't aim to influence the silver market for the worse—and if we should tell just how rich our mines are it might create a panic in the London silver market. Results speak louder than words, and if our mining industry should not be too seriously interfered with by a low price for silver, ere another year shall have passed the world will learn from results that the mines of this district are among the richest and most permanent on the globe.

WASHOE DISTRICT.

Savage.—Gold Hill *News*, July 20: The new pumping engine is in place. The pipes are all fitted ready to turn on steam. A portion of the pumps have already been placed in position in the shaft ready for use, and the placing of the others is going ahead at a very favorable rate of progress.

Sierra Nevada.—A new station is being opened at the 1750-ft level for the purpose of commencing the prospecting of the ledge at that point. On the 1500, 1250 and 1000-ft levels the prospecting drifts are being pressed ahead at all points.

Crown Point.—The south drift on the 1700-ft level has penetrated to within a very short distance of the Belcher line without developing anything of value. On the 1600-ft level the east prospecting drift is still pushed vigorously forward.

Dayton.—The flow of water at the bottom of the shaft has considerably retarded the progress of the sinking.

It seems to he again gradually decreasing in quantity.

HALE & NORCROSS.—Taking out tha old pumps and enlarging the stations, preparatory to putting in the new, is going rapidly forward.

WARD.—The south drift in tha Julia is gaiting well advanced toward the Ward line, tha face of tha drift being still in quartz and ore of a very favorable character.

KENT.—Sinking the main shaft is making good headway.

CON. VIRGINIA.—Sinking the shaft to the 1550-ft level is being pressed ahead with all possible vigor. The use of the shaft for tha purpose greatly interferes with the extraction of ore and the work in the other portions of the mina. It will take several days yet to completa the work and put the shaft in good hoisting condition. In the meantime the delay in extracting ore has been taken advantage of to advance all the proapecting drifts heretofore stopped in the southern portion of the mine, and thus prospect and complete tha ventilation of that entire section. On the 1700-ft level the north drift from tha Best & Belcher has reached a point opposite the south winza sunk below the 1550-ft level, and a side drift has been started to connect with the bottom of the winza for ventilation purposes. The drift is fearfully hot and can make but slow progress. The new cylinder head was placed on the engina at the C. & C. shaft yesterday, and an initial cylinder added to make the engine a compound low pressure instead of a high pressure, as heretofore. In the meantime the water is being kept down by a constant use of the tanks. The shaft appears to be draining the entire surrounding country, having even dried up the water as far south as the Gould & Curry shaft.

CALIFORNIA.—Daily yield, 700 tons of ore, keeping the mills running and crushing up to their full capacities. The ora bressts are both looking and yielding well. The mina is being gradually opened in the most systematic manner possible and promises a rich yield of good ore for many months to come; in fact it is hardly yet touched as regards the extraction of the ore bodies already thoroughly prospected and known to to exist down to the 1650-ft level. On the 1550-ft lavel an opening has just been made to commence the extraction of ora. The same is being done on the 1600-ft level. Above the 1400-ft level the enlargement of the winze in the ora body, extending up to the 1300-ft level, is showing the quality of tha ore body to ha of a much richer description than was ever expected that it would be. The entire loss of the C. & C. shaft for the past two weeks has worked a great disadvantage in the extraction of ore and the development of the lower levels of the mine. The erection of the new battery mill near the C. & C. shaft is steadily progressing.

JULIA.—The south drift on the 1600-ft level is making steady progress to the southward, tha faca of the drift showing some very fina quartz, tha ledge continuing to improva as the drift advances. During the first portion of the week cutting out for a pump station was commenced on the east side of the shaft at the 1700-ft leval. The workmen had only penetrated the ground a distance of about four feet when a fine body of quartz and ore waa struck. This body of quartz has been penetrated for a distance of 16 feet, and is one of the most encouraging developments yet made in the mine. It is entirely distinct and separate from all the quartz before found in the mine. It has a regular dip of about 45 degrees to the eastward, and tha quartz and ore is of the pure Comstock character. Highly encouraged by tha extent of the development on the 1700-ft level, Superintendent Thayer has started a drift east on the 1800-ft level to cut and prospect the ora vein in that direction.

OPHIR.—Daily yield, 280 tons of ore, keeping the mills all steadily running. The ore breasts show well on the 1600-ft lavel, both north and south. Driving the north drift on the 1600-ft level, toward the Mexican lina, is making favorable progress. Retimbering and preparing tha 1700-ft level for mora rapid prospecting operations is going steadily forward. Work on the main inclina is being pressed at three different points with a strong force of workmen. The mine is showing well at all points, and it will not take very long now to complete the main incline down to the 1700-ft levcl, ready to than take a naw dapartura, and ascertain what there is of vaiua at and below that point.

BULLION.—The upraise from the 1700-ft level and the winze halow the 1400-ft leval hava approached to within a very few feet of each other, last evening tha force of blast sat off in tha winze having driven the powder amoke through the interstices of the rock into the upraise halow, so that it cannot take a much greater laugth of time to complete the connection. Owing to a necessity for the use of all the air obtainabla on the 1700-ft level, the Alpha drift on the 2000-ft level has been discontinned for the time. It will be started up again just as soon as the air connection on the 1400-ft level is completed.

IMPERIAL CON.—Sinking the north winze below the 2000-ft level is going steadily forward, the bottom still in ore, though not of so rich a character as much of that already passed through in this winze. At the dapth of 100 feet halow the 2000-ft level a drift north has hean started. Thia drift is now in a distauce of 20 feet in favorable ground. It is being run west of the ore vein, and therefore does not touch the ore body in the bottom of the winze.

JUSTICE.—Daily yield, 70 tons of ore, keeping the Excelsior and Woodville mills running up to their full crushing capacities. Tha sherman mill has been obliged to shut down a few days for repairs, but will ba in good running condition in a day or two more, when it will resume orushing as before. Tha ore breasts between the 400 and 600-ft levals are showing splendidly.

YELLOW JACKET.—The north winze on tha 1940-ft level is down to tha 2040-ft level. A station has been completed at that point and a drift started to connect with the drift now being run from the east winze.

CHOLLAR-POTOSI.—Daily yield, 75 tons of ore. There is no change of interast in any of the ore breasts on the old upper levels of tha mine. The new and powerful hoisting engina is in place and will be ready to steam up in a very few days. The erection of the pumping machinery is going steadily forward.

AMAZON CON.—The combination shaft of the Amazon and Glasgow companies has now attained a depth of 356 feet. It is thoroughly timbered and is in excellent working condition to that point.

BELCHER.—Daily yield, 350 tons of ore. The erection of the new pumping machinary is being forwarded at a very rapid rate. The steam pipes are being connected with the powerful hoisting engines.

OVERMAN.—Sinking the shaft is making fair progress. The foundationa for the new pump are about completed.

BALTIMORE AND AMERICAN FLAT.—Sinking the main incline is going steadily forward. A strong flow of water has been encountered during the past two days, which is being kept under control by the pumps.

WEST BELCHER.—All of the prospecting drifts are being pushed ahead with all possible dispatch. The ore chutes on the 350-ft level will be in readinesa for tha reception of ore by to-morrow. As soon as these ore chutas are completed, it is the intention to commence hoisting ore from that portion of tha mine for milling. If nothing unexpected happens to prevent, milling tha ore will be commenced in a very few days.

MEXICAN.—The face of the north drift on tha 1465-ft level is again showing much better prospects of quartz and ore.

NORTH CON. VIRGINIA.—The mason work on the foundationa is completed, ready for the reception of the new machinery as fast as it arrives on the ground. The pump station and hob pit at the 900-ft level is about completed. The drain tunnel is steadily advancing eight feet per day.

HERALD.—The incline on the veln is down 55 feet, showing 18 inches of high grade ore—black sulphurets, chloride and native silver. Tha ledge is constantly improving in width and quality of ore.

SUPERIOR.—The flow of water at the bottom of tha shaft has been overcome and the sinking resumed in good earnest. The bottom is in soft ledge matter, carrying streaks of fina ore. The prospects of the mine are very encouraging. The new pumping machinery will be up ready to run in a very few days.

KOSSUTH.—The main south drift on the 350-ft level is being pressed vigorously ahead, the face in quartz and ore of better description than has been encountered for some time past.

PHIL SHERIDAN.—Sinking the shaft is going steadily forward. The flow of water at the bottom is at times quite strong.

EUROPA.—The face of tha north drift on the 500-ft level has passed into very hard blasting rock. The flow of water is steady.

NEW YORK.—Work haa been resumed in all parts of the mine in good earnest. We now confidently look forward to a steady, uninterrupted development of the mine.

EAST JUSTICE.—Gradiog for tha building and machinery has been commenced and will soon be completed.

NIAGARA.—Sinking the main incline is going ahead at a favorable rate. The bottom is still in soft ground, full of small veins of quartz and ore of a highly encouraging character.

SUCCOR.—A large force of workmen are employed in preparing for tha reception of the new pumping machinery.

ROCK ISLAND.—The flow of water is still strong at the 350-ft level. The drifts have been repaired and put in working order.

ALTA.—The erection of the naw machinery is going favorably ahead. It is confidently expected that everything will be in readinesa to start up by the first of August.

TAHOE.—Sinking the shaft is making good progress, the rock in the bottom being softer, with a slight seepage of water.

BROOKA.—The new machinery is expected on the ground during the coming week, and as soon as it arrives and can be set up work in the mine will be resumed.

CALEDONIA.—Tha pumps again have the water under control, and the sinking has been resumed.

OOULD & CURRY.—The repairs to the shaft are rapidly approaching completion.

PROSPECT.—Shaft down 400 feet. An opening for a station is being provided for at that point.

TWIN PEAKS.—By reason of tha large amount of grading being done for the surfaca works, sinking the new shaft is discontinued for a few days.

NEVADA.—Main drift cross-cutting the ledge in a westerly direction, with the face all in solid quartz, with streaks of good ore. Ledge shows wide at this point.

MITCHELL.—Winze making good downward progress, with the bottom in low grade ore. Prospects excellent.

SUTRO TUNNEL.—Face of header in harder rock than last week, and growing harder, requiring to be blasted.

(Continuad on Page 84.)

Leaching Process.

A correspondent of the *Bulletin*, writing from La Paz, Lower California, says:

Mr. Brooks, now sole owner of the Hermenegera company's mines, has 250 tons of silver ore in town, awaiting shipment to Europe, that will essey $150 to the ton. The prospects of this company ware never before so flattering as now. The lixiviating process hes proved a complete success, and tha company heve thrown ont their pans and barrels, thus seving a great amount of power. The adoption of this process has saved the company at least $200 per dey, while it has materially increased the yield of the ore. The fineness of the silver that never before averaged more then 760 fine, is now nearly pure, averaging 970 fine. No quicksilver is used for the process. The ore does not require to be crushed as fine, neither does it require as much roasting as when reduced by the pen process. No expensiva machinery, constently wearing out; only a tew wooden tanks are reqnired. Its adoption in Neveda wonld not only save millions anunally in expensas, bnt would increase the yield of the mines.

The Molege copper mines are yielding immense quantities of high grade ore, all of which goes to Europe. The American ship *Southern Cross*, now here taking in orchilla, will sail in a few days for Molege to complete her loading with copper ore. Perhaps Uncla Sam will begin to think he had tbe wool pnlled over his eyes when he ellowed the British Minister in Mexico to chisel him ont of Lower Californie, that England might continne to enjoy a monopoly of the trade of the west coast of Mexico. This trade of right should belong to us, and would hut for tbe supineness of our legislators at Washington and the merchants of Alta California. A reciprocity trade with this country would work great benefit, especially to Mexico, developing many new industries.

Stump Removing With Dynamite.

We reed in one of onr interior exchanges of the trouble which was experienced in removing some large redwood stumps, some times 20 kegs of powder being exploded nnder a single stump. Our memory is thus freshened by accounts in our English exchanges of a public trial which was made of tha recently iuvented explosive, dynamite. Although this substanca bas been in use for some little time as a blasting agent, wa are not awara that it has been tested for farmers' use in stnmp pulling. A number of experiments were made in the presence of a committee of farmars. Several stumps which had been digged up were split into stove wood with a few ounces of dyuamite. The experiments were concluded by blowing bodily out of the ground a large intact oak root; this was done by meking a crowbar hole between the ties or manor roots and inserting a charge of dynemite under the center. On the shot bsing fired, the root was lifted completely from its bed.

ELECTRIC TIME STANDARDS IN PARIS.—There is in Paris a committee for the automatic regulation of the pnblic clocks. This has appointed a sub-committee, MM. Le Verrier, Tresca, Breguet, Wolf and Du Moncel, to take measuras for tbe constrnction of four standard time measnres, to be set np in Paris at tha Palais de la Bonrse, at the Arts et Metiers, the Observatoire, ths Western station and St. Lazare (right bank).

The Engineer.

The East River Bridge.

The Naw York *Tribune*, in spseking of this enterpriss, says: The work upon the Brooklyn bridge seems to many to occupy much mors tima thau is necessary, and it is difficult for them to comprehend the vestnsss of the undertaking. But ons visit to the ground, a glance et the plans end drawings, and a few minutes' conversation with the angineer in cherge, will convince the most skepticel of the colossal character of the enterprise, end that there is no unreasonable delay. The immense blocks of stone, weighing four or five tons or more, swinging in the air as they are liftad to snch a dizzy hight; tbe incessant creeking of the derricks which lift them; the shouts of the foremen giving their directions; the constaut ring of tbe mason's trowel, end the buzz consequent npon the assembling of such e large number of busy lehorers and the working of so many machines, will carry tha convict on, es tha eye rests npon four enormous structnres —the towers end anchor piers—thet much time is necessary to tha completion of a work so gigentic and important. The deteils given by the engineer show thet the work is carried on from day to day with greet cere and exactness, and that it would be almost impossible to hasten what ought to be done slowly and with care to meke success sure. The preparatory work on the masonry of the different piers is now drawing to a close, end the snspension of the temporary bridge, it is now expected, will be begun ebont tha first of Angnst. The manufecturing of the cebles hes been given to a Brooklyn firm, end it is supposed that the work will be ready for them by the time that they ara completed. It is estimeted that it will take about two weeks longer to get the masonry in readiness, and that by the end of the month the derricks will be raised and a part of tha necessary machinery erected npon the tops of the piers. A foot bridge will he thrown across the river about 200 feet above the weter. Upon this tbe workmen will pess back and forth, suspending end erranging the parts of the temporary bridge which will precade the finel superstructure, and looking very much lika spiders npon a single threau, weeving a tremendous web. When the cebles are stretcbed they will be festened to the mein piers and continued to the enchorage piers, where they will be mede fast to immense cheins bnilt into the masonry. These cbains ara in themselves a marvel of construction. They are called chains because composed of links, but each link is nearly 15 feet long, three by nine inches squere, and there are from eight to ten of them, lying parallel and side by side in each chain, bolted one to another. There ere four sucb chains, heving in ell 856 links or bars, the total weight of iron being 1,000,000 pounds in each enchorege pier. Each one of these piers covers six city lots and contains nearly 30,000 cubic yards of solid mesonry. In all the pisrs the blocks of granite are laid with narrow spaces between them, which are filled with concrete well beeten down, leaving no cevities, and forming a mass of mattar, when the concrete has hardened, as remerkable for its solidity as its size.

A Great French Canal Proposed.

Frenoh enterprise is not content with the glory which the genins and energy of M. de Lesseps have reflected on his country. Frenohmen ara bent on thoroughly reclaiming for themselvas the pre-eminence they enjoyed in the seventeenth centnry for inventions to facilitate interconrse between remote localities. The project for securing throngh water commnnication hetwean the British channel and the Mediterraneen is, we are told, sariously taken np in Franca. Delegatas from chambers of commerce have formed a oommittee to advance tha proposal; and, whatever we may think of the headlessness of French speculators on the Paris Bonrse, the caution and prndence of the French merchent are established. Men of bnsiness, like the commercial classes among onr neighbors, as distinguished from the bangers-on at the centers of specnlation, do not wasta their time in idle inquiries or pladge tbemselves recklessly to ambitious undertakings; and vast as is the extent of territory to be traversed by such a water-way as that proposed, a little examination of the French map shows that some chennel of the kind is by no means difficult of constrnction. Great highways of commerca are provided by nature in the mighty rivers that traverse the country ou the west and on the south. The task of the engineer is to connect some two of these channels, so as to form one great cenal.

Already for purposes of internal commerce much of this work has bean done. The chief French river discharging itself into the English channel is the Seine. This river is nev agable in one sense or another for 340 miles, and for 100 years past has been connected with the watarshed of Mediterranean France by means of the Canal de Bourgogne. This canal runs from tha Yonne, one of the most important of the sontheastern tributaries of the Seine to the Saone, and thence tha stream of commerce is carried nearly dne sonth, by Lyons, into the Rhone and on to the Mediterranean. The proposal of the engineers is to widan and deepen the channel just providad, so as to secnre a complete water-way from Havre to Marseilles. The Minister of Public Works thinks the estimate of the committee, thet the cost of providing such a pessage for vassals of 200 tons burden would only be about two millions end a helf, must be consfdared sanguine; but his view ssams to be tbat there is no resson why such a work, if its practicability were once demenstrated, might not be completad with advantege at a mnch greeter expenditnre. In the present case ths difference of level doss not seem likely to prove of serious consequence except at Lyons, the jnnction of the Seona and Rhoue. Even thare ths enginssring skill which proposes to conquer tha difficulties occasioned by the shellows of the Saone will bsfore long provide against the sudden descent to ths Rbona, and were the wey onca open for vessels of considerable burden, the necessity of transshipment at Lyons would probably be soon obvieted.

Hell Gate Excavations.

Generel Jobn Newton, of the engineer oorps in charga of the Hell Gate operations, stetes that the explosion at Hellet's point certeinly will not take plece until September 1st, et the earliest. Although tha work of excevation is completed, the contracts for explosive materiels heve not been filed. The battery for exploding the charges will be placed near the edga of the pit; the operating room will ba about 350 feet from it. The explosive meteriels nsed will be nitro-glycerine and its various compounds, in cherges not exceeding ten pounds each, and pleced at points wbera they will be most effective, differing in this respect from the explosion in San Frencisco harbor, where the powder wes messed together. General Newton explained that the weter not only would act as a temping or covering, preventing by its weight an intense report end shock, but thet the enormous emount of beat genarated from the liberated gesas would spend its force in vaporizing tha weter, thus lessening the chences of merked egitation on the surfece. It is not expected thet much, if eny, rock will be thrown above the water, exoept where the bedrock may heve weak spots or seams. In such cases the explosion will have more effect, and throw the rock some distence in the air. The object of dispersing the nitro-glycerine is to effect a rending of the rook, so that it can be more effectually broken np by after blests. The works cover three acres, and the emount of debris which will have to be removed is estimated at not lass than 30,000 cubic yards, requiring about two years' further work.

General Newton expressed as his opinion that the scientific delegations which have epplied for the privilege of making determinations in reference to the rapidity at which sound travels in eerth, eir and weter, will be disappointed in the results of very many of their calculations, especially those which propose taking stations at some distance from the work. He anticipatss no remerkable report or violent concussions, owing to the distribution of the nitro-glycerine though so large en area end in such small quantities. The effect of the blast, to use the General's own words, will sound very much like "an explosiou in a tnb of mnsh!"—*N. Y. Tribune.*

Strength of Rail Joints.

At a late meeting in the hall of the Manchester (England) institution of civil engineers, the following paper was read: The introduction of the plain fish-plates now ordinarily used was a great advantage at the time to the railway world, mainly for preventing accidents by keeping the rails in position laterally, but since speed has increased, and weight of engines also, the plain fish-plates have been fonnd deficient in one vital respect, viz., that of giving the rail joint the same stiffness and elasticity as the solid rail, so as to obtain one continnous road. As the stiffness of the joint with plain fish-plates principally depends npon the section of the rail and the fishing angle, often only a third of the stiffne s of the joints is afforded as compared with that of the solid reil, but even in the best ceses hardly more than half the rail stiffness is obtained. Tbe introdnctiou of steel rails necessitating the abolition of notches in the rail flange as destructive to the strength of the rail, has led to the design of the Frenoh or German fish-pletes (*eclisse arret*) adepted for suspauded joint, but requiring base plates at the joint sleepers. Evan with this plan tha experiments show only two-thirds of the strength of the solid rail is obtained, and as only one fish-plate of this description is generally nsed, there is still less stiffness. Several other plans exist, more or less complicated, but as none hava yet given the same stiffness as the rail, combined with cheapness in cost and maintenance, they have not come into general use, and the weak joint, with ordinary plain fish-plates, is still generally adopted. This has given rise to the design of the dsep fish-plate for flange rails, similar to what has been already adopted for donble-headed rail sections on many English railways. By using one fish-plata of this kind on tha bolt-head side of the joint a metarial improvement is obtained, inasmuch as such joint possesses 80 per cent. of the stiffness of the solid rails. As ragards the use of two deep fish-plates the experiments are conclusive as to the great increase in stiffness, being aven stiffer than the rail, both as regards strength and elasticity. Experimeuts on two feet supports show a load of 35 tons with more deflection on tha rail than on the joint, proving a slight superiority of the joint, evan in this respect best shown hy the fact that the bolts were not the least hurt after snch an extremely heavy test.

Silver in Australasia.

The Grahamstown (N. Z.) local paper says: It would seem that this colony is about to add to the list of its productions the article of silver. This metal has lately been produced in immense quantities in different places—to such an extent, indeed, that it has become a "drag" in the market, and the value of silver is likely to be permanently reduced. That, however, probably matters little to us. The price of silver per ounce is not likely to be much affected, and our New Zealand mines bid fair to produce the metal in such quantities as to be of importance to the colony. A few days ago we stated that Mr. Masters, of the Thames, had brought up from Nelson two and a half tons of the ore, which he was about to submit to a fair test, producing from it the metal as it will be sold. Mr. Masters' skill as an assayer is fully acknowledged, and we are sure that he would not make statements which might injure his professional reputation if they turned out fallacious. Repeated assays of ore have been made, and the conclusion drawn by Mr. Masters is, that the reef will produce 300 ounces to the ton of silver ore. Some pieces, such as those shown in Messrs. Morrins' window yesterday, will produce 600 ounces to the ton, and Mr. Masters believes that he is on the safe side when he makes an estimate of 300 ounces. Mr. Masters is now erecting blast furnaces, in which the ore will be reduced by smelting, for which it is exceedingly suitable. It is believed that the copper in the ore, supposed to be about 18 per cent., will pay nearly all the expenses of working, leaving the silver as profit. Silver is at present worth about 4s 4¼d per ounce, so it would seem that each ton crushed will yield a profit of £60. It will be Mr. Masters' endeavor, in treating the ore, to produce a commercial article having about 1,000 ounces of silver to the ton, and worth about £250 a ton. This article will be in pieces of about one cwt. each, which will not require bagging, and each block can be strictly assayed. The furnace will be completed in about six days, and a most practical test can then be made, and a method of working established. We quote the following particulars as to the mine and company from the Nelson *Evening Mail:* "To satisfy numerous inquiries respecting the mine at Richmond hill, in the Para Para district, we are glad to be enabled to present some information derived from an authentic source. The Richmond Hill mining company, which was registered under the Joint Stock Companies act about two months ago, has been formed to work 320 acres of ground leased from the crown, seven miles from Collingwood, for minerals other than gold, silver being the main object, though lead and copper are also present in the metallic veins in such large proportions as to make it probable that their extraction will add materially to the profits. The lode richest in silver on the lease shows itself a few feet above the summer level of the Para Para river in a deep gorge which the latter has cut for itself through high cliffs of soapstone down to the harder formations, gneiss and clay slate, which form its present bed, The central, and silver-bearing portion of this lode, where it crops out, is about three inches thick, but, in proportion as it is sunk upon, it is found to widen out, as is usual with argentiferous veins. The general manager of the company, Mr. John Masters, who brought with him from the Thames the very highest character for metallurgical skill, has also undertaken the direction of mining operations, and since he commenced sinking on the lode has seen reason to express himself in sanguine terms as to the prospects of the mine. The nominal capital of the company is £18,000, in 1,800 £10 shares, of which 1,500 have been issued. Three-fifths of the shares are held, and three of the five directors reside in this province, the remainder in Auckland."

Works in the Illinois River.—The Illinois river is now being improved on the slackwater system. The *Engineering News* says: "Five dams will be required from Peru to the mouth, to secure seven foot navigation. The locks will be built 350 feet long and 75 feet wide, allowing of the passage of boats of 300 feet length and 72 feet width. One dam at Henry is now completed, securing the desired navigation for a distance of 25 miles. A second at Copperas creek will be completed during the present season. This dam will give 60 miles additional slackwater. When the five dams are completed no doubt the Illinois canal will be enlarged to corresponding dimensions. The length of the Illinois and Michigan canal is 96 miles. Of this, three miles is the Chicago river, which will need no enlargement; 33 miles from Bridgeport to below Lockport will need enlargement as a canal; the remaining 60 miles of canal will probably be abandoned, as the upper river can be improved on the same system as the lower river. The total lockage is 145 feet. When this improvement is complete throughout its entire extent the largest class of Mississippi boats can make the harbor of Chicago."

A Steam Velocipede.—A Berlin mechanician has invented a steam velocipede which is said to answer admirably. The engine is heated with petroleum, and being placed on the two back wheels, does not interfere with the convenience of the driver.

Statisticians estimate that there are now at work some 200,000 steam engines, with a total power of 12,000,000 horses, corresponding to the muscular strength of 100,000,000 men.

Useful Information.

A New Resin.—A process has been discovered and patented by Prof. Walter P. Jenney to utilize coal tar and convert it into a resin resembling shellac somewhat in properties and appearance, and possessing many new and valuable properties, which indicate that it will soon take its place among the resins and varnishes in the market. This new resin is dark garnet red in color; when bleached it is a fine golden amber; is tasteless, odorless; fuses at a higher temperature than shellac, and is insoluble in dilute acids, but dissolves in concentrated sulphuric acid; it is unattacked and insoluble in alkalies; even fusing caustic soda has no action on it. It is soluble in oils, coal tar, naphtha, in benzole, chloroform, ether, bisulphide of carbon, and in petroleum naphtha, but not in alcohol or water. When made into a varnish with suitable solvents, it leaves on drying a brilliant and permanent film, which shows a remarkable property, and not the slightest tendency to crack off; a thin coat of it renders cloth or paper water-proof as rubber; in fact, it dissolves rubber either pure or volcanized. For japanning tin or ironware, it is even superior to shellac or linseed oil alone, the surface being hard and wonderfully pliable. On tinware it produces, with linseed oil, a beautiful golden enamel, which a few hours' baking in an oven makes fine and adhesive.

Glass from Blast Furnace Slag.—We have lately had an opportunity, says *Engineering*, of examining several specimens of glass manufactured under the patent of Mr. Bashley Britten. The process consists in using the slag from iron furnaces in its liquid state direct from the blast furnace. The slag is conducted while in a liquid state into a tank holding about 15 cwt., where it is mixed with other materials, and in an incredible short space of time, as compared with the ordinary method, glass is produced. This glass is acknowledged by the workmen to be of an exceedingly soft or plastic nature. It is perfectly acid proof and capable of use for all purposes for which the best bottle glass is suitable. It cuts readily with the diamond, and is available as rough plate for roofings, skylights, greenhouses, roofing tiles, and for many other uses from which glass, as heretofore manufactured is, on account of its cost, necessarily shut out. Specimens have also been produced of this glass colored brilliantly, and suitable for the purpose for which colored glass is employed. A private company has been formed and will shortly be registered with a capital of £200,000, for carrying out the manufacture of glass under this patent on an extensive scale.

British Mining Statistics for 1875.—The reports of the Home Office of the inspectors of mines throughout the United Kingdom for the years 1874 and 1875 have just been issued. The whole produce of coal during the year was 133,306,485 tons, compared with 126,590,108 tons in 1874. The production of fire clay was 1,932,294 tons, compared with 2,067,791 tons in 1874. The yield of ironstone was 12,018,594 tons, against 11,693,186 tons in 1874; and the produce of shale (almost wholly in Scotland) was 442,940 tons, contrasted with 362,747 tons in 1874. These figures show an increase of 6,716,377 tons of coal, 325,508 tons of ironstone and 80,193 tons of shale, and a decrease of 135,497 tons of fire clay. This immense production was the work of 535,845 persons, whilst the number so employed in 1874 was 532,829. Of these 427,017 were employed underground, and 108,282 above ground, as compared with 428,611 and 110,218 respectively in 1874. Of these, 11,507 were under 13 years of age, 10 of them being females. In 1874 the number under 13 was 12,816, of whom 22 were females. The total number of females employed was 6,504, whilst in 1874 the number was 6,899. None of these were employed underground.

A Suggestion to Owners and Users of Steam-Power.—Accidents arising from the entanglement of some portion of an operator's garments in a swiftly revolving shaft, are of too frequent occurrence in large manufactories, and of a distressing or fatal character. Many suggestions have been made, from time to time, to prevent or at least lessen the chances of such accidents. One of the simplest methods of rendering these casualties impossible, without introducing the necessity of constructing a railing or fender about the moving piece in dangerous places, is to cover the shaft with a loose sleeve along its entire length. This may be made of sheet-tin or zinc, and to be removable if desired. It should be covered within and at the ends with leather, to prevent noise. Arranged in this manner, the friction between it and the revolving shaft would be sufficient to cause the sleeve to rotate with the latter; but in the event of any decided resistance being brought to bear upon it, as in case of the entanglement of a workman's garment, the sleeve would at once be brought to rest and permit of extraction without accident. The same idea of loose covers may be applied to cog-wheels or pulleys, and prove an invaluable protection against loss of life or injury to person.—*Manufacturer and Builder.*

Red Ink.—The following recipe for a beautiful red ink is given by Metra, of Paris: Dissolve 25 parts, by weight, of saffranine in 500 parts warm glycerine, then stir in carefully 500 parts alcohol and an equal quantity of acetic acid. It is then diluted with 9,000 parts water, in which is dissolved a little gum arabic.

Experiments on the Fading of Colors.—It has been observed by Kœchlin that woolen cloth dyed with indigo had its peculiar blue color notably diminished by being exposed to a freezing temperature. According to some experiments made by Goppelsrader, this discolorization is due to ozone present, which acts at temperatures below zero, but only when the tissue was wet. Cochineal reds on wool seem to lose their brilliancy when exposed to the action of ozone for eight days. Aniline black was unchanged, but aniline brown on cottons was turned into a yellowish brown. Magenta, aniline blues and violets, and iodine greens were unchanged, as were lakes and strong colors, as Turkey red. Ozone seems, however, to have in some instances the property of developing and intensifying certain colors, more especially the aniline blacks.

The Right to Demand Overtime.—The right of an employer to claim overtime work from a workman has been established in an English court. In the case the plaintiff stated that in October of last year he was engaged to work at the Darlington forge as a metal turner, and he remained there till May 24th of the present year. On that day he was told by one of the clerks that he was to go back in the evening and work overtime; but he left off at five o'clock as usual, and did not return until six o'clock on the following morning, when he found that his board was stopped. On making inquiries as to the reason for this, he was informed that it was because he did not return to work on the previous night as desired. He was not allowed to resume work again, and hence the present claim. It was stated for the defence that there was no wish to deprive the plaintiff of any wages that might be due to him, but the present claim was defended on principle. It involved the important principle of whether they could not, when it was required, compel their men to work overtime, unless they alleged reasonable excuse for refusal. The judge held that the plaintiff had tacitly agreed to work overtime before he left, and as he had failed to do so, and was without reasonable excuse for the failure, judgment was given for the defendants with costs.

Grape Refuse Vinegar.—Where grapes are made into wine, a fine article of vinegar can also be produced. Take the stalks of the grapes, and the skins and seeds, and let them heat in a vat or tub for four or five days; then to about every 30 pounds of the refuse, add four gallons of water, and stir it up well. Repeat this process three or four times a day for two days, then strain or squeeze out the liquor into a cask or tub, and dip a slice of bread into a teacupful of yeast, and add the whole to the liquor. Let it work until it ceases to hum, then cover the bung hole with a bit of wood, and let it remain until well soured, which will be in a few days, if the weather is warm. Then put it into a cool cellar, and if it looks a little muddy, mix a quarter of a pound of isinglass, with just enough cold water to cover it; let it stand ten minutes, and then turn over it a pint of boiling water, and let it boil until it is dissolved, and turn it into the vinegar. In a week or so it will be perfectly clear, and can be kept tightly bunged up.

Good Health.

Guard Against Contagious Diseases.

The following excellent practical directions for combating infection and preventing the spread of the "catching" diseases, such as small-pox, measles, typhus, scarlet fever, etc., embodying the measures recommended by eminent medical authorities, may be adopted with all confidence as suitable and efficient:

House Ventilation.—Keep rooms and passages sweet by opening windows and doors for the admission of fresh air. A fire with windows open greatly promotes ventilation. The burning of coffee or sugar also enhances the effect of ventilation.

Drinking Water.—See that the water pipes are clean, and in every case filtration is a very desirable precaution.

The Sick Room.—Remove bed curtains, window hangings and carpets. Use ventilation continuously, supplementing by the burning of coffee, sugar or with disinfectants, sprinkled from time to time on the floor, and inhaled into the air by means of a spray-producer. Place a dish or soup plate containing disinfecting solution underneath the bed occupied by the sick. Empty utensils as speedily as possible, and on replacing them in the sick room, throw in some disinfecting fluid. To all water used for cleaning, washing and scrubbing, add a small quantity of disinfecting fluid. Keep within reach of the patient a basin similarly charged with disinfectant for him to spit into, and have close at hand a tub or pail of diluted disinfecting fluid, into which immediately throw any article of clothing removed from the patient. Instead of a pocket handkerchief, let him make use of small pieces of rag, which are to be burnt after use. Hang outside of the door or room, from jamb to jamb, a sheet or old counterpane, and keep it moistened with disinfecting solution.

Infected Clothing or Bedding.—Linen and woolen articles, as admit of washing, on being removed from the patient should be plunged for 24 hours in a tub of water, diluted with disinfectant, and immediately washed afterward, which can be done with impunity. Cloth, clothes, mattresses, beds, pillows, etc., in the absence of a public disinfecting oven or room, are to be disinfected by exposure in the open air to the sun, if possible, or in front of a large fire, and thoroughly smoked by burning coffee, sugar, or other aromatics.

Nurses and Attendants.—Woolen dresses are to be avoided; and the preference given to washing materials. Prevent contact, as much as possible, between attendants and the inmates of the house. After handling the sick, or things connected with them, let the nurse be careful immediately to wash his or her hands in water impregnated with disinfectant.

The Patient.—As soon as may be admissible, anoint the surface of the body, the scalp or skin of the head included, twice a day with camphorated oil. The earliest appearance of scaling off of the scurf-skin will furnish the indication of the period beyond which this measure must not be delayed. When the patient has gathered sufficient strength, let him take a warm bath, to which has been added some disinfectant, and afterward be washed with soap and water. During a week or ten days from this time he may be kept apart, repeating daily the disinfecting ablution; after which he can, with safety, mingle again with the family.

Disinfectants.—The best known disinfectants are chloride of lime, Condy's fluid chloride of zinc, carbolic acid, camphor, carburate of camphor, bisulphate of soda, green copperas, Labarraque's solution of chloride of soda, salicylic acid. When doctors disagree, who shall decide? Either of the above are efficacious, and objectionable to some of the medical profession. But what chemical substances are truly disinfectant? According to the eminent chemists, Dumas, Chevrieul and Tage, certain chemical substances are serviceable in neutralizing unpleasant odors, while other chemicals are required in order to arrest the fermentation or decomposition of the decaying tuberances which produce the epidemic, influenza, and bad odors. For example, while chlorine, chloride of lime, zinc, and nitrous fumes are well known neutralizers of the odors of sulphureted, carbureted, phosphoreted hydrogen or ammonia, they have no power to arrest the decomposition whereby those odors are produced. This, moreover, is accomplished readily by carbolic acid, phenyl creosote, and especially carbolate of camphor, which act like tannin upon all albuminous substances and prevent further decomposition. But carbolate of camphor has a double action. While it stays dead muscle upon contact, it kills every living spore it touches, and thus, what is now believed to be the active principle of all contagious diseases is rapidly attacked and destroyed, and is therefore admitted to be the great scavenging principle of nature—a most powerful cleansing, neutralizing remedy. The combination and preparation, in a suitable fluid form, of the properties of carbolate of camphor, afford the means of bringing to bear, at any particular time and place, this most remarkable and effective agent in arresting and preventing contagious diseases.

From dead bodies all chance of infection will be prevented and all effluvia destroyed by wrapping them in sheets saturated with a solution of carbolate of camphor.—*Dr. L. Lanszweert.*

Beware of Poison in Toys.—The sanitary inspector of Glasgow (Scotland) has found that the yellow toy balloons sold to children are poisonous. He says that the coloring matter consists of one part of chromate of lead and three parts of carbonate of lime. Children, being in the habit of applying their mouths to the orifice of these balloons for the purpose of filling them with air, may readily receive a quantity of such poisonous powder into their mouths. Toy balloons, therefore, although admirably fitted for playthings at baby farms and other institutions of a similar character, should be viewed with supicion in every well regulated nursery. That colored candies sometimes contain poisons is well known, and those also should be avoided. Many other painted toys should be suspected, especially the bright colored ones, which most always are of a mineral nature, and if not directly poisonous are certainly injurious to health. As there is an abundance of good toys without colors or paints, there is no necessity to get suspicious looking things for children, and all small colored or painted toys adapted for use on the table, and which babies may put into their mouths, should be banished from a nursery. The paint on large objects, like sleighs and wagons, is of course not so apt to do injury as that on small objects.

Is Lead Pipe Unhealthy?—The question whether there is danger from the use of lead pipes for the conveyance of drinking water, is discussed by M. Belgrand from a rather different point of view from that which has been usual. He calculates the length of lead pipe used for this purpose in Paris, and shows that the water remains in contact with the lead much too short a time to be acted upon. As interesting specimens, he some time ago exhibited to the French academy two pieces of lead pipe, the one laid down two centuries back, the other at a period somewhat later. The inner surfaces of these tubes, notwithstanding the fact that one of them had conducted water for a period of 200 years, were both completely intact. The direct experiments with reference to this same question, made with such care by MM. Dumas and Lebtanc, are of similar import; that is, distilled water was found slightly to attack the lead, while river, spring and rain water has no appreciable action on the metal.

MINING AND SCIENTIFIC PRESS.

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Our latest forms go to press on Thursday evening.

San Francisco:

Saturday Morning, July 29, 1876.

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THE BERKELEY RAILROAD.—The Central Pacific railroad company have completed the track laying on the branch road to the State university grounds. The ferry commutation tickets for August are good for a passage to "Oakland, Alameda and Berkeley." It is stated that the company have a grading force, which is to be immediately increased to some 400 in number, at work on the main line of the Oakland and Bantas road, making the grade from Berkeley towards San Pablo. It is still said to be the purpose of the company to have the road completed to junction with the Western Pacific, near Bantas, early in the coming year.

A KIND REMEMBRANCE.—We acknowledge a kind remembrance from James Lick, Esq., freighted with six boxes of fine fruit from his farm at San Jose. The cheer is refreshing and the remembrance encouraging to the workers on the PRESS. Mr. Lick is frequent in his kindnesses, and his compliments to the literary toilers of the PRESS extend over many years. For the information of some fruit packers it is interesting to note that Mr. Lick's fruit is of uniform quality from top to bottom of the box.

METAL AND FUEL FROM ENGLAND.—During the week ending June 24th, the following amounts of metals, hardware and fuel were shipped from ports of Great Britain for San Francisco: Pig iron, 1,144 tons; 24½ tons of manufactured iron; 250 tons of old rails; 7 tons of iron tubes and pipes; 18 packages of hardware; 1,750 boxes of tin plats; and 7,113 tons of coal.

Respiratory Apparatus for Miners.

Not only in coal but in metal mines it is sometimes necessary to enter places filled with deleterious gases, either to carry aid to miners or to explore old workings. A number of contrivances exist to provide a respiratory apparatus, carrying a supply of fresh air. A very good one is that of Mr. Rouquayrol, a French mining engineer. In this the reservoir is made of sheet iron, capable of resisting from 25 to 40 atmospheres. Air is forced into it by means of ingeniously contrived pumps, the pistons of which are fixed, while the cylinders are movable. The apparatus is fastened on to the back like a soldier's knapsack. A contrivance consisting of a kind of bellows, placed above the reservoir allows the air, (although greatly compressed) to enter the lungs at the ordinary pressure only. A small external valve formed of two leaves of rubber, which are kept in contact with each other by the pressure of the atmosphere, open to allow the escape of the air respired. In this apparatus, at the same time as it is breathed the air is sometimes supplied to a lamp especially constructed to burn in an atmosphere in which a common lamp could not be used.

Provided with Rouquayrol's apparatus a man can breathe with ease even under water, conclusive experiments having been made on the beds of rivers, etc. The apparatus might sometimes be found useful in mines for working under water, at the bottom of sumps for instance, for upraising broken pumps, cleaning out pipes, etc.

A simpler contrivance than this, and just as effective for some purposes, is the system of injecting air into an air-tight goat skin by means of a small bellows. The man carries this on his back, keeping it in place by straps around the shoulders and waist. Two india rubber tubes are fitted to the bag, terminated together by a piece of horn or ivory, hollowed out around its circumference and held between the teeth. The nostrils are compressed by a small spring clothes pin or other similar contrivance. Lastly, when necessary, in a very hot atmosphere or in case of fire, the eyes are protected by a pair of spectacles with glasses mounted in leather.

With this apparatus, which any one could arrange quickly, the man is free in his movements. Breathing is carried on without difficulty and the air which has been respired is returned into the reservoir and may be used twice over without inconvenience, but at the end of a quarter of an hour it is necessary to renew the air in the bag. The tube through which the air passes outward opens at the upper part of the bag while the tube by which it is returned goes to the bottom. Besides the air which has been breathed, being heavier, goes to the bottom. At the end of some seconds a movement of the tongue is instinctively and unconsciously produced, which stops up or opens the swivel piece, sometimes one tube and sometimes the other, according as the lungs inhale or respire the air. This apparatus is especially useful for pump men, well workers, repairers of sewers, etc. For mines, reservoirs of tin plate may be used and the air forced in under some pressure.

The Engine for the Fair.

The large new engine which is to furnish power for the machinery at the Mechanics' fair was built especially for the purpose by the Fulton foundry, of this city. The engine, bed plate and fly wheel weigh about 10 tons. The engine is fitted with Myers' variable cut-off and Hendy's governor. It has an 18 inch cylinder and three-foot stroke. The fly wheel is 16 feet in diameter and weighs five tons.

The engine is an ordinary one such as is built at the Fulton, with perhaps a little higher finish. It is a little larger than the one used last year, which was built by the Union iron works and had a 16-inch cylinder. It is fitted with Saunders' metallic packing, which is being introduced here by the Ætna iron works. This packing is spoken of highly and we shall at some future time speak of it more in detail. The engine has been set up in the pavilion, so that there will be no delay in furnishing the motive power when the machinery is all in. It will be run a few days before beginning actual work, so that everything will be in order.

MINE CAGES.—An English inventor has patented a new safety apparatus for mine cages. Peculiarly constructed bevel clamps are used for locking the cage or platform to the guides when the rope breaks, each of which clamps has parallel bearing surfaces placed obliquely to the levers, one within the other, and pivoted cross-wise together, so that each lever thus bites on both sides of the guides. These levers may be connected in numerous ways with the platform so that its weight will cause them to bite upon the guides. Means are also provided for opening and clamping the levers.

THE railroad and stage men are said to be agitating the question of connecting Scales' Diggings by a good wagon road with Camptonville, Yuba county, so as to secure direct communication with Northern Sierra and San Francisco, via the narrow gauge railroad.

Comstock Papers.

NO. 2.

First Strike of the "Black Stuff." Conflicting Claims and their Adjustment. How the Great Washoe Lode Came to be Named.

As already related, the discovery of the Comstock lode at a new point near the present site of Virginia City, was occasioned by a couple of gold washers' digging a shallow pit to hold water for the use of their rockers. This event, which occurred in the month of June, 1859, was the result of the sheerest accident. These men were not hunting for silver nor ores of any kind. In so far as they had any idea about such substances, this was the thing they were most desirous of avoiding. While working up Six Mile canyon the year before, they and their companions, as they approached its head, had encountered a dark colored, heavy metallic rock, "black stuff" as they called it, which had caused them no little trouble, its weight being so nearly that of the gold obtained along the canyon that they found it difficult to separate the two in their rockers. All the gold dust gathered in that region of country, containing a large percentage of silver, was much lighter than the average California duet, and consequently more difficult to save by the process of washing. When, therefore, these honest miners detected in the pit they had sunk the presence of this detestable stuff—the rich sulphurets of silver, they were disgusted thereat, and would have heaved it aside and paid no further attention to it had they not found mixed up with the earth thrown out a considerable amount of free gold. This was an article with which they were acquainted—was, in fact, the thing they were searching for, wherefore they at once proceeded to take up a surface or placer claim at that point.

A Multiplicity of Claimants to the New Discovery.

Now, so it was, this precise spot happened to be within the bounderies of the ground located by Finney the year before, or this, at least, was the view this old man chose to take of the matter, and not, perhaps, without some show of reason, as it was then the custom of the district to make square locations in taking up both quartz and placer claims, and it might well have been that his claim, the croppings on which lay only a few rods further west, included this spot within its limits. Joseph Kirby, who had previously been washing along a small ravine a little below this place, also advanced some sort of claim to an interest in the new discovery, there being several others who, upon one pretext or another, were seeking a share in it.

Affairs being thus complicated,

Henry P. Comstock,

An old resident and common friend of all the contestants, was elected, or perhaps elected himself, to act as umpire in the premises; an office he seems to have performed to his own satisfaction, and for aught that appears to the contrary, to the satisfaction of all concerned. In adjusting the business it was so arranged that the umpire appeared on the record as the owner of most of the property in dispute, he having first awarded it to Finney, and then bought the latter out. The claim in question covered what are now known as the Bonanza mines, and also a part of the present Ophir ground. Within a year from the time the above transaction took place, it sold for a million of dollars. That the other parties to this contest should have so readily yielded their pretensions and acquiesced in the disposition thus made of the property is explained by the fact that they did not consider it of any special value, and had not, probably, much confidence themselves in either the justice or validity of their claims.

He Receives for his Mine an Indian Pony and Something to Drink Beside.

The consideration that moved the vendor to make over his estate in this mining claim consisted of a certain Indian pony, bob-tailed, lean and aged, of which the purchaser was then and there possessed, this constituting the sum total of his available effects, save only a scanty supply of cabin traps, a roll of blankets, a gold rocker and a rifle, with a reasonable stock of whisky and tobacco, without which latter, existence with these early dwellers on the "Eastern slope" would have been intolerable, if not wholly impracticable.

While Finney did not guarantee title to the ground sold, the transfer thereof having been effected by simple quit claim deed, he did, on the other hand, require that his friend should in the bill of sale assure title to the animal made over to him, the abbreviated caudal appendage of the brute and some other marks about him pointing to a former ownership by the Piutes, against any claim from which quarter the old man was naturally desirous of protecting himself. According to some authorities, divers bottles of exhilarating fluids formed part of the consideration by Finney received on that occasion; a fact which no one having any acquaintance with the convivial habits and commercial usages of these Washoe pioneers will feel inclined to call in question. Indeed, that class of persons may be said to infer that they know that such was the case, a drink all 'round having been with these pioneers not only a pledge of friendship but a token with which they sealed all bargains.

He Sells His Claim to a California "Rock Sharp."

Very soon after he had acquired this claim, Comstock disposed of the greater portion of it to Judge Walsh, an enterprising and experienced quartz miner of Gress Valley, who, having heard of this discovery and seen some of the rich ore brought to his place, hastened over the mountains for the purpose of examining the deposit and making a purchase thereof, if the thing looked favorable. How little appreciation Comstock himself had of the real value of this property is evinced by the fact that he parted with his interest in nearly the whole of it for $6,000, congratulating himself that he had been able to dispose of it for even that much, and joining with his associates in making merry over the manner in which he had taken in what they facetiously termed, "the California rock sharp."

How His Name Came to be Conferred on the Lode.

In making out the deed whereby this claim was conveyed to Walsh, it was, for the want of a better name, described as the "Comstock ground," a style of description which, having been adhered to in all subsequent sales of the property or portions thereof, caused this term to be at length applied to all portions of the lode. Other than this there was no especial fitness in thus designating the great ore channel, the man whose name it bears having had nothing to do with its discovery, location or subsequent development, and who acquired all his interest he ever had in it at a very cheap rate.

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Mechanical Ore Concentration and Separation.

(Written for the PRESS by FRANCIS F. M. CASIN, M. E., Santa Fe, New Mexico.)

Introductory.

In presenting this treatise to the public, I intend to have it understood that it shall not claim rivalry with the two scientific and complete works on the same subject, written by Rittinger and by Gætzschmann. Nor shall it compete with Guido Kustel's "Treatise on Concentration." All three very elaborate books are indispensable to the engineer following this special line of trade, but they contain too much, when consulted for a practical purpose by the mine owner. This essay has been written with the double object of propagating a correct estimation of what mineral dressing really is and of indicating the right line of action to those who are in a position to require assistance of the art of mineral dressing. These combined objects neither require a long enumeration of hundreds and thousands of apparatuses used at different places with more or less success, nor learned and elaborate examination of principles on which the action of these apparatuses is based to the extent that these three works cited above do more or less contain them.

In offering this treatise to the American public, I had to accommodate it to the requirements of the period and of localities as well as to the faculties of those connected with the mining interests, and I hope to have augmented its practical usefulness by so doing. It contains a full statement of facts and principles *as far as required for the purpose of all mine owners, adventurers and practical mineral dressers*, in order to enable them to select efficacious machinery, make efficient arrangements at the right places and to do sensible and successful work. To those only generally interested in mining it will convey the impression that mineral dressing is a trade requiring good theoretical and practical knowledge, and that it is dangerous to confide the construction of mineral dressing arrangements to persons inexperienced in the premises or lacking the proper knowledge, though they may be of great general ingenuity.

This treatise will also give such statements as will enable adventurers to judge whether their ores can be dressed or not and at what cost. The propagation of proper acquaintance with what the art of mineral dressing is able to accomplish, will bring vast wealth to this country, where enormous mineral treasures are lying idle because a majority of those to whom the mines belong or those who would work them do not now possess the knowledge of what results *mechanical metallurgy* can accomplish, and therefore do not realize what treasures are in their possession, in the shape of mines producing low grade ores. This knowledge once propagated, many will find ways and means to utilize their knowledge and will thereby produce the wealth alluded to.

LABOR AT THE EAST.—We lately had the pleasure of a brief conversation with Rev. W. W. Brier, of Centerville, Alameda county, who has just returned from an Eastern visit. He reports a general reduction of wages in almost all employments so far as he has observed. To show the condition of labor in St. Louis he said a trustworthy man told him that if he should advertise one week for hands on a public work, he could get 5,000 at 30 cents a day. He returns to California fully impressed with the fact that this State is not such a bad place for a laboring man, after all.

Alpine County—Its Mines and Resources, Past, Present and Future.

[Written for the PRESS by VICTOR HARLAND.—No. 2.]

Of the several mining districts situated in this county, there are four of which special mention should be made, and which have been and are now the scenes of operations that will be greatly extended within the next two years. These districts are known respectively as Silver Mountain, Alpine, Mogul and Monitor districts.

The operations in former years, while developing in many cases a sufficiency of ores bearing gold and silver in fair quantities, have been, in almost every instance, confined in that disastrous method of prospecting mentioned in a former article, viz: Surface

Mining by Means of Tunnels.

The general idea pervading the minds of owners during the early period of mining here, was to first ascertain the nature and dip of the veins by cutting the lodes at a short distance below the various outcrops; then, encouraged by proof in nearly all cases of the apparently true character of the lodes, they would proceed to run long tunnels, starting at a point far below their first surface explorations and running toward the lodes with the mistaken idea that as each foot was gained horizontally along the line of their tunnels, the same pro rata was gained in depth along the vein itself. The rugged nature of these localities, the hight of the mountain summits from the valleys and canyons below, and the seeming expediency of this method of working, were the actual causes that decided the experiment of tunnel mining here. In some cases tunnels of 1,500 and 2,000 feet were persistently driven through the country rock, only to cease their gigantic operations when actually compelled to by reason of the failure of stockholders and parties interested in contributing, month after month and year after year, the necessary funds with which to carry on the work. Many such enterprises have so failed before reaching the point where it was expected the lode would be intersected; others, after penetrating 500 or 600 feet of "bedrock," and cutting their lodes often at a depth equal to less than one-half the horizontal distance of the tunnel driven, were abandoned because the ore proved still refractory at these short distances from the surface, no note being taken of the mammoth proportions of the lodes or of the vast upheavals on either side, which show conclusively that with the evidences of wealth upon the surface, and at these short distances below, a perpendicular depth of reasonable proportion below their lower workings once gained, the better in both quality and quantity will become the ore.

The Ores Being Refractory

To a certain degree, though not to be pronounced base, and no process being introduced which would successfully separate the gold and silver from the baser metals, operations were allowed to languish, and, eventually, many fine locations were abandoned until some time in the future when an economical method of reduction should be introduced. The ores in these districts contain a very fair percentage of gold, and the latest developments in several of the mines therein have demonstrated the fact of an increasing value in that particular as depth is gained upon their lodes, reaching in some instances 65 and 70 per cent. of the total assay value in gold and silver.

It is believed that at

A Reasonable Depth

The refractory nature of the ores will by degrees disappear. These opinions are based not only by assertions and reasonings of scientists who have given the localities a thorough examination, but by a practical demonstration in the character of ore found in the prospect shaft of the Advance company at Monitor, at a depth of 150 feet below the adit level, or what is known as their main tunnel from the base of Monitor mountain. This ore proved by experiment to be far more tractable than that found in the upper or surface tunnel. With the present exploration of this and other companies by means of permanent shafts, penetrating their respective lodes at a depth not heretofore explored within the county, there is little cause for anxiety or fear regarding the future prosperity of these districts, for as surely as the day follows the night this inauguration of deep mining here will cast aside all doubts regarding the productiveness of these mines, as the proof of the existence of ores of good quality is of every day occurrence and cannot truthfully be disputed.

Until within the past two years, but one shaft in the county had reached a depth of 200 feet; which accounts for, in a great measure, the stagnation of business and delay in producing that undisputable evidence of the wealth of a mine or locality,—bullion. Again, many of the best locations are owned by poor men, who can ill afford the expense necessary to open and develop their claims, but having firm faith in the ultimate success attending the efforts of those companies who, having means at their command, are now moving in the right direction, have remained and protected their claims from re-location. Within the past year, many of the

Old Abandoned Claims

Have been again located, several of them by persons residing in your city, who have lately visited this county and were favorably impressed with appearances here; others, again, that have lain idle for years are receiving the attention of parties interested, who are preparing to resume operations under the original titles. In my next letter, I will begin a description of

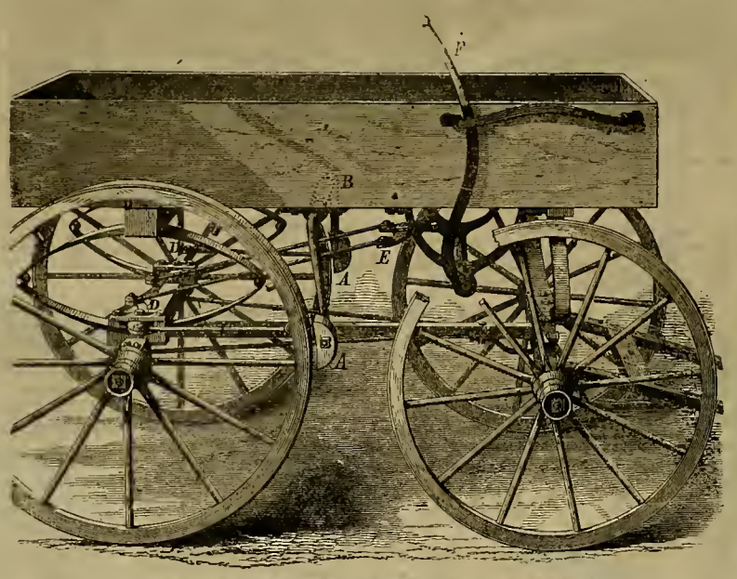
The Various Districts

And of the mines that are located therein, their extent, development, etc. I have already taken up a great portion of your columns with a general description of the appearance of the mining portion of the county, deeming it but just to point out the defects, which are attributable to an imperfect knowledge of mining in the earlier period, as well as the advantages which this county really possesses as a basis for future operations of a more perfect and systematic character than indulged in during the intervening time between the date of occupancy of these districts and the present time.

Howell's Self-Adjusting Brake.

The importance of a good brake is appreciated by all teamsters. We illustrate on this page a new brake which is highly recommended by those who have used it. The following is a description of the contrivance as shown in the engraving:

The brake shoes, *A*, are suspended in front of the hind wheels by arms of shafts, the inner ends of the latter being secured in a sleeve, *B*, (dotted lines) underneath the wagon. The shafts not being connected together, and working independently in the sleeve, *B*, it follows that either brake shoe may be pushed against its wheel without causing a like movement of the opposite shoe. To each shoe is attached a rod, *C*, which is attached to pivoted lever, *D*, and these last by rods to the evener, *E*. The levers, *B*, it will be observed, are pivoted to the rear axle, so that the direction of the forces, imparted by them to the axle and by the shoes to the wheels, will oppose and neutralize each other through the wheels and the axles. The evener, *E*, is pivoted to the end of a rod which is connected to an arm of an oscillating shaft suspended from the bolster or front part of the wagon box, and provided with a hand lever, *F*, for operating the mechanism.



HOWELL'S IMPROVED PATENT WAGON BRAKE.

The inventor claims for his brake that it has the following advantages over the common brake: It operates with greater force; it racks a wagon less than any other lock you can attach to it; it imparts an equal force to each wheel, though the diameters may not be equal; in dangerous places you can always rely upon it.

Mr. Howell writes us that many parties are taking off the old brakes and substituting his. Any further information may be had by addressing C. M. Howell, Andover, N. J.

MR. B. GOODWIN will shortly start on a trip in the interests of the PRESS through Tehama, Trinity and Shasta counties, California, and probably go even further north. We bespeak for him the courtesies of our friends while on his travels.

A TUNNEL 775 feet long was completed this month to drain the Babb claim at Timbuctoo, Yuba county. It is a costly work, and will give facilities for washing a large body of deep auriferous gravel, that has been waiting years for an outlet.

THE sulphur product at the Sulphur Banks quicksilver mines in Lake county goes a long way toward paying the expenses of the establishment, and furnishes employment for a great many men and teams.

THE *Daily Telegraph* announces that letters from Henry M. Stanley, the famous explorer, have been received dated April 24th, 15 days' march from Ukiki.

The Coming Industrial Fair.

Active preparations continue for the approaching exhibition under the auspices of the Mechanics' Institute. The internal arrangements of the mammoth pavilion have been changed to suit the present requirements, more fountains and walks added and whatever would conduce to the comfort and convenience of visitors and exhibitors has been done.

It has been decided that the opening exercises shall take place at Wade's opera house instead of at the pavilion. The exercises will commence on Tuesday afternoon, at two o'clock, August 8th. They will consist of an address by President Hallidie, oration by Henry Edwards, the reading of a poem, and vocal and instrumental music. There will be a grand orchestra and a chorus composed of 100 adults and 500 school children. The exercises will close with a grand tableau representing the different arts and industries. Those holding tickets of admission to the fair will be admitted to the opera house. This will be a much better place for the literary exercises than the pavilion, which is so large and usually so noisy on opening day, that little of the speech making can be heard.

As we have previously stated, the musical concerts will be a prominent feature of this year's fair. There will be two bands under efficient leadership. To render the music more enjoyable a partition has been run the whole length of the machinery department, so as to separate it from the rest of the exhibition and shut off the noise incident to machinery in operation. It is stated that the art gallery will be more than usually attractive this year as many contributions from private collections have been promised.

The trustees of St. Ignatius college have consented to allow an exhibition of the philosophical instruments of the college. This collection is the best on the coast without exception, especially in the line of electrical apparatus. Professor Neri will give frequent exhibitions of the powers of the electric light.

The Location Committee are still at work laying out the "space" for exhibitors and many of them are arranging for their stands, etc. There is no doubt whatever that all the available space will be occupied and that the fair will be as great a success as ever.

The following employees have been selected by the board of managers: Doorkeepers, George Harmon and John Evatt; sergeants, Mr. Brickwell and D. Delaney; watchmen, E. M. Taylor, John P. Allen, George P. Little, George Gilland, Charles Vizina, Frank Sweitzer, W. J. Newton, Andrew Duncan, A. W. Rhody, J. G. House, James F. Campbell, Peter Jenkins, Thomas Olvanney, Charles D. Smith, William B. Stevens, H. L. Barker, H. C. Osmer; janitress, Mrs. Susan H. Allen; sanitary inspector, Dr. Nimrod W. Jones; hat and cloak room, Thomas Tweedale.

MINING AND FARMING.—Hon. G. J. Carpenter delivered the Centennial oration at Placerville, El Dorado county. He said that agriculture and mining in that county are mutually patronizing and protecting, not hostile avocations. Since the discovery of gold, California has produced $1,200,000,000, of which El Dorado county must have contributed $100,000,000. He warned the farmers against checking mining industry by litigation on account of the shifting of watercourses by the sluicing process.

AN historical painting by Harrington, representing the discovery of the Comstock lode, will shortly be placed on exhibition at one of the picture stores in this city. The picture, although, of course, altogether imaginative, gives an unusually truthful representation of a mining scene.

How Valuable Mines should be Recognized, Prospected and Worked.

[For the PRESS by E. G. G.—No. 5.]

G. Amalgam.

Color, silverwhite, slightly brittle. Specific gravity, 14. Strongly heated it squirts, quicksilver separates while silver remains. Composition: quicksilver, 65.2 or 73.75; silver, 34 8, or 26 25. It appears with quicksilver ores in Almaden (Spain), Hungary and Chile.

H. Discrasite (Antimonial Silver).

Color, silverwhite—if exposed yellowish or greyish; slightly brittle. Specific gravity, 9.4; smelts readily under the blowpipe.

There are besides the ores mentioned, other compositions but too rare to be of interest to the practical miner and we therefore omit them.

We shall now proceed to give an illustration how a practicel miner, with the aid of a blacksmith's fire and a few simple appliances, can make his own *assays of gold and silver ores.*

The only costly appliance required is a scale, which on being loaded with 100 milligrammes would indicate one-tenth of a milligramme. Scales of that description can be purchased for about $75. Besides that there would be necessary a pulp scale at a cost of about $10; some crucibles, test tubes, drying cups and cupels.

To make an assay of a gold or silver ore, pulverize the same finely, weigh off 20 grammes on the pulp scale, and mix the same with five or six times its weight with litharge, add one teaspoonful of soda, a little borax, and a very little pulverized charcoal; mix the whole well and place it in a crucible; cover the mixture with a layer of common salt and put your crucible in the blacksmith fire or; put a cover on it and build a fire all around and over it, then expose the same to bright red heat for about 20 minutes, this will suffice to bring the whole to flow. Now take your crucible, pour quickly into a mould and allow the mass to cool. You can then readily seperete the slag from the metallic bottom, and by hammering it clean it for the second operation, which is the cupelling.

(To be Continued.)

The Silver Question.

In another column we give the full text of the "silver bill," which was passed by Coogress, signed by the President, and is now a law. Still another silver bill has been agreed upon by the Committee on Mines and Mining, which is as follows:

A bill to utilize the product of gold and silver mines and for other purposes:—Be it enacted, etc., that coin notes of the denomination of $50, and multiples thereof up to $10,000, may, in the mode hereinafter provided, be paid by the several mints and assay offices at San Francisco, Carson City, Philadelphia and New York, for net value of gold and silver bullion deposited thereat, and of bullion thus received not less than 75 per cent. in coin or fine bars shall at all times be kept on hand for redemption of coin notes, gold for gold and silver for silver. Gold deposited shall be computed at its coining value, and silver at the rate of 412 8 grains standard silver to the dollar, less lawful mint charges and such charges for transportation from assay offices to mints for coinage, and from the latter to the Assistant Treasurer's respectively, by whom the coin notes shall be payable; and there shall be coined at the mints of the United States the silver dollar hereinbefore mentioned. Third—The Secretary shall from time to time cause coin and fine mint bars stamped to be transferred from the mint to the Assistant Treasurer's at San Francisco and New York in such amounts as may be necessary for redemption of coin notes. Fourth—The coin notes thus issued shall be receivable without limit for all duties of the United States, and the coin mentioned in this act shall be a legal tender for all debts, public and private, not specified to be paid in gold coin. Fifth—Gold notes issued according to this act shall be redeemed on presentation in gold coin or fine bars, and silver in silver dollars or fine bars. Sixth—Coin notes authorized by this act to be issued shall be prepared under direction of the Secretary of the Treasury, and be transferred to the above named mints and assay offices as a part of the bullion fund, and from which fund deposits shall be paid for in coin or in notes, at option of depositors. Seventh—Fine gold or silver bars herein authorized to be issued shall bear the mint stamp of fineness, weight and value, and the value of gold bars be computed according to their coining rate and of silver bars all their coining value in dollars. The Secretary of the Treasury shall prescribe the necessary regulations for carrying the foregoing provisions into effect.

This bill has two features which, should it become a law, will have an important influence on the business of the country. One of these features is, the recognition of two currencies—gold coin and silver coin—whose relative value will be determined by the commercial value of the metal of which they are composed. A second feature is, that the coin issued under this act shall be a legal tender for all debts, public and private, not specified to be paid in gold coin. The practical effect of this bill, if it should become a law, will be to make legal tenders redeemable in silver on the basis of the old silver dollar of 412 8 10 grains. It is provided that bullion, either gold or silver, may be deposited at the several mints and assay offices of the United States, and notes, gold or silver, according to the deposit, be issued of the value of the bullion, less mint charges, in payment therefor. The depositor has the option of payment in coin, and the notes are at all times to be payable in coin. To secure payment, seventy-five per cent. of the bullion received is to be kept on hand, gold notes to be redeemed with gold coin and silver with silver coin.

The tendency of this measure will be to increase the uses of silver, and thus indirectly enhance its value as a commodity.

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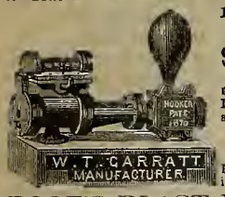

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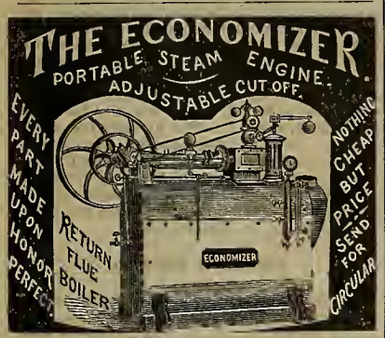

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Cost of Roasting and Chloridizing by this Process:

Two cords of wood at $6	$12.00
Two firemen at $4	8.00
1500 lbs of salt at 1½c	22.50
Wear of shoes and power	1.50
Cost for 15 tons	$44 00
Cost for one ton	2.93½

In a furnace of three or four times this capacity the cost is decreased by 20 per cent.

The furnace is now working successfully at the Poe Consolidated Co.'s mines, in the Peavine District. For further information, apply to

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And BOILERS for driving Model Yachts from one to ten feet in length, and Row-Boats or Skiffs 16 feet and upwards in length; either plain castings, partly finished, or complete ready for use, so constructed that a speed of from six to twenty miles per hour can be easily obtained.

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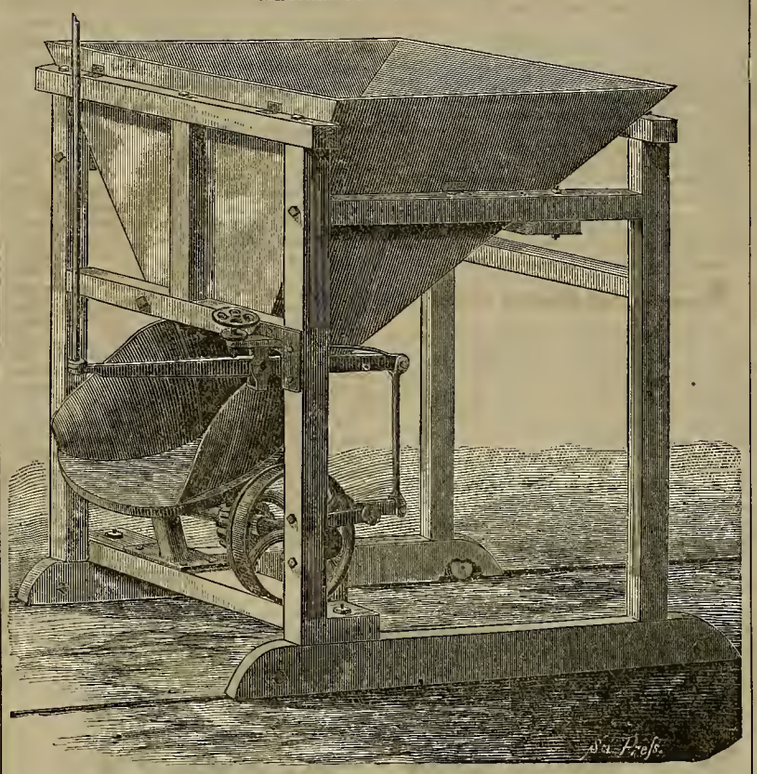
HENDY & COCHRANE'S ORE FEEDER

FOR QUARTZ MILLS,

AWARDED FIRST PREMIUM AT THE TENTH INDUSTRIAL FAIR OF THE MECHANICS' INSTITUTE.



It may be considered as now fully demonstrated, by careful and long-continued experimentation, that the plan upon which a perfect ore feeder must be constructed is that of the *carrier*, and not that of the shaking table. Uniform and accurate feeding is not possible upon the latter plan. The ore must be evenly carried, upon a steadily advancing plane, or table, to the line of discharge, and there simply *dropped*. Spasmodic or jerky contrivances will not answer the purpose.

REFERENCES.

A letter received from the Julian Mill, Newcastle, says, of the Table Feeder: "It is the most perfect Feeder we have ever seen; don't see how any mill can do without them."——A letter from Mr. C. O. Belding, of Amador County, speaks in the highest terms of them.——Two of the machines were shipped to the Bunker Hill Mill, Amador County.—— Mr. Stevenson, of Boston Mill, Gold Hill, Nevada, says they are the best Feeder he has ever seen.——Mr. Lachman, of the Soulsby Mill, Tuolumne County, says they work splendid; could not do better.——Two of the machines were shipped to the California Company, Nevada City.—— C. J. Garland, of Mosquito Gulch, Calaveras County, says: "I find them an excellent machine."——S. D. B. Stewart, Supt. Lincoln Gold Mining Company, says they are a perfect success.——O. C. Hewitt, Supt. Keystone Mining Company, says: "I can safely recommend them to all millmen."

We warrant the machines to give perfect satisfaction, and to be a better and more durable Feeder than any other in the market, and will sell them as cheap as any other machine of its class.

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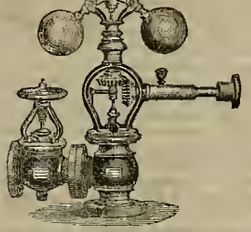

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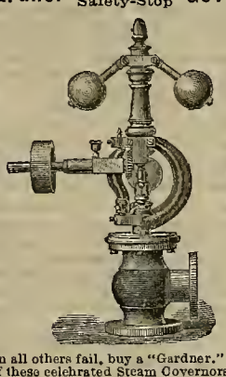

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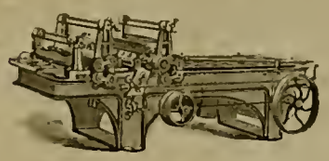

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Smith's Celebrated Molders.

We have four sizes of these Machines always on hand—"B," "C," "D" and "E,"—to work either three or four sides. Have slotted heads and all other improvements, and may be seen in any mill on the Coast. ☞*Prices reduced* to 15 per cent. less than Eastern list. We have also, a large stock of all kinds of Planing Mill Machinery, such as Molders, Mortisers, Tenoners, Band and Jig Saws, etc. Send for our new Illustrated Catalogue. BERRY & PLACE, Selling Agents

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Band and Jig Saw

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The Most Efficient Rock Drill in the Market.

LIGHT, STRONG and DURABLE.

No External Machinery Liable to Injury from Rough Usage, as all the Working Parts are Enclosed in the Cylinder and Valve Chest.

A TRUE SMOOTH HOLE EVERY TIME. THE MOST ECONOMICAL DRILL YET MADE.

THE WORKING PARTS OF THE DRILL ARE FEW AND SIMPLE IN ARRANGEMENT, SO THERE IS NO LIABILITY OF INJURY. THE CLAMPS FOR HOLDING THE DRILL ON THE TRIPOD, FOR HOLDING THE DRILL TOOL IN POSITION, AND FOR FIXING THE WEIGHTS ON THE LEGS OF TRIPOD, ARE ALL IMPROVED AND VERY EFFECTIVE.

The device for rotating this Drill has few parts, and can not get out of order. There is no chance for wear. The motion is positive, and never fails of action. The Drill Carriage can be turned clear round the column, and can also turn in a complete circle on the head of the clamp.

All parts subject to wear are of the Best Cast Steel, and all made to gauge and interchangeable.

This is the Lightest and Strongest Rock Drill yet invented. Being nearly all Cast Steel, it is easily handled and moved, as all superfluous metal is dispensed with.

We also call the attention of those interested to the Horizontal Air Compressor furnished with the Buckminster Drill when desired. It is Economical, Light, Easily Run and conveniently portable.

We claim that the Buckminster Drill will do as good work as any in the market, at a much less expenditure of power, and a great decrease in first cost of machinery. Drills made all the usual sizes.

Mining Companies Desiring Rock Drilling Machinery should Examine this Drill and Air Compressor, and we are confident that it will give satisfaction. Address,

PACIFIC IRON WORKS,

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MANUFACTURERS OF ALL CLASSES OF MACHINERY.

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San Francisco Pioneer Screen Works,
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32 Fremont Street, San Francisco.

SCREENS

Several first premiums received for quartz mill Screens, and perforated sheet metals of every description. I would call special attention to my SLOT CUT and SLOT PUNCHED SCREENS, which are attracting much attention and giving universal satisfaction. This is the only establishment on the coast devoted exclusively to the manufacture of Screens. Mill Owners using battery Screens extensively can contract for large supplies at favorable rates. Orders solicited and promptly attended to.

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Having been appointed Agents for the Washington Pipe Works, we are prepared to ship from store, Pipe and Fittings at the lowest market prices.

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Gloves Made to Order

At prices most economical to customers, at the SACRAMENTO GLOVE FACTORY of I. W. Lusk, Tenth St., between J and K Sts., Sacramento. None but the best quality of California tanned skins used. Ladies' and Gents' colored plain and Indian dressed riding and common gloves and mittens on hand, or made to order on short notice. ☞Send your size or number and you can order by mail. Satisfaction guaranteed. Ladies, farmers, miners, engineers, and all requiring serviceable gloves are invited to call at the factory.

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All classes of mining properties reported on, consultations had on reduction of ores of all descriptions, plans for furnaces and reduction works furnished, and the construction of them superintended. Ore tests made at the office,

309 California street, Rooms 8 and 9.

A Desirable Bargain.

Mr. Lee H. Utt, of Pala, San Diego county, offers for sale a share in his valuable place, consisting of 320 acres, and situated as described above. There is an Apiary on the ranch in successful operation. For this business it possesses marked advantages. Twenty acres are seeded to alfalfa and eight acres are in vines. The place has growing on it 420 trees, many of them in bearing.

The owner will warrant the Cavendish Dwarf Banana to grow as well here as in Florida. He has three now growing. The pasture now enclosed will keep 50 head of cattle. The ditch—which is large enough to run a mill—is stocked with trout, and has a fish pond 100 feet square, and full of fish. There is a nice warm spring, with bath house; the water contains sulphur, salts and iron.

The place possesses great natural advantages, and the present owner has not spared money nor labor to improve; but being a valetudinarian he is not strong enough to attend to the work. To the right kind of a man a rare opportunity is here offered. To such a person as will come in good faith he extends the invitation to stop on the ranch long enough to become familiar with its characteristics and capacities.

Parties can refer to I. Nast, stock broker, San Francisco, or to anybody of note in San Diego. The place bears the name of "Aqua Tibia." Address,

LEE H. UTT,
Pala, San Diego County, Cal.

JOHN LUTTRELL MURPHY,
Attorney and Counsellor at Law,
NO. 535 CLAY STREET,
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BY THE
Year, Month or Week.

BOUND VOLUMES of the MINING AND SCIENTIFIC PRESS from Jan. 1st, 1864, are for sale at this office at $5 per volume, two volumes a year. Unbound at $3 per volume.

Continued from Page 78.

Idaho.

Mr. Baldwin Free.—Idaho *Avalanche*, July 22: The miners and citizens of Fairview showed a commendable spirit at their meeting on Friday morning, over which Thos. Ellis presided, in unanimously deciding to release Mr. Baldwin and give him an opportunity to go to San Francisco and represent how matters stood here. The best of feeling prevailed all round. Mr. Baldwin authorized his clerk in his absence from town to sign checks and draw orders for such goods and provisions as the men might need previous to his return.

South Mountain.—Notwithstanding this camp has been partly deserted of late, favorable reports have just come to hand pertaining to the resumption of operations. A movement combining the needed capital has probably been consummated with that view. There is plenty of ore in that camp to be reduced, and in a month or six weeks from the present time it is quite likely that the furnaces will be in operation.

The South Chariot.—L. P. Goldstone, of San Francisco, arrived here recently to take the management of the South Chariot mill. The company's indebtedness is being rapidly paid off, and it is reported that work will be resumed in the mine some time during the month of August.

Montana.

Mining Items.—Helena *Independent*, July 18: Mining about Cave gulch is turning out better than the prospects promised early in the season. Mining in Montana gulch is being prosecuted with vigor. A large force of hands will be at work on the Rumley mine in a few days. The placer mines at Bannack are furnishing a fine supply of gold. Several rich discoveries have recently been made in the Trapper district. Several placer claims have been purchased by Chinese in Emigrant gulch. Eighty-four tons of ore from the Acquisition Spur lode, at Butte, have been shipped East for reduction. Copper ore from the Park mines is going forward to Salt Lake for smelting. Three shafts have been sunk on the Trevonia lode—one of them is to a depth of 70 feet. A splendid nugget, assaying $145, arrived yesterday from the Snow Shoe mines. Twenty thousand dollars in gold dust was sold in Helena Monday, and $21,000 on Wednesday. Twenty-two tons of second grade ore from the late Acquisition Spur lode sampled $400 to the ton. A streak of $500 ore has been found on the Clear Grit lode near Butte. A fine clean-up was made last week on El Dorado bar. The mines in Hendereon gulch are being worked with fine results. There is plenty of water to work the Nevada creek mines. Miners on Spruce bar are taking out good pay. Several new mining claims are being worked on Boulder bar. The Rochester mill is working rich ore and makes a fine showing in silver bullion. The Willow creek mines are turning out well.

Oregon.

Prospecting.—Oregon *Sentinel*, July 19: Parties are already beginning to go out prospecting. Already several are far among the hills, and in a short time many more will be on the way. Recent discoveries in the "gravel range" have given new impetus to the search for deep placers, and before long we expect to hear of some big strikes.

A Mica Lead.—Taking a hint from a paragraph published in this paper a few weeks ago, a party began to look up mica, or isinglass, mines around in this vicinity. On Saturday last Mr. J. P. Blaylock brought in some specimens of mica from a ledge found about 25 miles northeast from here, which were the finest we have seen. They were picked from the surface, on or near a ledge of large size, are more or less mixed with quartz and have been discolored and fractured by the action of the elements. Flakes or sheets of from one to two inches in width by two or three inches in length are obtained from the specimens shown to us. The discoverers intend developing the ledge soon, and are confident of finding an endless supply of marketable quality.

Utah.

Beaver District.—Cor Salt Lake *Tribune:* The Cave mine, in Bradshaw district, has struck four feet of high grade milling ore in the incline, with an average assay of $300 per ton. This mine has improved wonderfully in the last 60 days in the value and extent of ore. The mine is shipping considerable ore daily to the Shaunlie smelter, which works high in silver and gold.

Lincoln District.—The Rollius mine is said to have been purchased by Angle & Co., of Chicago, at a fair figure, and it is rumored that work will soon be commenced again on the mine. It has been a prominent piece of property, but has been delayed considerably by being troubled with water. There is, however, considerable ore in sight in the deepest works.

The Coral Reef mine is situated in the above district, and is looking well. It is showing a large body of high grade ore in its works, and the owners are confident of developing a second bonanza.

The Shauntie smelter is still on Pioche and Star ores, and is making a successful run, turning out considerable bullion every 24 hours. Mr. Shinmar has gone to Bristol to select a site for the purpose of putting up a smelter in that section of the country to work Pioche and Bristol ores. Shumar & Co. are the only go-ahead smelters who have met with success in Southern Utah, and who are fully competent in the smelting line. The strike in the Savage mine, in Star district, creates considerable excitement in mining circles. It is developing in extent and value. The San Francisco smelter shut down last week for repairs, after a successful run of 10 days under the management of Chris Heinecke, on Big Bonanza, Dykes and Rebel ores, and turning out 50 tons of bullion. The smelter will start up as soon as repaired, and I am informed it is the intention of the Bonanza owners to put up another stack.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

North Prospect M. Co.—July 15th. Location: Nevada. Directors—F. D. Atherton, H. M. Newhall, P. N. Lilienthal, B. Flint and F. A. Benjamin. Capital, $10,000,000.

Great Eastern Gravel M. Co.—July 15th. Location: California. Directors—Hugh Greenless, Mathew Mane, Samuel W. Moore, James McCloskey and Wm. Small. Capital, $1,400,000.

Charlotte G. & S. M. Co.—July 15th. Location: Inyo Co., Cal. Directors—Charles G. Ewing, James P. Colp, David Samuels, J. L. Armstrong and S. F. Walsh. Capital, $10,000,000.

Mariposa Con. G. M. Co.—July 15th. Location: Mariposa Co., Cal. Directors—George Peters, Theo. F. Tracy, Robert C'Neill, A. Bateman and Wm. T. Reynolds. Capital, $66,600,000.

Gould & Barnhart S. M. Co.—July 18th. Location: Nevada. Directors—Joshua I. Ayres, P. D. Barnhart, George L. Woods, Joshua Hunt and J. B. Crosby. Capital, $100,000.

Avery & Crosby S. M. Co.—July 18th. Location: Nevada. Directors—Joshua L. Ayres, P. D. Barnhart, George L. Woods, A. S. Gould and J. B. Crosby. Capital, $100,000.

Union Petroleum Co.—July 15th. Object: To bore and dig for oil in Los Angeles county. Directors—T. L. M. Chipley, Wm. Parsons, F. A. Berlin, George S. Riggs and John A. White.

Newhall Petroleum Co.—July 15th. Object: To bore for oil in Los Angeles county. Directors—T. L. M. Chipley, Wm. Parsons, F. A. Berlin, George S. Riggs and Thos. C. Huxley.

Shasta Coal Co.—July 19th. Directors—H. H. Haight, S. J. Kellogg, Joseph Warethman, Wm. S. St. Anburn and M. H. Peck. Capital, $5,000,000.

Spanish G. M. Co.—July 19th. Location: Nevada Co., Cal. Directors—Erastus Bond, James Shorkley, S. P. Lord, A. R. Lord and H. H. McClellan. Capital, $5,000,000.

Lone G. & S. M. Co.—July 20th. Location: Nevada. Capital stock, $10,000,000. Directors—Geo. Muck, John Bruner, Henry N. Stahl, Al Peck and E. A. Peck.

Aptos Water Co.—Capital stock, $500,000. Object: To supply the towns of Aptos and Soquel, in the county of Santa Cruz, with water taken from the Aptos and Valencia creeks. Directors—Claus Spreckels, G. A. Haas, M. Rosenbaum, G. H. Eggers and J. Brandenstein.

Custer G. M. Co.—July 24th. Location, Mariposa county, Cal. Capital stock, $3,000,000, in 30,000 shares of $100 each. Directors—H. G. Rollins, San Francisco; L. A. Booth, Oakland; Fred Homer, T. G. McLenan, S. N. Putnam, San Francisco.

Manhattan Ore Treating Co.—July 26th. Capital stock, $5,000,000. Object: Manufacturing and selling of machinery, treating gold and silver ores, etc. Directors—Chas. F. Secor, A. C. Bradford, Chas. Chandler, James H. Smith and O. D. Squire.

Meetings and Elections.

Phil Sheridan M. Co.—July 24th. Trustees—J. A. Pritchard (President), J. J. Scoville, (Vice-President), George Townsend, Joseph McGillvray and S. A. Raymond. W. R. Townsend was elected Secretary, and the London and San Francisco bank Treasurer, and Sam'l L. Jones Superintendent. There were 16,260 shares represented. The company has recently erected fine hoisting works, and rapid progress is being made in sinking. The Secretary's statement shows $6,750 in the treasury, with outstanding liabilities of $6,000.

Proto M. Co.—July 22. Directors—H. H. Flagg, J. P. Forbes and A. P. Forbes.

Savage M. Co.—Samuel T. Curtis has been elected Superintendent in place of F. F. Osbiston.

Emigrant S. M. Co.—July 26th. Directors—Maurice Dore, Stephen H. Phillips, B. W. Mudge, Philip Falk and J. E. Shawhan.

Patents & Inventions.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

From Official Reports for the Mining and Scientific Press, Dewey & Co., Publishers and U. S. and Foreign Patent Agents.]

For Week Ending July 18th, 1876.

Hampton Kelley, Multnomah, Ogn., fruit drier; James McAllister, Gold Hill, Nev., casting car wheels; Benj. F. Penniman, S. F., purifying and amalgamating gold and silver bearing sand, etc.

Reissues.

John S. Hall, S. F., assignor to John L. Boone, short thread sewing machines; Redmond Gibbons, S. F., adjustable elastic straps for garments.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s Scientific Press American and Foreign Patent Agency, the following are worthy of mention:

Coffins.—Wm. O'Day, S. F. The object of this invention is to cheapen the manufacture of wooden coffins by providing a simple and convenient method of constructing and applying the ends of that class of coffins or caskets which is made with octagonal ends. Ordinarily each piece which is used in the formation of the octagonal ends is cut and fitted separately so that it requires much labor and nice workmanship to properly construct a coffin. This is owing to the number of miter joints to be fitted and the taper of the casket, which necessitates each piece to be tapered and fitted correspondingly. By this invention an octagonal form of any given length is first constructed, either tapering or otherwise, according to the shape of the coffins to be made. This form is made of the proper size to serve as a pattern upon which to fit and put together in long strips the boards which are to form the ends of the coffins. The inventor then takes the long boards and miters, fits and nails them together so as to provide an octagonal end piece of any desired length, which can be cut into short lengths to form the ends after they have been fitted to the body of the coffin. By this arrangement the long end pieces can be put together at a mill cheaply, and as the pieces are put together on a form no mistake can happen. The work is therefore done more cheaply, and all that the coffin maker has to do is to construct the box or body of his coffin to conform to the ends and then put them together, thus enabling him to produce a cheaper and at the same time a neater coffin than when the pieces have to be fitted singly. The arrangement also enables the maker to construct the coffin out of boards which have been stained and polished in the long piece before they are cut up.

Barrel Tap and Faucet.—Elisha T. Barlow, S. F. This invention relates to that class of permanent taps for beer and other barrels in which the valve admitting the liquid to the faucet is arranged on the tap, and is operated by an independent key or implement after the faucet or tube through which the liquid is drawn has been secured in place on the tap. The inventor produces a combined tap and faucet that can be cheaply manufactured and which is not likely to get out of order. A common bent tube can be used instead of a faucet, and will serve every purpose as a conductor of the liquid.

Mining Accidents.

Several serious accidents have happened in the mines this week, the most disastrous of which was one which occurred to gang No. 3 of the Black Diamond coal company's works, Nortonville, Contra Costa county. It was at first stated that the explosion was caused by the ignition of the dry coal dust that had accumulated in the chutes, cross-cuts, breasts and gangways, from a blast fired in one of the breasts. It transpires, however, that although the primary cause of the disaster was the ignition of a quantity of coal dust, the greatest evil was done by the explosion of a twenty-five pound keg of blasting powder, with which the fire communicated. Eight men in all were killed, six on the spot and two afterwards. Their names were: William Gaethee, William L Williams, Meredith Lewis, George M. Reynolds, David Griffith, David W. Griffith, Theophilus Watts and T. Dumas. Dangerously burned, Thomas D. Davis, David Watts and Evan Smith. Slightly burned and recovery probable: Thomas D. James, Harry Manwaring, Giacomo Larggo; and Watkin Williams, asphyxiated, will probably recover.

The damage to the mine was not of a serious nature. Though there was some trouble in getting the men out on account of some slight caves, no interruption to the mining work was incurred. The accident occurred in the 400-foot level, the lowermost of the workings, in what are called the new openings. A quantity of coal dust had ignited, and the supposition is that a keg of blasting powder, containing 25 pounds, became ignited by the fire. The men killed were near the spot, but did not lose their lives simply and immediately by the force of the explosion, but from asphyxia; the condition of four out of the five showing clearly that this was the case. There were no marks of violence on any of the bodies.

In cases of asphyxia very much depends on the length of time which elapses before the sufferers have assistance, and no doubt if, as stated, the men were simply asphyxiated, not hurt by the powder explosion, if they could have been immediately removed they could have been brought to. The usual remedy in such cases is to produce artificial respiration, as in the case of partially drowned persons. By forcing the deleterious gas from the lungs and blowing in pure air respiration is induced, and if not too late the patient can be restored. As to the means of entering places rendered dangerous by bad gas, some remarks are made in another column of this issue.

A terrible storm visited Gold Hill, Nev., on the 22d inst., exceeding any in severity experienced in many years. It partook more of the nature of a cloud burst than anything else. At the time of the cloud burst a fatal accident occurred at the Lady Washington mine. The flood of water rushing down Gold canyon was so great that it backed up into the drain tunnel from the shaft to the ravine. There being probably but about one foot of fall in the whole length of the drain tunnel, and the rise of water being two or three feet, a perfect deluge of water was suddenly poured down into the main shaft where four men were at work. The men rang the bell for the cage to be lowered, and when it came down two of the men got on board of it and went to the surface. Why the other men did not get upon the cage does not very clearly appear, as we are only told that they were "too slow." Being left in the shaft and finding the water pouring in upon and rising about them, they began climbing up the timbers of the shaft. Those above lowered the cage again with a man aboard who had volunteered to go down. When he had descended about 40 feet below where the drain tunnel connected with the shaft, he found the flood of water pouring down so great that he was in danger of being drowned on the cage, and so was obliged to ring to be brought back to the surface. After the rush of water was over the cage was again lowered and one of the men was found safe in the pump-station at the 700-foot level, to which he had climbed. The other man, Thomas Ryan, was not found for some time after, when the shaft had been pumped out, when his dead body was recovered. The shaft was filled to the depth of 80 feet in a short time, so great was the volume of water that poured into it. When Ryan's body was recovered the only mark found upon it was a cut on the back part of the head. The wound was not of such a nature as to have caused death, therefore the unfortunate man must have drowned. It is thought that in trying to climb up the timbers of the shaft he lost his hold and fell back into the water, his head striking a timber in his fall.

On the 14th inst. a man working in the Yellow Jacket mine, on the Comstock, met with a curious accident. The *News* says: He was engaged with other workmen in retimbering the west compartment of the shaft, and was about 50 feet below the 1100-foot station. In his work it became necessary to take out a guide bolt from the guides, and in doing so he put a two-by-six inch plank across the shaft to stand on. The pump-man in the next compartment had started to go down, and Richards thought he would have time to get his job finished before the cage in his compartment came down again. The two cages are so joined that when one goes down the other comes up. After going down a little more than 100 feet, the pump-man rang his cage to the top again. This sent the cage down into the compartment where the workingmen were, and before Richards was fully aware of his situation he was caught between the descending cage and the plank on which he was standing. The motion of the cage was fortunately slow and the weight of it was put upon the plank by degrees.

The tank was also on the cage, and the combined weight was so great that the plank was broken, Richards being literally mashed through it. He fell a distance of more than 50 feet, to the bottom of the shaft. There was about 15 feet of water in the sump, and to this fact may be ascribed the escape of Richards from death. He was picked up out of the water, in a few minutes, in an insensible condition. Upon examination it was found that no bones were broken, but that Richard's entire left side was badly bruised and crushed.

Foundry Work.

The Etna Iron Works.

The press of work at the foundries for the season is over and comparative dullness now prevails. More or less general work is of course on hand at all of them, but they are by no means busy.

At the Etna foundry they are working a full complement—from 70 to 75 men. The largest work at present on hand is an engine for a saw mill of Dolbear & Carson. This is a 14x30 engine designed especially for them. It has glass gibs in the cross-heads and is supplied with both the Saunders and Dunbar patent steam piston packing. Saunders' metallic packing has been in use at the Ætna works for a year or more and is found to answer the purpose admirably, being very tight and at the same time causing no heating.

They are also making an 8x16 engine for a mine in Mexico. This is built in sections so as to be packed on mule back to the mine. The heaviest piece weighs 350 pounds. They are also making the castings for a set of Secor's amalgamating machinery.

They are engaged also on castings for Smith's three cylinder pumps, of the pattern recently described and illustrated in the Press. One of these is a seven-inch pump for the Coquille Black Sand mining company. The demand for these pumps is increasing. The principle is to keep the column of water continually moving without stoppage such as occurs in the ordinary pump on the return stroke.

At this foundry castings are being made of slag pots, lead molds and smelting work machinery for the reduction works in Oakland. Considerable work of the same kind is also being done for the New England smelting and tunnel company, Tulare county, and the works of the Defiance company in Inyo county.

One of O'Hara's roasting furnaces, recently described in the Press, is being made for the Exchequer mine. Work has just commenced on a White roasting furnace for a mining company at La Paz. Considerable jobbing work is being done also; in fact, the principal part of the business of this foundry is of this class. They are at present putting in six sidewalk hoists at Baldwin's building on Market street, and doing other work of a similar character.

General News Items.

The Custer fund amounts to $40,000.

There are 88 miles of good street sewers in San Francisco.

A general reduction of wages is imminent in Glasgow.

The Sultan of Turkey is suffering from delirium tremens.

According to the dispatches the atrocities in Bulgaria still continue.

The Frear stone works in this city were destroyed by fire on Sunday.

Dispatches received state that General Canal has been elected President of Hayti.

Forty of the crew of the *Thunderer* were killed by the recent explosion, or have died from the effects of it.

The fast mail train between New York and the West was discontinued on the 22d, the House having reduced the appropriations for the postal service so greatly that it could not be maintained.

All children attending the public schools are now required to present to the teachers of the classes to which they belong a physician's certificate showing that they have been vaccinated within seven years.

The yacht *Mohawk* was capsized by a squall in New York harbor on the 19th inst., and Commodore Garner, of the New York yacht club, together with his wife, Miss Adele Hunter, Frost Thorne and the cabin boy were drowned. The accident is attributed to the carelessness of Captain Rawlings, the sailing master.

A material for packing stuffing boxes recently patented in England consists in thin pliable shavings of soft metal or alloy, such as is employed to form soft metal bearings.

Information is wanted at this office of Mr. J. M. McArthur, who was last heard from June 29th, at San Bernardino. Said he was bound for Panamint.

Woodward's Gardens embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

METALS.

[WHOLESALE.]

THURSDAY, M., July 27, 1876.

American Pig Iron, ₩ ton	32 00	@	—
Scotch Pig Iron, ₩ ton	31 50	@	32 00
White Pig, ₩ ton	40 00	@	50 00
Oregon Pig, ₩ ton	31 50	@	32 50
Refined Bar	—	@	— 4¼
Boiler, No. 1 to 4	—	@	— 8½
Plate, No. 5 to 9	—	@	— 5½
Sheet, No. 10 to 14	—	@	— 5½
Sheet, No. 14 to 20	—	@	— 5¾
Sheet, No. 22 to 24	—	@	— 6
Sheet, No. 26 to 28	—	@	— 6½
Horse Shoes, per keg	7 00	@	8 50
Nail Rod	— 10	@	— —
Norway Iron	—	@	— 5½
Rolled Iron	— 4	@	— 8
Other Irons for Blacksmiths, Miners, etc.	—	@	— 4½
COPPER.—			
Copper Tin'g	— 37	@	— 40
Sheathing, ₩ lb	— 24	@	— 40
Sheathing, Yellow	— 21	@	— 22½
Sheathing, Old Yellow	— 10	@	— 11
Composition Nails	— 41	@	— —
Composition Bolts	— 24	@	— —
STEEL.—Kanlish Cast, ₩ lb	— 20	@	— 25
Anderson & Woods' ordinary sizes	—	@	— 15
Drill	—	@	— 16½
Flat Bar	— 16	@	— 20
Plow Steel	— 8	@	— 9
TIN PLATES.—			
10x14 I C Charcoal	11 00	@	— —
10x14 I X Charcoal	13 00	@	— —
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	— 21	@	— —
Australian	— 25	@	— —
ZINC.—By the Sheet	—	@	— 11
Zinc, Sheet 7x3 ft No 7 to 10 ₩ lb	—	@	— 11
do do 7x3 ft, No 11 to 14	—	@	— 11½
do do 8x14 ft, No 8 to 10	—	@	— 12½
do do 8x14 ft, No 11 to 10	—	@	— 12
NAILS Assorted sizes	3 60	@	3 75
QUICKSILVER, per lb	— 43	@	45 —

DOMESTIC PRODUCE.

[WHOLESALE.]

WEDNESDAY M., July 26, 1876.

BEANS.			
Bayo, ₩ ctl	4 50	@	5 00
Sntter	1 9	@	2 25
Pea	1 92½	@	—
Pink	2 50	@	3 00
Sm'l white	1 60	@	1 90
Lima	1 90	@	2 00
BROOM CORN.			
Common, ₩ lb	2	@	3
Choice do	4	@	5
COTTON.			
Cotton, ₩ lb	15	@	18
DAIRY PRODUCE, ETC.			
BUTTER.			
Cal. Fresh Roll per lb	27½	@	32½
Point Reyes	30	@	32½
Firkin	25	@	27½
W'st'n Reserve	16	@	20
New York	—	@	—
CHEESE.			
Cheese Cal., ₩ lb	10	@	15
do Old	—	@	—
Eastern	—	@	—
EGGS.			
Cal. fresh ₩ doz	37½	@	40
Ducks	—	@	—
Oregon	22	@	25
Eastern	21	@	—
FEED.			
Bran, per ton	—	@	18 50
Corn Meal	27 50	@	28 00
Hay	7 00	@	13 00
Middlings	24 00	@	—
Oil cake meal	—	@	37 50
Straw, ₩ bale	55	@	60
FLOUR.			
Extra ₩ bbl	5 50	@	6 00
Superfine	4 50	@	4 75
Graham, ₩ bbl	5 00	@	—
FRESH MEAT.			
Beef 1st quality ₩ lb	6	@	8
Second do	5	@	5½
Third do	4	@	4½
Spring Lamb	5½	@	6
Mutton	2½	@	3
Pork, undressed	7	@	7½
do. dressed	—	@	10½
Veal	6	@	8½
Milk Calves	5½	@	7
GRAIN, ETC.			
Barley, feed or	95	@	1 00
do brewing	1 20	@	1 25
Chevelier	1 25	@	1 35
Corn, White	1 15	@	1 22½
do Yellow	1 15	@	1 22½
Oats	1 25	@	1 80
Milling	—	@	1 75
Rye	1 50	@	1 60
Wheat shipping	1 53	@	1 52½
do milling	1 60	@	1 65
HIDES.			
Hides, dry	10	@	13
do wet salted	6	@	6½
HONEY, ETC.			
Beeswax, per lb	25	@	30
Honey in comb	12½	@	15
do Strained	6	@	8
HOPS.			
New crop	10	@	13
NUTS—Jobbing.			
Alm'ds n'rd sh'l ₩ lb	8	@	10
do, soft sh'l	18	@	20
Brazil do	14	@	16
Cal. Walnuts	12	@	14
Chile Walnuts	11	@	12½
Peanuts per lb	9	@	10
Filberts	15	@	16
Pecanuts	17	@	18
ONIONS.			
Union City ctl	—	@	—
Stock'n	75	@	80
New Red	50	@	60
Silver Skins	62½	@	87½
POTATOES.			
Petaluma, ₩ ctl	—	@	—
Early Rose	—	@	—
Humboldt	—	@	—
Half Moon bay	60	@	80
Early Rose new	65	@	75
Sweet	—	@	—
POULTRY & GAME.			
Hens per dz	5 50	@	9 00
Roosters	8 01	@	7 50
Broilers	3 00	@	5 00
Ducks, tame do	5 00	@	6 00
do Mallard	—	@	5 00
do Canvas	—	@	5 00
Geese, per pair	1 25	@	2 25
Wild Gray dz	3 00	@	4 00
White	1 00	@	1 50
Turkeys, Live, ₩ lb	15	@	18
do Dressed	20	@	23
Quail, per doz	—	@	—
Snipe, Eng., doz	—	@	—
Doves, per dozen	50	@	87
Rabbits	1 00	@	1 00
Hare, per doz	1 50	@	2 00
PROVISIONS.			
Cal. Bacon, ₩ lb	16	@	17
do Medium	15½	@	16
do Heavy	—	@	15½
Lard	14	@	16½
Cal. Smoked Beef	10	@	12½
Eastern do	—	@	10
Eastern Shoulders	—	@	10
Hams, Cal	14	@	14½
do Armour	14½	@	15
do Worster's	17	@	17½
do Dupee's	16	@	16½
do Davis Bros	17	@	17½
SEEDS.			
Alfalfa, Chile ₩ lb	8	@	10
do California	11	@	12
Canary	10	@	12
Clover Red	—	@	22
do White	50	@	55
Cotton	8	@	10
Flaxseed	—	@	3½
Hemp	12½	@	—
Italian Rye Grass	25	@	30
Perennial do	20	@	30
Millet	10	@	12
Mustard, white	3	@	3½
do. Brown	3	@	3½
Rape	7	@	9
Ky. Blue Grass	30	@	—
do 3d quality	20	@	—
Sweet V Grass	—	@	75
Orchard do	30	@	35
Red Top do	—	@	25
Sungarian do	8	@	12
Lawn do	50	@	—
Mesquit do	20	@	25
Timothy	11	@	13
TALLOW			
Crude, ₩ lb	6½	@	—
Refined	8½	@	9
WOOL, ETC.			
SPRING—			
Seedy, ₩ lb	9	@	12½
Choice long free	17	@	18
do Northern	19	@	21
do short	13	@	16½
Berry	10	@	14
Oregon	14	@	18

LEATHER.

[WHOLESALE.]

WEDNESDAY M., July 26, 1876.

City Tanned Leather, ₩ lb			22@23
Santa Cruz Leather, ₩ lb			22@28
Country Leather, ₩ lb			22@28
Spoke Leather, ₩ lb			25@29
Jodot, 8 Kil., per doz			$50 00
Jodot, 11 to 13 Kil., per doz			85 00@ 75 00
Jodot 14 to 19 Kil., per doz			82 00@ 84 00
Jodot, second choice, 11 to 19 Kil. ₩ doz			57 00@ 74 00
Cornellian, 12 to 16 Ko			57 00@ 67 00
Cornellian Females, 12 to 13			83 00@ 67 00
Cornellian Females, 14 to 16 Kil			71 00@ 76 50
Simon Ulimo Females, 12 to 13, Kil			58 00@ 62 00
Simon Ulimo Females, 14 to 15, Kil			66 00@ 16 00
Simon Ulimo Females, 16 to 17, Kil			72 00@ 74 00
Simon, 18 Kil., ₩ doz			51 00@ 13 00
Simon, 20 Kil. ₩ doz			67 00@ 69 00
Simon, 24 Kil. ₩ doz			72 00@ 74 00
Robert Calf, 7 and 9 Kil			35 00@ 40 00
French Kips, ₩ lb			1 00@ 1 15
California Kip, ₩ doz			40 00@ 6? 00
French Sheep, all colors, ₩ doz			8 00@ 15 00
Eastern Calf for Backs, ₩ lb			1 00@ 1 25
Sheep Roans for Topping, all colors, ₩ doz			9 00@ 13 00
Sheep Roans for Linings, ₩ doz			5 50@ 10 50
California Russett Sheep Linings			1 75@ 4 50
Best Jodot Calf Boot Legs, ₩ pair			5 00@ 5 25
Good French Calf Boot Legs, ₩ pair			4 00@ 4 75
French Calf Boot Legs, ₩ pair			4 00@ —
Harness Leather, ₩ lb			24@ 28
Fair Bridle Leather ₩ doz			48 00@ 72 —
Skirting Leather, ₩ lb			33@ 37½
Welt Leather, ₩ doz			30 00@ 50 00
Bag Leather, ₩ foot			17@ 18
Wax Side Leather, ₩ foot			17@ —

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, July 26, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 89¾ to 90¼. Silver, 7½@8.

GOLD in N. Y. 111¼.

GOLD BARS, 880 to 890. SILVER BARS, 20 and 30 per cent. discount.

EXCHANGE on N.Y., 50-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, 12 per cent. discount.

LONDON — Consols, 93 to 93⅛; Bonds, 102⅛

QUICKSILVER in S. F., by the flask, per ₩, 42½@45c.

The Mechanics' Fair Daily.

This journal, printed and issued in the Pavilion of the ELEVENTH INDUSTRIAL EXHIBITION, and circulated free, will be a superior publication. It will contain all OFFICIAL INFORMATION during the Exhibition, commencing Aug. 8th, 1876 ITS ILLUSTRATIONS will furnish accurate views of NEW INVENTIONS AND MACHINERY.

The volume will give a substantial and readable RECORD OF THE FAIR, quite valuable for reference and preservation, in addition to a goodly variety of other reading matter, daily, embracing GRAPHIC PARAGRAPHS AND HUMOROUS INCIDENTS, making altogether a paper eagerly sought for (both in and out of the Pavilion) by nearly a QUARTER OF A MILLION OF READERS during the term of the Exhibition—a circulation reaching a greater number of different individuals than that of any publication yet issued.

We shall make a specialty of inserting ATTRACTIVE ADVERTISEMENTS, representing the leading firms in nearly EVERY BRANCH OF TRADE AND INDUSTRY on this coast, upon favorable terms, soliciting such as we believe will be most benefited by advertising in a well conducted, enterprising and everywise meritorious journal.

This beautifully illustrated sheet, issued upon such an occasion, will receive close attention, and its contents—both reading and advertising being original—will be closely scanced throughout.

THE IMMENSE PAVILION has been improved for the coming Fair. An unusually large amount of space for exhibits has already been engaged. Special exhibitions and new and attractive features will be introduced, calculated to make the Fair of 1876 a GRAND SUCCESS.

Orders for advertising, sent in early, will receive careful attention.

The undersigned, publishers of the MINING AND SCIENTIFIC PRESS, have successfully issued a popular daily in the Mechanics' Fair during seven Industrial Exhibitions since 1864, and we are now confident of making the coming volume surpass all its predecessors in its standard of value as a reading journal of art and information and a medium of first-class business announcements.

We have been awarded by the managers of the Exhibition the EXCLUSIVE PUBLISHING AND ADVERTISING PRIVILEGES of the Eleventh Industrial Exhibition, and are determined to accomplish a work creditable to the MECHANICS' INSTITUTE, to OUR PATRONS AND TO OURSELVES.

DEWEY & CO.,

Publishers and Patent Agents, No. 224 Sansome street, S. E. Cor. of California, S. F.

Our Agents.

OUR FRIENDS can do much in aid of our paper and the cause of practical knowledge and science, by assisting Agents in their labors of canvassing, by lending their influence and encouraging favors. We intend to send none but worthy men.

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RICHARD RULE—Nevada.
B. GLONW N—Pacific States and Territories.

"Faith and Confidence"

LIVERMORE, Oct. 1st, 1875.

MESSRS. DEWEY & CO., Patent Solicitors: *Gentlemen*—Yours of the 29th ult. containing my patent to Elevated R. R. duly received, and I hereby return my sincere thanks to the MINING AND SCIENTIFIC PRESS Patent Agency for your promptness and honesty in regard to our business connections. I have received a flood of circulars from Eastern firms, desiring to deal with me, but I have declined any communication with them and prefer, as soon as circumstances will permit, to negotiate with and patronize a home institution; one in which I have faith and confidence—DEWEY & CO.

Again thanking you for your promptness in securing my patent, I remain, obediently yours,

WM. H. HARRISON.

KUSTEL'S CONCENTRATION OF ORES (of all kinds), including the Chlorination Process for Gold-bearing Sulphurets, Arsenurets, and Gold and Silver Ores generally, with 120 Lithographic Diagrams. 1867. The most complete treatise. Published at this office. Price $5. Postage, 50 cts. extra

ROASTING OF GOLD AND SILVER ORES, and the Extraction of their Respective Metals without Quicksilver. 1870. It contains 142 pages, embracing illustrations of furnaces, implements and working apparatus. Price $2.50 coin, or $3 currency, postage free. Published and sold at this office.

CHOICE VOLUMES.—We have a full new set of *Scribner's Monthly*—ten volumes—well bound, for sale at this office. Price, $2 per volume.

SEWING MACHINES.—We have a first-class machine we wish to dispose of on favorable terms. Apply at his office.

Mining and Scientific Press,

Started in 1860, is one of the oldest weekly journals now published in San Francisco. It has been conducted by its present proprietors for ten years, during which period it has been repeatedly enlarged and constantly improved. The active and steadfast efforts of its publishers have gained for its conduct an amount of practical experience greater than any other publishers have accumulated on this coast, of a weekly journal.

The sum paid by us for the best editorial talent obtainable for our special class journal; for engravings, for interesting news and correspondence, and for printing a large-sized, handsome sheet, is unequalled by that of any other American weekly west of the Mississippi.

As a PRACTICAL MINING JOURNAL it has no rival on this Continent.

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DEWEY & CO.,

No. 224 Sansome street, S. F.

THE MINING AND SCIENTIFIC PRESS PATENT AGENCY was established in 1860—the first west of the Rocky Mountains. It has kept step with the rapid march of mechanical improvements. The records in its archives, its constantly increasing library, the accumulation of information of special importance to our home inventors, and the experience of its proprietors in an extensive and long continued personal practice in patent business, affords them combined advantages greater than any other agents can possibly offer to Pacific Coast inventors. Circulars of advice, free.

Address,

DEWEY & CO.,

Publishers MINING AND SCIENTIFIC PRESS and PACIFIC RURAL PRESS, San Francisco.

THANKS, ETC.—*Messrs. Dewey & Co.—Gents:* I write to acknowledge the receipt of letters patent on my fruit drier, which came to hand to-day. Accept my thanks for the very satisfactory and successful manner in which the case has been handled.

Respectfully yours, HILAND G. HULBURD.

Placerville, July 20th, 1875

To Mining Secretaries.

An emendment to Section 336 of the California Code, taking effect July 1st, 1874, provides that in addition to the regular publication, daily or weekly, of the assessment and sale notices as heretofore,

PERSONAL NOTICE

Must be served as provided in the following quotation from the law:

"The notice must be personally served upon each stockholder, or in lieu of personal service, must be sent through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where the principal office of the Corporation is situated."

The above refers to the ASSESSMENT NOTICE only Advertisers in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assessment notices printed on slips suitable for service personal notice under this law at short notice.

DEWEY & CO., Publishers.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Antilles Mining Company—Location of

principal place of business, San Francisco, Cal.

Notice is hereby given, that at a meeting of the Directors, held the seventh day of July, 1876, an assessment of 20 cents per share was levied upon the capital stock of the corporation, payable immediately, in U. S. gold coin, to the Secretary, at his office, No. 207 Sansome street (third floor), San Francisco.

Any stock upon which this assessment shall remain unpaid on August 16th, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, September 8th, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

H. M. MORGAN, Secretary.

Office, 207 Sansome street, San Francisco, Cal.

Cherokee Flat Blue Gravel Company—

Location of principal place of business, San Francisco, Cal. Location of works, Cherokee Flat, Butte County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, No. 36, levied on the eighth day of June, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A Uasell	17	4603	$230 40
Mrs Mary W Farrington	35	144	7 20
Mrs E M Walton, balance of certificate No. 21 128 shares sold for assessment No. 35	81	73	3 65
George W Remage, balance certificate No. 36. 320 shares sold for assessment No. 35	83	235	11 75

And in accordance with law, and an order of the Board of Directors, made on the eighth day of June, 1876, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the company, room 13, No. 328 Montgomery street, San Francisco, Cal., on Saturday, the fifth day of August, 1876, at the hour of two o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

O. H. BOGART, Secretary.

Office, Room 13, Safe Deposit Building, San Francisco, Cal.

Office South Comstock Gold and Silver Mining Company.

NOTICE.—The annual meeting of the stockholders of the South Comstock Gold and Silver Mining Company, for the election of trustees and the transaction of such other business as may be presented, will be held on Monday, the 21st day of August, 1876, at two o'clock P. M., of that day, at the office of the company. Transfer books will be closed on Wednesday, August 16th, 1876, at three o'clock P. M.

J. M. BUFFINGTON, Secretary.

Office, Rooms 3 and 4, No. 311 California street, over Ætna Insurance Office, entrance 309 California street, San Francisco, Cal.

Kearsarge Consolidated Quicksilver Mining Company.

Principal places of business, San Francisco, Cal. Location of works, Lake Mining District, Lake County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the first day of July, 1876, an assessment of fifteen cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, No. 10 Stevenson Block, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 28th day of August, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 16th day of September, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale

JAMES MCHAFFEE, Secretary.

Office, Room 10, Stevenson Block, San Francisco, Cal.

Mariposa Land and Mining Company

of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the sixth day of July, 1876, an assessment (No. 6) of one dollar per share was levied upon the capital stock of the corporation, payable immediately, in United States currency, to the Secretary, at the office of the company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office, No. 9 Nassau street, New York.

Any stock upon which this assessment shall remain unpaid on the seventh day of August, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the second day of September, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

LEANDER LEAVITT, Secretary.

Office, Room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal.

Office of the Tintic Milling and Mining Company,

San Francisco, Cal., July 14th, 1876. The annual meeting of the stockholders of the Tintic Milling and Mining Company will be held at the office of the company, No. 310 Sansome street, San Francisco, on Monday, August 14th, 1876, at two o'clock P. M., for the election of directors for the ensuing year, and the transaction of such other business as may be brought before the stockholders. By direction of the Board of Directors. H. CLAY MILLER, Secretary.

San Francisco, July 14th, 1876.

Umpire Tunnel and Mining Company—

Location of principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No 5), levied on the 23d day of June, 1878, the several amounts set opposite the names of the respective shareholders, as follows:

OLD STOCK.

Names.	No. Certificate.	No. Shares.	Amount.
Allen, Jas M. Trustee	184	50	$ 6 25
Ambrose, Michael	142	10	1 25
Ambrose, Michael	144	10	1 25
Ambrose, Michael	145	5	53
Ambrose, Michael	147	5	53
Ambrose, Michael	148	5	63
Ambrose, Michael	149	5	63
Ambrose, Michael	150	5	53
Ambrose, Michael	151	5	53
Beal, W A, Trustee	205	100	12 50
Beal, W A, Trustee	212	100	12 50
Beal, W A, Trustee	214	100	12 50
Beal, W A, Trustee	262	30	3 75
Beal, W A, Trustee	263	25	3 12
Beal, W A, Trustee	275	4	50
Beal, W A, Trustee	279	10	1 25
Beal, W A, Trustee	300	100	12 50
Congdon, H B, Trustee	31	125	15 62
Congdon, H B, Trustee	136	125	15 62
Congdon, H B, Trustee	185	50	5 25
Costello, J V	338	50	6 25
Costello, J V	339	50	5 25
Costello, J V	340	20	2 50
Costello, J V	341	20	2 50
Costello, J V	342	20	2 50
Costello, J V	343	20	2 50
Costello, J V	344	20	2 50
Dempsey, Peter	192	200	25 00
Dunseth, J D	201	130	16 25
Eakins, P A, Trustee	289	100	12 50
Edgerly, Saml	85	20	2 50
Edgerly, Saml	87	20	2 50
Edgerly, Saml	88	20	2 50
Edgerly, Saml	75	10	1 25
Edgerly, Saml	80	10	1 25
Edgerly, Saml	250	100	12 50
Edgerly, Saml	255	100	12 50
Galli, A	270	100	12 50
Galli, A	271	100	12 50
Galli, A	272	100	12 50
Galli, A	273	100	12 50
Galli, A	274	50	6 25
Johnson, S W	263	100	12 50
Lynch, J F	219	100	12 50
Lynch, J F	220	100	12 50
Mangeri, S	269	50	6 25
Knapp, W A	191	2	25
Smith, J P	308	100	12 50
Smith, J P	309	100	12 50
Smith, J P	310	100	12 50
Smith J P	311	100	12 50

And in accordance with law, and an order of the Board of Directors, made on the 2d day of June, 1876, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, No. 605 Montgomery street, on the 14th day of August, 1876, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. W. W. DAVIS, Secretary.

Office, 605 Montgomery street, San Francisco, Cal.

Iron and Machine Works.

WM. HAWKINS. T. G. CANTRELL

HAWKINS & CANTRELL,

MACHINE WORKS,

210 & 212 Beale St.,

Near Howard, - - - SAN FRANCISCO.

MANUFACTURERS OF

Steam Engines and all kinds of Mill and Mining Machinery.

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Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horse Power.

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Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:

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SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors:

Joseph Moore, Jesse Holladay, O. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary

24v17-qy

THOS. PENDERGAST. HENRY S. SMITH.

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MANUFACTURERS OF

IRON CASTINGS

and MACHINERY,

OF ALL KINDS.

Fremont Street, bet. Howard and Folsom,

SAN FRANCISCO.

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Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

☞ All kinds of Machinery made and repaired.

24v22-3m JOSEPH MOORE, Superintendent.

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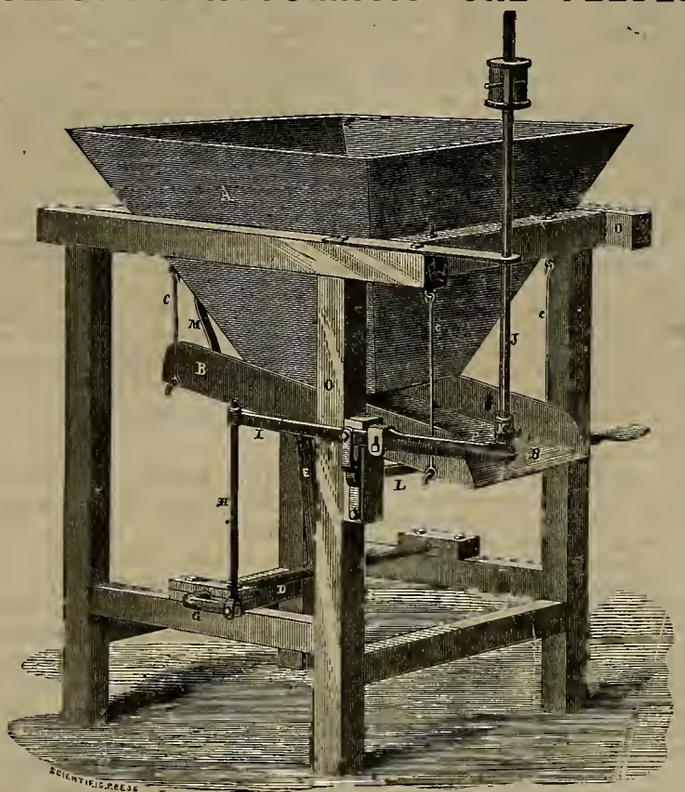

The **TULLOCH AUTOMATIC ORE FEEDERS** have been practically tested during the last year and a half in twenty-seven mills, of from five to eighty stamps each, and have, in every case, given perfect satisfaction. Refer to the following Mills: California, Con. Virginia, Northern Belle, Leopard, Trench, Humboldt, Douglas, Phœnix, Hite, Crescent, and others. Prices Reduced. Send for Circulars.

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Owing to our largely increased business, the present low price of Iron from which our Steel is manufactured and the improved facilities for casting and forging, we take great pleasure in announcing that from and after this date we will supply our IMPROVED CAST AND FORGED STEEL SHOES AND DIES FOR QUARTZ MILLS at 12 cents per pound, delivered at San Francisco or Sacramento, instead of 16 cents, as heretofore.

We also furnish Steel Plates for Blake and other Ore Crushers, Steel Gut Gearing, etc., for Mills and Hoisting Works, Steel Pan Shoes, Battery Cams and Tappets, etc.

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—AND—

Every Variety of Shafting,

Embracing ALL SIZES of

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—ALSO—

HAMMERED IRON

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MANUFACTURERS OF ALL KINDS OF

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ALL STYLES OF FANCY HEAD BOLTS.

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CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston

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INDESTRUCTIBLE! NON-CONDUCTOR OF HEAT

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Made from Pure Long Fiber Asbestos,

INDESTRUCTIBLE! SELF-LUBRICATING!

Keefe's Boiler Compound,

Prevents the formation of Scale in Boilers and removes the same, without injuring the iron or causing the water to foam.

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AFTER ONE OF THE

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Best Established Reputation,

In which, at great expense, the different Steam Pumps were tried under every test known to experts, the Examining Committee of the Tenth Industrial Fair of the Mechanics' Institute have awarded to us their

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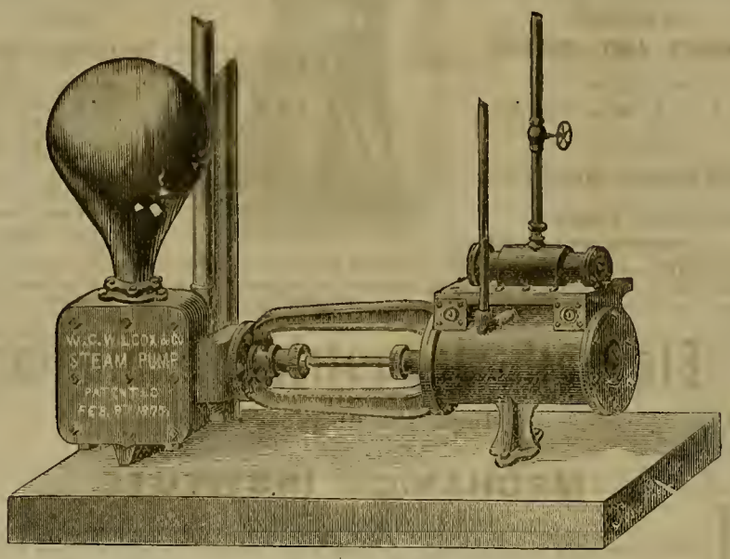

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We claim that our Pumps are the **best** ever made in **simplicity** of construction, economical use of power, **durability** and perfect adaptability for general uses, and we ask all persons interested to investigate **our title to this claim.** Salesrooms at our Machine Shop, 114 and 116 BEALE STREET, SAN FRANCISCO.

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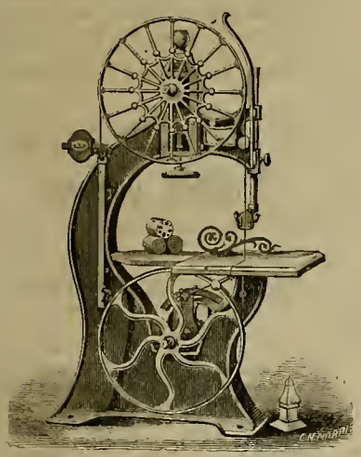

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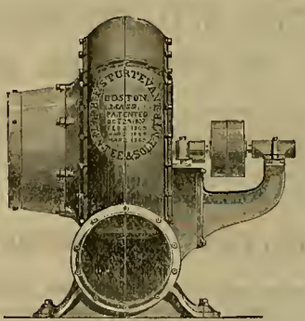

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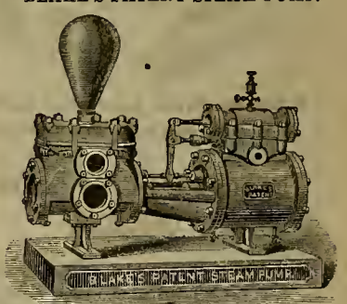

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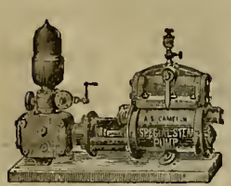

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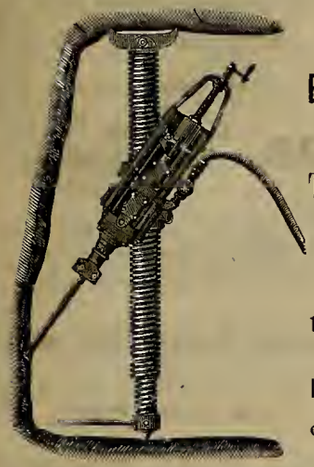

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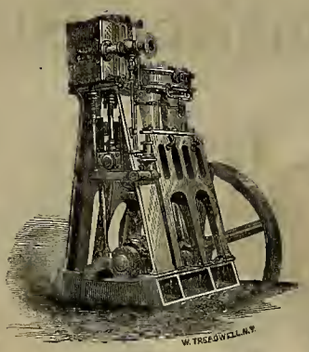

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Large Assortment of

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HASKINS' PORTABLE HOISTING ENGINES, constructed especially for economical use in mining districts, with Compressed Air or Steam, adapted to all classes of underground work and made throughout on the interchangeable plan, so that all parts can be duplicated when desired. Catalogues and Estimates given on application.

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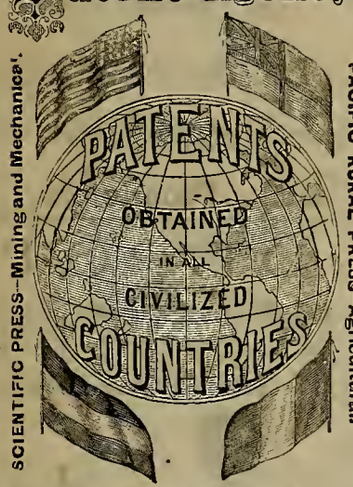

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The Scientific Press Engraving Company.

As has been announced in our columns, this company is prepared to do fine wood engraving on favorable terms. Mr. E. Schultze, managing partner, served a thorough tnition in his branch of art in Germany and New York, and has since had over seven years' experience in designing, drawing and engraving in California. Customers can place their orders in Mr. Schultze's hands with tha full assurance of receiving satisfaction as to quality of work and fairness of price.

Thanks for Prompt Attention.

STOCKTON, June 26, 1875.

Messrs. Dewey & Co., S. F.—I have received the patent for my invention in wagon brakes, which you prosecuted for me; patented May 11, 1875—No. 163,046. Thanks to you for your prompt attention to the case; you will hereafter be my attorneys in such cases. I recommend all inventors on the Pacific coast to give you a call, which I think they will never have any cause to regret. Very truly yours,

GEO. G. BUCKLAND,
Stockton, Cal.

Newspaper Fileholders.

Dewey's new elastic fileholders (black walnut), size of the PRESS, *Harper's Weekly* and *Scientific American*, for 50 cts. Larger sizes, to suit any newspaper, 75 cts. By mail, postpaid, 10 cts. extra. Cash with all orders. Patent allowed. Address, DEWEY & Co., Publishers, San Francisco.

THE EXPLORERS', MINERS' AND METALLURGISTS' COMPANION.—Comprising a practical exposition of the various departments of exploration, mining, engineering, assaying and metallurgy; containing 672 pages and 83 engravings. By J. S. Phillips, M. E. Price, cloth, $10.50; in leather, $12; postage 50 cts. Sold at this office.

Eleventh Industrial Exhibition,

Under the Auspices of the

MECHANICS' INSTITUTE.

The Managers have the honor to announce that the forthcoming Exhibition will be opened to the public on

Tuesday, Aug. 8th,

At 11 A. M., with the usual ceremonies. By the desire and co-operation of the leading citizens of San Francisco, the Exhibition will be held on a much grander scale than heretofore.

THE EXHIBITION BUILDING, OCCUPYING AN AREA OF OVER 214,000 FEET

OF FLOOR ROOM, WILL BE COMPLETELY FILLED WITH THE VARIED PRODUCTS OF THE SKILL AND INDUSTRY OF THE PEOPLE AND OF THE SOIL. OVER 700,000 PERSONS WERE ADMITTED DURING THE LAST FAIR. THE MANAGERS INTEND TO ENGAGE THE SERVICES OF THE BEST INSTRUMENTAL TALENT OF THE COUNTRY, SO AS TO ENABLE THEM TO GIVE UNEQUALED

MUSICAL CONCERTS AFTERNOON AND EVENING.

In every Department applications for space far exceed expectations, and surpass those of former Fairs. Intending Exhibitors must not delay filing their applications, otherwise they will be excluded.

The Exhibition will Continue at least One Month.

THERE WILL BE NO CHARGE FOR EXHIBITING SPACE.

Application for space or for information should be addressed to the Secretary of the Board of Managers, Eleventh Exhibition, 27 Post street, San Francisco or to J. H. Gilmore, Supt., at same address.

A. S. HALLIDIE, President.
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SAN FRANCISCO, SATURDAY, AUGUST 5, 1876.

VOLUME XXXIII Number 6.

A Geological Anomaly.

A Noted Calcareous Deposit—One of Lyon County's Industries.

A short time ago your correspondent had the pleasure of visiting the Dayton lime works, owned by, and under the immediate supervision of Mr. H. C. Blanchard, an old and popularly known resident of Nevada. The works are situated about two miles southeast of the town of Dayton and about the same distance, in an easterly direction, from the Carson river, at the base of the Como range of mountains, near the mouth of a long, deep canyon or gorge known as El Dorado canyon.

The Location of the Deposit,

As well as the surrounding country is most singular, being pronounced by Professor Stewart to be a "geological anomaly," as the formation of the same, is such that the existence of limestone, even in small quantities, is as curious and unexpected as many other characteristics which it possesses. Before proceeding further I will state that the quotations used referring to its geological structure are taken from a report lately made for Mr. Blanchard, by the well known geologist and mineralogist, Professor W. Frank Stewart, as also the accompanying diagram of the works made by that gentleman. In referring to this singular formation the Professor says: "Owing to the tremendous and wide spread volcanic activities which prevailed in the great American basin during the azoic as well as in more recent periods, the geological structure of Nevada is in many respects, quite anomalous, and geologists are continually surprised and perplexed by the singular juxtaposition and entanglement of tertiary and secondary strata with the ancient hypogene and metamorphic rocks. In many portions of the State we find tertiary beds and carboniferous deposits resting in the very heart of volcanic basins, the former in such close proximity as to warrant the conclusion that either all of the intervening formations, from the subcarboniferous to the miocene tertiary have been entirely obliterated by erosion, or that a marvelous geological hiatus occurred and no such sedimentary deposits ever existed in these localities. A striking example of this unconformability of the geological period occurs at the western base of the Como range of mountains, at a point two miles east of the town of Dayton. * * * * * From exposed and extremely distinct surface indications, a vertical section at this point would give us the following

Series of Strata

Upon a rising scale, first—a bed of homogeneous grey trachyte; second—alternating strata of calcareous slates, argillaceous slates and ferrous oxides; third—compact mountain limestone and gray marble, both impregnated with iron and silver; fourth—a deep stratum of loadstone or granwacke; fifth—a well defined stratum of carbonate of lime, having a vertical thickness of from 12 to 15 feet; sixth—a deep layer of indurated siliceous tufa; seventh, and last of all, a bed of gray pulverent tufa with tertiary sand and soil containing organic vestiges." In the immediate vicinity are found large quantities of ribbon or moss agates; the silicified branches, stumps and trunks of trees; "stranger than all, the surroundings of these petrified relics furnish undubitable evidence that the primeval forest was in existence ages before the awful convulsion, during which the trachyte crown by Mount Como was lifted to the clouds. That the elevation of the mountain was subsequent to the time of those leaf-shedding trees is manifest from the lateral distortion of the stratified rocks; from the westerly bedding of the limestone and loadstone layers." As already noted in item "fifth" of our geological section, this stratum of limestone is perfectly formed, and rests directly upon a permanent bed of loadstone or granwacke. "As this limestone is apparently devoid of organic remains, and as there seems to be no analogous deposit anywhere else in this region, the underlying granwacke with its accompanying argillaceous and calcareous slates, evidently places its origin in the upper devonian or old red sandstone period. At present, what remains of this limestone layer merely serves as crowns for two conical buttes, or eroded nodules of granwacke, and although these

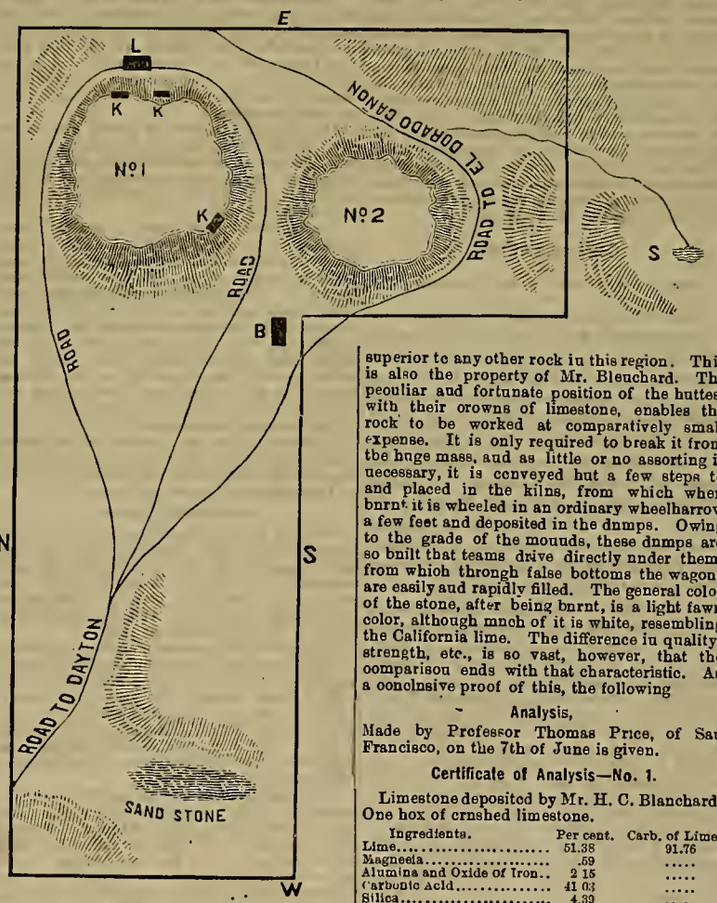
Two Isolated Masses

Of limestone are perfectly conformable with each other, and both occupy their original horizontal positions, yet a slight northwesterly dip of the granwacke bed, together with neighboring rock displacements, plainly indicate that the limestones were bodily elevated from their former horizon when the great trachyte ridge to the eastward arose from the depths."

The accompanying diagram shows

The Relative Positions

Of the two knolls or buttes on the summits of which the great stratum of limestone exists. A small ravine divides them, and they are



LIME WORKS IN EL DORADO CANON.

nearly circular in form, having an elevation above the ravine, from base to summit, of about 50 feet on the southeast, or upper side of the mounds, and probably 60 feet on the lower or opposite side. The lime stratum of butte No. 1, in surface diameter is 290 feet from north to south, and 490 from east to west. That on No. 2 is 290 feet from north to south and 200 feet from east to west, and resembles in appearance the huge croppings or mineral bearing veins such as are often seen in this country. The location is recent, and although

A Large Quantity of Lime

Has already been burnt, sufficient progress has not been made to determine its extent regarding depth; but the geological formation is sufficient to guarantee almost an unlimited amount. This has reference to butte 1, No. 2 having so far remained untouched as regards practical work, while the dimensions given above referring entirely to the visible extent of the stratum, makes in view 530 feet north and south, and 690 feet east and west of the finest possible limestone. Mr. Blanchard was not slow to realize the great pecuniary benefit which might be derived from a proper working of the quarries, and from the period that it passed into his hands to the present, has been constantly adding to it value in way of substantial improvements. He has

Three Kilns,

Which burn on an average 90 tons per week. In this connection we will state that the stone with which the kilns are built, is obtained from a bluff of silicious tufa or sandstone situated but a short distance west of the quarries, and makes one of the finest firestones we ever saw, the intense heat causing it to yield a fine glazed finish or glass coating all over the interior of the kilns. It also makes durable building material having been extensively used in Dayton and Silver City for that purpose, and is considered superior to any other rock in this region. This is also the property of Mr. Blanchard. The peculiar and fortunate position of the buttes' with their crowns of limestone, enables the rock to be worked at comparatively small expense. It is only required to break it from the huge mass, and as little or no assorting is necessary, it is conveyed but a few steps to and placed in the kilns, from which when burnt it is wheeled in an ordinary wheelbarrow a few feet and deposited in the dumps. Owing to the grade of the mounds, these dumps are so built that teams drive directly under them, from which through false bottoms the wagons are easily and rapidly filled. The general color of the stone, after being burnt, is a light fawn color, although much of it is white, resembling the California lime. The difference in quality, strength, etc., is so vast, however, that the comparison ends with that characteristic. As a conclusive proof of this, the following

Analysis,

Made by Professor Thomas Price, of San Francisco, on the 7th of June is given.

Certificate of Analysis—No. 1.

Limestone deposited by Mr. H. C. Blanchard. One box of crushed limestone.

Ingredients.	Per cent.	Carb. of Lime.
Lime	51.38	91.76
Magnesia	.59	.....
Alumina and Oxide of Iron	2.15	.....
Carbonic Acid	41.03	.....
Silica	4.39	.....
Water	.46	.....
	100.00	91.76

This sample was taken from butte No. 1, (which in quality is equaled by No. 2). The only care being exercised was that a fraction should be gathered from every portion of the lime stratum, without regard to its appearance or supposed quality. In reference to which Prof. Price says "No. 1 would produce after burning a first-class quality of lime," which is apparent to all, as shown in the high percentage of the analysis. Another desirable quality which it possesses, above any other lime used on this coast, is its power of retaining strength after being exposed to the air. "On the east and west sides of butte No. 1, the ledge has been opened sufficiently to give a tolerably fair view of the general structure and

Chemical Characteristics

Of the mass. In some portions of the bed, the rocks are drusy, and have become strongly impregnated with oxide of iron, alumina and silicious matter from water infiltration. This drusy rock burns into lime as readily as any other portion of the bed," and yields the finest quality of hydraulic lime, as shown by the following analysis made at the same time and by the same competent chemist as No. 1.

Certificate of Analysis—No. 2.

Limestone deposited by Mr. H. C. Blanchard. One piece of limestone.

Ingredients.	Per cent.	Carb. of Lime.
Lime	48.72	86.95
Magnesia	.86	.....
Alumina and Oxide of Iron	3.85	.....
Carbonic Acid	39.14	.....
Silica	7.22	.....
Water	.21	.....
	100.00	86.95

This sample was from rather an under average of the bed, much better could have easily been obtained, but as an "average" was desired it will serve to prove its quality, still a comparison between it and that made at Roudout, N. Y., (which is supposed to be the best made in the U. S.) will give a better idea. An analysis made by Prof. Beck, of the

Rondout Rock

Showed the following: Carbonic acid, 34.20; lime, 25.50; magnesia, 12.35; silica, 15.37; alumina, 9.13; peroxide of iron, 2.25. By reference to Prof. Price's analysis of No. 2, it will be readily observed that Blanchard's surface rock is superior in caustic strength, as well as other requisites of first class hydraulic lime. These samples, in connection with the many practical tests made by competent and impartial mechanics, conclusively proves in every respect its superiority over any other made or imported to the coast.

As before intimated, the possession of the valuable calcareous deposit has caused Mr. Blanchard to exert all his energy to further its full and proper development, in which he has not only added largely to the interest of Lyon county, but those of Ormsby, Washoe and Storey, especially the latter, where, owing to the large amount of building in progress, a great demand exists for lime, so much so, that we are informed by the agent, Mr. C. H. Clark, No. 164 South C street, Virginia, that he is constantly pushed to meet the demand. To supply this, the three large kilns have been kept burning at their full capacity, and it is the intention to erect another of greater dimensions on the Eastern side of butte No. 1.

On this Work

Quite a body of industrious workmen are constantly employed; in some cases double shifts being engaged, one by day and the other by night, who are under the foremanship of Mr. Charles Fleury, an able and experienced workman. A large and well-regulated boarding house has been erected by Mr. Blanchard, for their benefit and comfort; while in a small ravine, some 4,000 feet southeast from the quarries, there exists a perennial spring of fresh cool water, from which pipes have been laid conveying it to different parts of the premises where most desired. A large number of teams are constantly employed in transporting the lime to Dayton, over well constructed roads, from which point it is forwarded to the localities desired; while others haul wood from the adjoining hills to be used in the kilns. In fact, "Blanchard's lime quarries" daily presents an animated appearance, and the bright light from the burning kilns of a night show that an enterprising spirit of industry has found a home among the barren knolls and buttes of El Dorado canyon. As it is beyond calculation to estimate the amount of lime contained in the two quarries, one can only conclude with the pleasant thought that at least one of the many minerals of Nevada has given to one of her pioneers a never-failing income for life.

R.

Virginia City, July 17th, 1876.

THE Secretary of War has sent to the house a dispatch from General Sheridan recommending the increase of the second, third, fourth, fifth and seventh cavalry companies to 100 men, as was done for two regiments on the Rio Grande, and submits an estimate for the men required. In addition to the 2,500 men authorized by law, the number required to fill a regiment of cavalry on the frontier and in Texas, to the maximum of 100 men to each company will be 2,500; total expenses, $1,634,700. General Sherman prefers regular enlistments to volunteers.

CORRESPONDENCE.

Alpine County—Its Mines and Resources, Past, Present and Future.

[Written for the PRESS by VICTOR HARLAND.—No. 3.]

Silver Mountain District.

Within thie district, which is the oldeet and one of the moet prominent in ths conntv, are located several of the most promieing locations therein, and of which your correspondent will endeavor to present a fair and unexaggsratsd mention. Many of your readere will douhtleee rsmember the rush to this particular locality in "'63," and the almost unprecedented activity reigning there for some tims after its occnpation. Had the discovery been mads within the paet two or thres years, instead of at that earlier period, the trials and difficulties expsrienced here since that time would have proved but insignificant in comparison with those that have vexed ths mining public for yeurs. Our mining men were not then prepared for a war of economical reduction with rsfractory orse; though had more caution been dieplaysd in ths eelection of euitable furnacee, a great majority of the failures which have occurred would havs been prsventsd, and this district, togethsr with othere within the county, would present an incalculably hetter and more prosperons condition than at the present time. This ie, howevsr, in no manner ths fault of the district, as with the many meritorious locatione eituated therein, together with its natural advantages ae a timber region, also its splendid water privilegee, it ie destined to again attract that attention from our mining men which will insure the permanency for its mines and business interests that it eo justly deserves. Most prominent among the many locations within this district, ie the property owned by the

Exchequer Company,

Situated about one mile distant from the town of Silver Mountain, and near the head of the Scandinavian canyon. This property, which embraces two or three of the original locations in the immediate vicinity of the present works, is owned by a Londcn ccmpany, and is worked steadily and upon an extensive scale. In the earlier period of mining here, the original locatore and ownere of this mine expended considerahle time end money in driving a surface tunnel, intersecting the lode at a point about 130 feet helow the surface. Here, even at this nominal depth, the vein proved very encouraging, and further explorations showed a pay chute of fine ore, of which assaye gave rcsults from $90 to $497 per ton. The lode upon which the present company are now making extensive explorations is a well defined vein from four to eix feet in width, easily traceahle upon the surface for two miles or more. Under the present management a two-compartment ehaft hae been eunk to a depth of 400 feet, with drifts of varioue lengths along the lode upon the higher levels. The lode was penetrated by the shaft at the 200-foot level, the rugged nature of the grond undoubtedly being the cause that prevented a greater depth being attained hefore cutting the vein. The Exchequer—formerly termed the Buckeye—has, ever since its discovery in the earlier days of the district, been the object of attention throughout the county, and the progre-e and discoveries made therein from time to time have been anxiously awaited hy all interested in its prosperity, and especially those who have similar locations and mining intereets in the immediate vicinity, for in a great measure upon the succese or failure of this company depends the ultimate prosperity or adversity of the district. The diecoveriee in the different levels have been of euch character as to give the public a firm belief that with suitable machinery at the mill for reduction purposee, and the erection of a furnace that will thoroughly deculphurize tho ores, the day is not far distant when the Exchequer will become—in compariaon with othere of like dimeneions—one of the hest producing minee on the coast.

The Ore

Is of that clase known ae ruby silver, and the regularity of the lode, hoth vertical and upon the surface, proves it a true fissure vein of great etrength in both charoter and outline. In many places along the vein, taken from the different levels, beautiful specimens of ruby ore have heeo extraoted, and yielding an assay value of $3,000 per ton. These of course are exceptional, but the ore being taken from the pay chute mentioned and othera of like nature along the vein, indicate a proximity of larger hodies of great value at no great distance helow the present workings. The depth recently reached hy this ccmpany is 400 feet, from which level a drift will be run to cut the lode. Should the appearance ot the lode, and the quality of the ore at this level he in comparison with that fouud in the higher levels, it is safe to predict that thie mine will soon he in a condition to realize all that has been expected of it. In addition to the property above described, the company own a good substantial steam mill, with saw mill attached, which latter is run hy water power. The mill at preeent contains a hattery of eight stamps with pans, eettlers, etc., sufficient for mors crushing power, but, with the introduction of 10 additional stamps and ths ersotion of an O'Harra furnaos of 30 tons capacity, ths mill will soon he in a condition to rsduos ths ore that ie daily heing extracted from the mine. An almost inexhauetible supply of the finest timber, in closs proximity to hoth mins and mill, completss ths list of the valuahls possessions of this company. Ths machinery in uss and ehortly to be introduced in hoth mine and mill ie of a psrmanent and substantial nature, and

The Furnace,

Which will be ersoted as soon as possible, wae decided upon after a carefol examination of its merite (while in activs opsration in Peavine district, Nev.) hy ths manager, Mr. Chalmers, who visited the dietrict for that purposs. Mins owners and managere in this county have been so repeatedly duped by worthless monstrositiss, misnamed "chloridizing and desulphurizing furnacee," that it is a mattsr of no surpriss that at this late day thsrs should be but one patent contrivance of that naturs within the county, which is eusceptible of performing one-half the dutiss advertised as a guerantee by partiee interested in the conetruction, hut after having rscsived the careful attention of Mr. Chalmsre, who is psrfsctly competent to judge of its working capacity and msrits, it is to be hoped the O'Harra furnaos may bs all that is olaimed for it by the inventor, and by a succeesful treatmsnt of the ores to be introduced from ths Exchequer, put to hlush the fraudulent constructione which, although having the same aim in visw, are nevertheless utterly worthlese in their operation.

Owing to sxtsnded improvemsnts upon ths mins and mill, the working force of this company has heen necessarily lnrgs aod sxpsnsive, but having now already erected and in progrese ths machinery and improvements neceesary for a perfsct and permanent devslopment of their property, there ie no reason why a sufficient amount of milling ore of good qnality should not be produced to place this mine upon a firm hasis, self-eupporting, and to spare. Men of well-known mining abilities have visited this mine upon several occasions, and have, withont hesitation, prononnced their favorable and complimentary verdict upon the permanency and value of the mine. Experimental rune have heen made at the mill upon ore taken from the levele in the preeent ehaft, with eatiefactory reeults, and in these cases the old reverberatory furnece being ueed. With the succees which it ie hoped will attend the manager in his firet and all subsequent triale of the ores hy the O'Harra nrocees, and with a prudent and careful management of mines and mills, the fnture awaiting the Exchequer company is as bright ae the noon-day sun.

Centennial Chat.

[Written for the PRESS by MARY MOUNTAIN.]

I have been trying to imagine a pen driven hy the concentrated brain power of the whole quizzing multitude, who gather and scatter here day after day, and wondering if such a pen could poseihly present enough of the reality to satisfy the distant reader. For my own part I dare not think of the distant reader; but I drop like a coward into the pleasantest corner I have found yet; where the invitation ie always standing, "Come in and read your own home paper." This ie Rowell's newspaper pavilion, where more than 8,000 American publications of all eorte are constantly served up fresh and filed away in the moet orderly manner.

Surely nothiog could have been invented more homelike than this quiet retreat, close by the lake and the cool chief fountain, where you can take an easy chair and rest at a great rate while eximming the very top cream of the last PRESS. That means a dip into Mr. Ewer's lettere, and a dangerous dip it is for me—just takes all my courage away to note with what a vigoroue air he grapplee thie immensity aa though it really can be handled, and, if it can, he is certainly the man to do it; so I may as well get myself into marohing order and hriug up the rear with various odde and ends. Before leaving Rowell'e for other centers of attraction I would like to expreee my thanks and admiration of the enterprise and editorial courtesy which hae spread out, free for all, this rare pleasure.

And now, if one is in douht whioh way to turn, the U. S. government building, close at hand, is so large and so full of interest that days and weeks might he epent there with great satisfaction. Last winter in rainy eveninge we were reading a series of articlea upon

The Stone Age,

With illnstratione of the moet remarkahle relics found. So when we came upon whole cahinets and long rowe of glaee oases filled with venerahle fossils, genuine war-clubs, tools, images and all eorte of antediluvian tale-bearers, we were delighted to be on epeaking terme with them and, looking as wise as poseible, we marched from case to case, tracing the progress of

Pre-historic Man.

I think it was ahout the tenth case where he began to eat hash, and here was the original flint chopping knife, broad and remarkably well preserved. His progress was very rapid after this, and he or his wife hegan to indulge in heads, charms and other little flinty fripperies. Just as I had discovered a cunning little flap-jack ehovel, and was trying to make out whsthsr it once had a long handle like mins at home, up came a briek and portly eight-eeer, who openad hoth eyes and month with astonishment at each a lcng array of arrow-heade, slinge, daggere, battle-axee and othsr more peacahle toole.

But his gentle companion had sharp elbows, and used them nudgingly as shs cried out, "Oh, do hurry up! Who caree for a mees of old rocks!"

Thie wae pretty ssvers anubbing for the mound builders, and I fear this dumb story of ths peculiar hardware and hardship of their livee will ever seem to that astonished man liks the broksn fragments of a dream. I call it a dumh story, writtsn here in stons and clear, hard flint; hut will our own records of lifs and labor he more enduring?

The columns snpporting the roof over this collsction of relics ars decoratsd with the hugs, grinning idole and monetrous imagee mads hy those tribee who found it necessary to give form and color to their religious notione; but very liksly we do wrong in accusing them of actually worehiping theee pot-hsllied deformities. We might, perhape, as justly accuss the modern Chrisiian of worshiping hie luxurious church and big organ.

Nearly svery creed builde symhole hstwsen itself and God; and it is quite poesihle that ths pagan who carvss an image may he as truly devout as he who carvse a pulpit.

These old imagss have absurdly hig nosee, and perhape thie provss how venerable and well-founded is the belief that power and breadth of character may alwaye be found behind a hig noss.

Not far from here may be found

Models of the Cave Towns

That still exist in good stats of prsservation along the Colorado canyons. They ars cut in the sides of high hluffs overhanging ths river, and the town repreeented hy the model has a central house of three stories, with wings of two stories extending each way, and all the houses are connected with each other along the whole line of 600 feet.

Theee ancient cliff dwellers evidently understood the advantage of co-operation, and from samples of their handiwork epread ont helow the models of their houses, we see they knew how to furnish their homee with dishes and haskets, matting, corn-grinders, woven cloth, tanned skine, and varioue tools for agriculture and manufactures.

They also had leisure for gamee, and we see here a hundle of worn old sticke they used for countere in eome dead and gone style of gamhling. Some of their pottery was hrightly painted, and eo well glazed that the colors are still fresh.

Passing from theee relice of a people who were proud, happy and industrioue long before America was dreamed of by Columhns, we come upon a section of an oak tree whioh etood inside the en renchmente near Spotteylvania court house, and wae cut down hy musket balls in an attempt to recapture the worke. Several bright-eyed hoys hang around the rough old stump and slyly ran their fingers along the hullet gashes; but fingering ie not allowed becauee of the remorseleee relic huntere who would make short work of a dozen euch stumps if they had the least chance.

Here are four of the queerest old aix-pounders, looking so very historical one is sure to hunt up the card which telle ue they belonged to Revolutionary fathere, and were

Presented by Lafayette.

Close by is an ancient breech-loading cannon dating hack to 1570; a relic of the early Spanish occupation of Mexico, and with etill brase enough to look squarely in the mouth of a fine modern gun, one of a hattery of Whitworth guns, presented hy loyal Americans in Europe to the U. S. Government in 1861.

All around this point are warlike sights and sounds enough to stir the pulee of a voteran or put an extra strut into the proud walk of the "West Point cadets," who survey the world's fair with the cool, critical glance of those who know all ahout it. And what are the warlike eounds? The clang of machinery making cartridgee and turning out gune—more and more improved guns.

Winding its aweet way among the big noisee comes the eound of martial musio, and there goee a hand playing "soldier tunes." A crowd always followe the band, or rather any hand that marchee, and we have here eeveral of the finest bands in the country. A marching band is alwaye supposed to lead on to glory of eome sort, and ever since the cadete encamped out there heyond the great eawmill,

Their Dress Parade

Is alwaye eurrounded by admiring crowds, and more young ladiee than you would care to count.

It was rumored one afternoon that these straight young soldiere were to show ue their last parade and then hreak camp for the return trip. Ah, the girle looked sorry, and some were sisters, to be sure, and pointed out "Will" or "Tom" in tones that enlieted all my sympathy.

"See, there'a Will eweeping out the third tent in the fifth line. He knowe I'm here, but he don't *hurry*. How long he ie putting things tidy."

"Well he might he," growls the envious young hrother; "if he leaves even the washdish slack wont he catch it? All the cads are down on somehody 'cause he wouldn't let 'em hring hut 10 pairs o' white pants for 10 daye. O, my! And then there'e the gray pants anyhow, and how many more d'ye think they want? I tell ye Bell, they feel awful etuck up," etc.

By and hy Will hae ths tent in order for inepection and comee ont to see Bell. I could easily admire hie soldierly hearing and lofty stride; but hie stiffnsse tnward poor Bell nearly eet my teeth on sdgs, for he looked ae if eisters were nothing but a bother; and as he marched off with Bell and the youngsr hrothsr, the hystandere growled a little ahout Weet Pointers being a "epoiled est of fellowe." The care come up again and again loaded with ths hundrede who liks to help spoil the cadete, and they all wait patiently in ths broiling eunehine while the officers inepect arme and mueter ths companies for their usual drill. It ie all new to ms and really quite beautiful to eee the harmony of motion all along ths line and all ths boys looking so full of spirit and etrength. Aftsr ths drill tents were not struck and word went arnnnd that further leavs of abeence wae hoped for and "mors whits pants." They were highly favored in being allowed to camp on the Centennial grounds, whers thie little village of whits tents contrasts finely with ths handeome architecturs of eome of ths largeet buildinge in the world.

Returning from parade we again paes along the shady eide of ths great eawmill and notice the enterprise of Canada hsrs as well ae in all other departmente. In the main building, in agricultural hall, in machinery hall and in the art galleriee, Canada hae distinguished hereelf and many of her provinces have eent spscial exhibite of grain, furs and minerals, pottery and beautiful iron work. Then ont in the grounds they havs a quaint log houss to represent the hackwoode, and eoms sections of their hig trees, lumber, etc.

I was delighted ons day to come upon a rathsr quiet nook in the main building filled with cnriosities "from Greenland's icy mountaine." All eorts of furs made up into cloaks, shirts, boots, mittens and stiff little petticoate and hoods. Then there are odd looking tools, models of the native hoats, with all sorts of fishing, hunting and domestic implements, not gilt-edged for the occasion but such ae they are actually using. The hunches of sinew for thread, the clumsy needlee and pine made of fish hones and many other things represent to us the hardship of their narrow lives. Yet they have some idea of "trimmings," and much of the native work was ornamental as well as useful. Some chubby Arctic ducke stood peering with glass eyes into a great nest of beautiful sea fowl eggs. All this was included in the department of Denmark, and that must have separate notice.

The Working Facilities at the Eureka Consolidated Mine.

Last Monday, for the first time in several months, we visited the Eureka Consolidated works, on Ruby hill, and were greatly surprised to notice the many improvements which have been made there since our last visit. Everything is in excellent working order and the machinery for working the mine as perfect and complete as wae ever erected in the state, not excepting the most expensive worke on the Comstock. The engine and machinery are capahle of hoisting from the ninth level, a depth of 730 feet, 1,000 tons in 24 hours, and are of sufficient power to do all the hoisting that will be required until a depth of 2,500 feet ie attained, and will perform all the work, including the raising of the water in tanks, for a depth of at least 500 feet below the ninth level. About 50,000 gallons are now being taken out in 24 hours and it ie not probable that the volume will increase until the level of the valley is reached, which ie at least 500 feet lower than the depth attained. The tank in which the water is raised holds 500 gallons; it makes the round trip in three minutes; consequently, it will he seen that the machinery is only employed five hours of the 24 in keeping the mine clear of water, leaving an abundance of time for the employment of the machinery in hoisting ore, weete, etc., and the performance of such other work as may he necessary. Near the engine is an air compressor of sufficient capacity to furnish underground at the ninth level the amount of 30 horse power. By thie the Burleigh drill is worked, the compressed air being forced down the shaft in pipes and carried into the drifts where the instrument ie used in strong gutta percha hose. A small engine has also been erected at the ninth station, to be used below that level. This engine will he run hy air, from the compressor on top, which will furnish sufficient power for a couple more of the seme capacity. The water thus pumped will be discharged into the sump at the ninth level, from whence it will be taken to the surface in the tank. Another great labor-saving improvement, is a railroad incline now in course of construction from the bottom of the ore dump to the level of the hoisting works. The grade ie 18 degrees, and the cars will be drawn up hy a stationary engine at the top. Thie will save the rehandling of mining timhers, wood, coal, and other supplies for the mine, which at present are unloaded at the dump, from whence they are hauled to the shaft by teams. When this is completed, everything about the mine will be as convenient for working as can he rendered hy human ingenuity. The indications at the ninth level are all favorable for the speedy discovery of an ore body, which is all that ie wanting to place the Consolidated upon the list of the dividend paying mines of Eastern Nevada.—*Eureka Sentinel.*

MECHANICAL PROGRESS.

English Minting Operations.

From a report of Mr. Bramwell, engineer, may be gathered an insight into the nature of the processes connected with the manufacture of English coin. "The metal, in ingots, as it is received at the mint, is melted in closed crucibles heated by a perfectly smokeless (coke) fire. The required alloy is made in the process of melting, and the mixture is poured into molds. The bars resulting from the castings are then rolled down into fillets of suitable thickness and width for the intended coins. From these fillets the blanks are cut, and these blanks, after having been marked (i. e., thickened at their edges), are of suitable dimensions for the finishing operation, that of impressing on the blank the device appropriated to the particular coin. During the preparatory processes the metal has to be annealed two or three times; this is done in close vessels, which are heated in smokeless furnaces. After the pieces are coined they are passed into the weighing room, where each is tested in automatic weighing machines. Ancillary to the above described operations are the preparation and repair of the various dies, involving the use of two or three turning lathes and of fires for hardening and tempering. Formerly the presses used for cutting out the blanks and those employed in coining acted by percussion; they were screw presses, fitted at the tops of the screw with heavy swinging weights, which on being put into motion caused the screws to descend, and caused the upper die to strike the coin, which acted as the stop to arrest the momentum of the press. Such presses were undoubtedly noisy, although not nearly so noisy as an ordinary steam printing press, but such presses are now discarded as regards the cutting out the blanks, and for coining a simple press of improved construction is in use. This improved construction is one wherein the coining is done silently by pressure, instead of noisily by percussion. The rolling and drawing machinery is quite quiet, as are the engines which work it. The furnaces for the engines are absolutely smokeless, being on the 'Jukes' construction."

AMERICAN STEEL.—Within the last few years, says the New York *Sun*, the standard of American steel has been greatly elevated; so much so that in all staple lines, such as cutlery, pitchfork, gun, file, hoe, rake, axe, and agricultural steel, foreign goods have no standing. But one cutlery concern in America is using foreign steel, the great bulk of all the table cutlery being now made from American ores, converted into steel and rolled into shape in American mills. This is also true of wire rods for drawing into merchantable sizes and shapes. American hay forks have no superior for durability and adaptation to their purpose, and it was recently noted in an English trade journal that the growing trade in English markets of American makers of hay forks had seriously interfered with their own orders. Steel is lower in price in America now than it has ever been before, yet better in quality, and notwithstanding the unsettled condition of trade, is still made in large quantities. It is one of the most active and important of our industries, demanding millions of capital and employing some thousands of skilled workmen and laborers. The city of Pittsburg, Pennsylvania, is the seat of the largest steel works in the country, but there are several in Jersey City, Philadelphia, Newark, and at other points. A visit to one of them would amply repay those curious in such matters.

THE RAILWAY OPERATIONS OF 1875.—The operations of the railway companies of the United States during 1875, as summarized in the advance sheets of Poor's Manual, are by no means destitute of encouraging features. The reported amount of dividends is greater than in the preceding year, being $74,294,208, as against $67,042,942 in 1874. The most important increase is in the dividends of the Pacific railroads, but there is also an increase in the aggregate dividends paid on the lines of the New England, Middle, Western, and Southern States. The total diminution in the gross earnings amounts to $17,400,511, while the net earnings only show a decrease of $4,064,520, —a result that bears emphatic testimony to the remarkable efforts of the railway companies to economize expenditures and reduce the cost of transportation. The reduction in gross earnings was especially heavy in the Middle States, and their railways accomplished the task of suffering a loss in gross earnings of $10,821,020, while the net earnings were only reduced $4,579,554. The reported results on the Western lines are still more extraordinary, as their gross earnings declined $8,651,823, while the net earnings were diminished only $57,409.—*Railway Age.*

INTRODUCING THE BLAST.—The Hsmoir process of introducing a blast into molten pig iron between the time that it leaves the blast furnace and being poured into the ingot-molds has been the subject of prolonged experiment by French and Belgian metallurgists. It is now found at the Maubeuge iron works that a saving of 10 per cent. on the coal for the puddling furnace is effected by the partial decarbonization due to the blast; with the same quantity of coal two charges more are obtained per furnace per 24 hours.

Steel Wire Hawsers vs. Hemp Hawsers.

An important trial took place last week, by order of the Lords of the Admiralty, at Devonport dockyard, conducted by Captain Youel, the Master Attendant, and witnessed by Admiral G. O. Willes, C.B., and other officers of the yard. It is the custom at the government dockyards to keep in store 25-inch end other large sizes of hemp hawsers for use in cases of emergency, as in the instance of Her Majesty's ship *Agincourt* getting on shore, when these hawsers were sent out to assist in getting her off. In the finest weather, and under the most favorable circumstances, it is with the greatest difficulty these hawsers can be handled. Mr. Bullivant therefore obtained permission of the Lords of the Admiralty to test his 8-inch patent flexible steel wire hawser of equal strength, against the 25-inch hemp hawser as used in the service. The 120 fathoms of 8-inch steel wire hawser tested weighed 50 cwt., and was coiled on a reel, the outside measurement of which was five feet square. The 25-inch hemp hawser was coiled in a tier 42 feet long and 14 feet wide, and the weight to 120 fathoms is 150 cwt. Each hawser had an eye spliced in the end ready for use. Twelve men were told off to work the 8-inch steel hawser, which they hauled off, ranged along the ground, with the greatest ease, and two men took two turns around a gunpost one foot in diameter, without any injury to the steel wire hawser. Forty-eight men were then told off to work the 25-inch hemp hawser, the eye and thimble of which were so large and heavy that it was found necessary to provide two large trucks in which to move them; trussels were also laid along, on which the hawser was hauled to a post 18 inches in diameter, round which one turn was taken with difficulty. A wish was expressed by Mr. Bullivant that the hawsers should be put in and laid out from a boat, as it would be necessary to do in case of requiring them to get a ship off the shore. This was, however, considered quite unnecessary, as it had been so clearly shown that 12 men could work the flexible steel wire hawser far easier than 48 men, assisted with trucks and trussels, could work the 25-inch hemp hawser; and it was also stated that no ship in the service carries a boat in which the 25 inch hemp hawser could be coiled and paid out.—*Iron.*

THE ENGLISH PATENT OFFICE.—Several changes are impending in the arrangement of this office. An order has just appeared which puts an end to the abridgements of provisional specifications, which have, since 1866, been required from each applicant with his provisional specification. This will be a slight relief to inventors, and it is only an official acknowledgement of a fact that has long been obvious to all concerned, that these so-called abridgements were quite useless for any purpose whatever. This order is to take effect on July 1st. Notice is also given that, in future, the drawings accompanying specifications will be reproduced by photo-lithography, and the copies of the original filed for reproduction are, after June 30th, to be sent in in a condition such that they may be copied by means of photography. It is understood that it is intended to make a considerable reduction in the scale on which the drawings are published, with the object of economizing space and lessening the cost of printing. In order to give time for the examination of the filed drawings, the Commissioners of Patents request that they may be sent in at least six days before the expiration of the time allowed, thus limiting by a week the six months' provisional protection granted under the Act of 1852.—*Ironmonger.*

A NEW SYSTEM OF PLASTERING.—Builders, owners and tenants of city houses will doubtless view with interest a new system of plastering, which is claimed to prevent the sudden and disastrous downfall of ceilings, so frequently occasioned by defects in the water pipes and consequent leakage and overflow. The invention consists of replacing the scratch coat and brown coat used in ordinary work by the combination of fibro-ligneous sheets with a cement composed of lime, sand and plaster. The sheets are of a fabric resembling coarse bagging, which is secured to the lathing, and the cement is supplied in the ordinary way. A hard finish coating completes the work.

PROGRESS IN JAPAN.—We are informed that energetic measures are being adopted by the government for introducing the improved manufacture of iron into the country. With this view, two charcoal blast furnaces and other works are in course of erection, and it is expected that by the close of the present year 12 puddling and seven reheating furnaces, to forge train plate, rail and bar guide mills, with steam hammers, four different shears, saws, lathes, cranes and all other necessary appliances of the most modern construction, will be in operation.

CARBON BRONZE—Messrs. B. W. Baldwin & Co., Pittsburg, Pa., have been very successful in introducing carbon bronze for use in hot work and heavy plate rolls. It has been found very durable, and it is the opinion of many persons thus using it that carbon bronze journal bearings will wear at least twice as long as those of any other material. During a use of four and a half years, not one instance has been reported of heating or cutting journals. The metal admits of a wide range of uses, and possesses a substantial value for the purposes for which it is recommended.

SCIENTIFIC PROGRESS.

Efforts to Use Solar Heat.

The last number of the *Revue des Deux Mondes* contains an article on the labors of sundry scientific men intent upon putting to use the heat of the sun. The *Pall Mall Gazette* summarizes the article. In France, it says, M. Mouchet, Professor of Mathematics in the Lycee of Alencon, has been engaged since 1869 in experiments. His first were made with a vertical copper boiler, blackened externally, so as to absorb the incident rays, protected by three concentric bell glasses, and resting on a badly conducting surface, such as sand, brick or wood. Throwing on this boiler the rays from a metallic reflector, M. Mouchet found that he could dispense with two of the bell glasses. He succeeded in vaporizing water and infusing sulphur, which requires a temperature of 110 deg. Centigrade, and at the end of 20 minutes of exposure he raised the temperature of his boiler when empty to 200 deg. Centigrade. He subsequently fused tin in two minutes, lead in five, and zinc in six. The quantity of metal in each case was a kilogramme, and the degrees of heat required were 235 deg., 335 deg. and 475 deg., Centigrade. The first practical use made by M. Mouchet of the rediscovery, or rather reapplication, of a force that Archimedes had rendered available as a military engine of offense during the siege of Syracuse, was in the humble but important department of cookery. His exhaustive solaire was a glass jar, in which was placed a cylinder of copper or wrought iron, blackened without, and resting on the bottom of the jar. The whole was closed by a glass lid. A cylindrical reflector, plated with silver, cast the concentrated rays of the sun on this apparatus, in which an excellent soup was made in four hours, perfectly cooked, an unusually fine flavor being attributed to the regularity of the heat. This solar soup kettle has been simplified into a plain glass vessel, placed in the focus of a conical mirror of plated brass, in which vessel all kinds of viands—meat, vegetables or fruits—are cooked by the direct action of the sun. Tea, coffee, or any other infusion may be thus readily prepared in a Lyons beer bottle; or the vessel in the focus may be used merely for the production of steam, which is led off to a second vessel by a pipe, and thus boils any requisite quantity of vegetables in a short time. By substituting a box of wrought iron for the glass jar, a solar oven is formed, in which a kilogramme of bread, said to compare favorably with that baked in the ordinary manner, is baked in less than three hours. Roasting does not require so fierce a heat as either of the former processes. It is sufficient to suspend the meat to be roasted in the focus of the reflector without interposing any other vessel, either of glass or of metal. In less than an hour a joint, a fowl, or piece of game is well roasted. It is necessary to avoid the use of butter for basting, as the chemical rays of the sun convert this substance into butyric acid, which gives an abominable taste to the roast; but by interposing a yellow or red glass the chemical rays are arrested. Replacing the covering of the "marmite solaire" by a sort of alembic a distilling apparatus is formed. A tube led through a helix in the ordinary way is added, and in 40 minutes the distillation of two liters of wine may be effected. In this case also the flavor of the alcohol is said to be unusually fine in consequence of the slow regularity of the heat.

In 1866 M. Mouchet took the sun from the kitchen to the workshop, and at the cost of the Emperor Napoleon completed his first mechanical solar engine. An apparatus of this nature is now to be seen in the court yard of the library at Tours. A conical silvered reflector, 26 metres diameter at the base, one meter at the apex, and eight centimeters high, exposes four square meters of reflecting surface. The angle of the inclination of the sides of the cone to the axis is 45 degrees. The boiler placed in the focus of this hollow cone is double, being in fact a mere shell. The outer coat has a longitudinal diameter of 80 centimeters, and a transvereed diameter of 28 centimeters, while the correspouding dimensions of the inner coat are 50 and 22 centimetres. Thus a shell of water of three centimeters in diameter is subjected to the reflected heat, the contents of the boiler being 20 liters of water with a steam box containing ten liters of cubical space. The vacant space within the inner coat affords room for the steam and water pipes and for the safety valve. A bell glass of five millimeters thick (or 3–16 of an inch) is constructed so as to surround the boiler concentrically at a distance of five centimetres (or two inches). The object of this transparent envelope is to allow the free passage of the visible rays of light and heat that come from the surface of the reflector, and to arrest the invisible thermic rays that radiate from the blackened surface of the boiler. The latter is thus constantly surrounded with a cushion of heated air, excepting at the foot, where it is joined to the reflector. A clockwork apparatus is attached, by means of which the axis of the apparatus is kept continually directed toward the sun. The apparatus in question was erected three and a half years ago, by aid of a subvention from the Council General of the Department of the Indre and Loire. The result merits attention. On the 8th of May, 1875, the day being fine, 20 liters of water at a temperature of 20 degrees, Centigrade, were placed in the boiler at 8:30 A. M. In 40 minutes steam was generated with a pressure of two atmospheres, which gives the calculated temperature of 21 degrees Centigrade above boiling point. The pressure rapidly rose to five atmospheres, which was that at which the safety valve was weighted, as at this heat the sides of the boiler have to support a total pressure of 40,000 kilogrammes. Toward the middle of the same day 15 liters of water at the boiling point were raised in less than 15 minutes to a pressure of five atmospheres, equivalent to a temperature of 158 degrees Centigrade. On the 22d of July, about 1 P. M., the apparatus converted into steam five liters of water per hour, which is equal to 140 liters of steam per minute, or to about one-half of a horse power.

It will be evident to the reader that the one weak point in this scheme is the fact of the dependence of the solar marmite on the condition of the sky. That on a fine summer day any imaginable quantity of heat may be derived from the sun and utilized by the mechanic is not to be denied. But by night, during the winter, or on a rainy day, the motor must be powerless.

Does a Bird Die a Natural Death?

It is the opinion of some naturalists that birds never die what is called a natural death, but come to their end by some murderous or accidental means; yet I have found sparrows and vireos in the fields and woods dead or dying, that bore no marks of violence; and I remember that once in my childhood a red-bird fell down in the yard exhausted and was brought in by the girl; its bright scarlet image is indelibly stamped upon my recollection. It is not known that birds have any distempers like the domestic fowls, but I saw a social sparrow one day quite disabled by some curious malady, that suggested a disease that sometimes attacks poultry; one eye was nearly put out by a scrofulous-looking sore, and on the last joint of one wing there was a large tumorous or fungous growth that crippled the bird completely. On another occasion I picked up one that appeared well but could not keep its center of gravity when in flight, and so fell to the ground.

One reason why dead birds and animals are so rarely found is, that on the approach of death their instinct prompts them to creep away in some hole or under some cover, where they would be least liable to fall a prey to their natural enemies. It is doubtful if any of the game birds, like the pigeon and grouse, ever die of old age, or the semi-game birds, like the bobolink, or the "century-living" crow; but in what other form can death overtake the humming bird, or even the swift and the barn-swallow? Such are true birds of the air; they may be occasionally lost at sea during their migrations, but, so far as I know, they are not preyed upon by any other species.—*John Burroughs in Scribner's.*

CONCERNING THE VISIBILITY OF FLAMES.— M. Allard has published several memoirs on the transparence of flames and of the atmosphere, and on the visibility of flash light beacons and his experiments therewith. The flames most generally employed in lighthouses are those derived from oil lamps having many burners, with concentric wicks. M. Allard finds that the luminous intensities of these flames augment a little more rapidly than does the consumption of oil, and on comparing said intensities with the dimensions of the flames, that the former augment equally with the apparent surface, while they diminish per cubic centimeter (.06 cubic inch) in proportion as the total volume of the flame becomes greater. These results can only be explained by a defect of transparency of the flames. Different experiments lead to the adoption of the number 0.80 as the average value of the coefficient of transparency of the flames, referred to the thickness of one centimeter of flame traversed by the luminous rays. From several observations, the author has also determined that there is a state of transparency at which a light ceases to be seen from a given point. In the case of flash-lights, it is demonstrated that in the persistence of the luminous impressions on the retina, the law of decrease of the sensation is represented by an exponential function. The retina then acts like phosphorescent bodies of short period, when they are previously excited by light, and which becomes rapidly extinguished in darkness, since the law of extinction is the same.

PRIZES FOR SCIENTIFIC WRITERS.—The German gasmakers' association offer $400 for the best treatise on the method of separation of carbonic acid from the lighting gas made from common coal. The method proposed must be set out at full length, with scientific explanation of its mode of action and description of apparatus for its use on an economical working scale. Essays are to be sent in unsigned, but containing a private mark, to Dr. Schilling, at Munich, before December 31st next.

THE AMERICAN CHEMICAL SOCIETY.—An organization of professional chemists has lately been formed, having the above name, under the presidency of Prof. John W. Draper. The new society already boasts of a membership of over 100, including the most prominent chemists of the country. As an agent for fostering and promoting the development of chemical science in America, the society has a wide field of utility.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company	1 W'k to July 13.		1 W'k to July 20.		1 W'k to July 27.		1 W'k to Aug 3.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	....	....
Advance	....	....	....	....	11	....	....	....
Alpha	47	33½	41	34	41	37	40	43½
Alta	....	....	....	....	3	....	4½	3
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	....	....	....	....	....	....	....	....
Andes	2¾	2½	2⅝	2	2¾	2½	2⅝	2½
Alps	1⅜	1⅛	1½	1	1⅜	1¼	1¼	1⅛
Amazon	....	....	83	71	80o	75c	....	....
Balt'm'e Con	1½	1	2	1⅜	2¼	2	2½	2
Belcher	18¾	17¼	17¾	16⅞	17¾	17	19⅝	17¾
Belmont	3⅛	2¾	3¼	2⅞	3¼	3	3	2½
Best & Bel	44¾	39⅜	47½	40	44	49	46	46
Buckeye	....	....	....	....	....	....	....	....
Bullion	44	40	45	40	43	41	43¾	44
Caledonia	7⅞	7	9¼	8	9¾	9½	10⅜	10
California	70⅜	64⅜	64⅞	55¾	61⅞	56⅜	67⅜	61¼
Challenge	4¾	4	....	....	4¾	4¾	4½	4
Chollar-P'ts	....	....	83	71	83	75	101	84
Confidence	17	16½	17½	14⅜	17	16¾	17¾	16¾
Con Imperial	6	5¾	6⅜	5¼	6⅜	5¾	6¾	4⅞
Con Virginia	52	46	61½	46¾	58½	53	69⅜	54⅝
Crown Point	10	8½	10	9	10	9¾	12¼	10½
Coso Con	65c	50c	30c	25c	35c	30c	35c	30c
Daney	....	....	....	....	....	....	....	....
Dayton	4¾	4½	....	....	4	....	....	....
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka (G V)	....	....	....	....	....	....	....	....
Eureka Con	12¾	10⅜	12	10⅝	12	10½	13½	12
Exchequer	16½	14¾	16	14	15	14½	16½	15¾
Europa	....	....	....	....	....	....	....	....
Gila	87½o	1	62½o	50c	62½c	37½c	62½c	55c
Globe Con	....	....	20c	....	....	....	10c	10c
Golden Char	....	37½c	40c	37½c	40c	37½c	50c	40c
Gould & Car	15	13⅝	15	13¾	14½	12	16¼	15
Hale & Nor	9¾	9	9¾	8½	10¼	8½	12½	10⅛
Ida Elmore	....	....	....	....	....	....	....	....
Jefferson	1	....	....	....	1⅜	....	1	....
Julia	8	6¾	8½	6¾	7¾	7¾	8¾	8½
Justice	2¾	2¾	22	20	25	20¾	26¾	24
Jackson	4	3	2⅞	2½	3¾	3½	3¾	3½
K K Con	....	....	....	....	....	....	....	....
Kentuck	13	10	11½	10½	11¾	11	13	11½
Knickerb'k'r	25c	....	1½	....	1½	....	1½	1¼
Kossuth	1½	1¼	1¾	1¼	1¾	1½	1⅝	1¼
Lady Bryan	75c	70c	80c	75c	1¼	1⅛	1⅜	1
Lady Wash	2½	2½	2¾	2¼	2½	....	2½	2¼
Leo	....	....	....	....	....	....	2½	....
Leopard	8¼	7¼	9¼	8¾	10	8¾	12½	10½
Leviathan	75c	70c	70c	....	8 c	6 c	87½o	75c
Mahogany	....	....	....	....	....	....	....	....
Mansfield	....	....	51¾o	45o	....	....	....	....
Meadow V'y	1¼	1	....	....	50c	5 c	65c	42c
Mexican	30	25	30½	27⅝	34½	29¼	40	35½
Midas	....	....	....	....	....	....	....	....
Mint	....	....	....	....	25c	....	50c	....
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	87½c	75c	75c	62½c	....	75c	2	75c
Niagara	....	....	....	....	....	....	1¼	....
Northn Belle	37	32	39	27	30	21	21	17
New Coso	2¾	2¼	2⅝	1⅝	2⅜	2	2⅝	2⅛
Occidental	3⅝	3½	3	2¾	3	3	3¼	3
Ophir	48¼	45	47	40½	47⅜	44	53	46¾
Or Gold Hill	....	....	....	....	....	....	....	....
Overman	68	60	63¼	65	73	65	83½	74
Pacific	....	....	....	....	....	....	....	....
Phil Sheridn	....	....	....	....	....	....	....	....
Pioche	....	....	....	....	1¼	....	1¼	....
Poorman	30c	25c	50c	25c	....	....	....	....
Prospect	6	5¾	6	5⅞	5¾	....	6½	6
Prussian	....	75c	1¼	....	1⅛	....	....	....
Ray & Ely	10	8½	8¾	8	9	8	9	8½
Rock Island	1	1¼	1¼	1	1½	1	2½	1½
Rye Patch	....	....	....	....	....	....	....	....
Savage	20¾	17	21¾	17	20½	18¼	22½	19½
Seg Belcher	70	67	65	....	70	....	80	70
Sierra Nevada	14	13¾	14¾	13	17	13¾	17½	15½
Silver Hill	7⅛	7	7¼	6¾	7½	6¾	7	6
Sth Chariot	82½o	....	....	....	30c	....	30c	....
Succor	....	....	37½o	25c	25c	....	25c	....
Union Con	11⅞	10¼	14¼	10¾	14½	11¾	16¾	15½
Utah	18	15⅜	18	16¾	19½	17	19½	17½
Wells-Fargo	15c	....	17½o	15c	14c	12½c	14	12½c
Woodville	1¾	1	1¾	1	1¾	1⅛	1⅜	1
Yel'w Jacket	30	27½	27¾	24	26½	25	30	26⅜

Sales at S. F. Stock Exchange.

FRIDAY, A. M., JULY 28.

240 Alpha ..... 42@42½
90 Andes 2¾
360 Best & Belcher ..... 46@47¾
105 Belcher ..... 18¼@18⅝
25 Bullion 42
210 Baltimore Con 2¼
1620 Coa Imperial ..... 5¾@5⅞
3425 Con Virginia ..... 58¾@59¾
1865 California ..... 64@64½
175 C Point ..... 10¼@10⅝
125 Chollar ..... 84@85
100 Confidence 17
940 Caledonia ..... 10@10⅛
285 Exchequer ..... 15¾@15⅞
160 Gould & Curry ..... 15⅝@16¼
1850 Hale & Nor ..... 10⅜@10⅞
1005 Just ce ..... 26@25¾
595 Julia ..... 8¾@8½
40 Kentuck ..... 11⅞@12
320 Kosauth 1 20
200 Knickerbocker 35c
3795 Lady Bryan ..... 1⅛@1
50 Lady Wash 2¼
100 Lee 1¼
2915 Mexican ..... 35½@36¾
200 Maryland 75c
100 New York 87½c
100 N Con Vir 47c
570 Ophir ..... 47¾@47¾
295 Overman ..... 71@72
120 Occidental ..... 3½@3⅝
75 Prospect 6
275 Savage ..... 20½@20¾
335 Sierra Nevada ..... 15½@15⅞
30 Seg Belcher 70
75 Hill 8
660 Trojan 66c
2415 Union ..... 15⅜@15⅞
20 Utah 1
250 Wells-Fargo 14c
15 Woodville 1⅛
630 Yellow Jacket 27¼

AFTERNOON SESSION.

300 Alps ..... 1¼@1½
55 Alpha ..... 42@42½
120 Best & Belcher ..... 48½@48¾
210 Belcher ..... 17½@17¾
185 Belmont 3
370 Con Imperial 6¼
335 California ..... 63¾@64
500 Coso Con ..... 32½@35c
1485 Con Virginia ..... 58½@59
250 Crown Point ..... 12@10¾
40 Challenge 4¾
29 Exchequer ..... 15¾@16
55 Eureka Con 12½
870 G n Thomas 1
585 Gould & Curry ..... 17@16¾
730 Hale & Nor 10
300 Hussey 4
40 Jackson 3¾
455 Justice ..... 26½@27¾
230 Kentuck 11
1-5 Leopard ..... 10¾@10½
1135 Mexican ..... 37¾@37¾
100 Meadow Valley ..... 62½@60c
805 Northern Belle ..... 21@20
60 Overman ..... 73¾@73
400 Ophir ..... 48@48¾
25 Raymond & Ely ..... 8¾@8¾
225 Savage ..... 20¾@20
310 Sierra Nevada ..... 15¾@15¾
100 Seg Belcher 70
330 Union Con ..... 15¾@15¾
55 Yellow Jacket 27¾

SATURDAY, A. M., JULY 29.

300 Alpha ..... 40¾@41
290 Best & Belcher ..... 47¾@47½
285 Belcher ..... 17¾@18
445 California ..... 61¾@62
140 Chollar 86
265 Crown Point ..... 10¾@11
1615 Con Virginia ..... 57¾@57½
95 Confidence 17
2240 Con Imperial ..... 47@6¾
220 Caledonia ..... 10¾@10¾
115 Exchequer ..... 15¾@15¾
110 Eureka Con ..... 12@12¼
270 Gould & Curry ..... 16¼@16¾
1150 Hale & Nor ..... 10¾@10½
1895 Justice ..... 26@25¾
890 Julia ..... 8½@8¾
50 Kentuck 12¼
2230 Lady Bryan ..... 1⅛@1⅜
995 Mexican ..... 36½@36¾
150 Meadow Valley 62½
520 Ophir ..... 47¾@48
20 Raymond & Ely ..... 8½@9
690 Overman ..... 74@76
45 Seg Belcher ..... 70@73
635 Sierra Nevada ..... 15¾@16
865 Savage ..... 19½@19¾
150 Succor 25c
1980 Union Con ..... 15¾@15¾
180 Utah ..... 18¾@19
930 Yellow Jacket ..... 26¾@27

MONDAY, A. M., JULY 31.

180 Alpha 40
155 Belcher ..... 17½@17¾
150 Bullion ..... 43@44
300 Best & Bel ..... 47¾@48
1805 California ..... 61¾@61¾
3 5 Caledonia ..... 10¾@10¾
125 Crown Point 11
1795 Con Imperial ..... 5¾@6
220 Confidence ..... 17@16¾
2140 Con Virginia ..... 56¾@56¾
50 Chollar ..... 84@86
170 Gould & Curry ..... 16¾@16¾
885 Hale & Nor ..... 10¾@10¾
590 Julia ..... 8½@8¾
1061 Justice ..... 25¾@24¾
50 Kentuck ..... 11¾@12
145 Lady Bryan ..... 1⅛@1⅜
105 Mexican ..... 37¾@37¾
385 Ophir ..... 47¾@48¼
210 Overman ..... 76@75
320 Savage ..... 20¾@20½
869 Sierra Nevada ..... 15¾@16⅜
50 Succor 25c
20 Utah 19
3435 Union ..... 16¼@16¾
235 Yellow Jacket ..... 27¼@27

AFTERNOON SESSION.

160 Alps ..... 1¼@1½
1200 Alta ..... 3¼@3⅜
100 Andes 2¾
50 Amazon 55c
525 Belmont ..... 2⅞@3
5691 Baltimore Con ..... 2¼@2½
130 Best & Belcher ..... 48@48½
285 California ..... 61¾@61¾
410 Con Virginia ..... 56¾@56¾
85 Eureka Con 12
100 Gila 50c
140 Gen Thomas ..... 2¼@2⅜
105 Gould & Curry ..... 15¾@16
320 Hale & Norcross ..... 10@10¼
100 Jackson 3¾
570 Julia 8
435 Justice ..... 24¾@25
285 Leopard ..... 9¾@10
280 Meadow Valley ..... 5@62½c
1125 Mexican ..... 34½@34¾
670 Northern Belle ..... 21@20
183 New Coso ..... 2¾@2¾
1400 Ophir ..... 47¾@47¾
240 Raymond & Ely ..... 8⅝@8¾
150 South Chariot 30c
530 Sava e 2
50 Sierra Nevada 15¾
5 0 Union Con ..... 14½@14¾
500 Yellow Jacket 26¾

Pacific Board—Latest Sales.

WED'SDAY, A. M., AUG. 2

100 Alpha 42
120 Al a ..... 4½@4¾
20 Andes 3
0 Belcher 18¼
440 Best & Bel ..... 49@47¾
50 Chollar ..... 89@8
50 Crown Point 11
5-0 Con Im erial ..... 5.0 @ 5¾
430 Con Virginia ..... 59@5 ¾
270 Cal fornia ..... 68¾@6 ¾
20 Caledonia 10
200 Cosmopolitan ..... 4 0 @ 37½c
1-0 Exchequer ..... 6¾@6¾
2 Emigrant 4
100 Eric Con 57½c
80 Gould & Curry 16¾
0 Hale & Nor ..... 11¼ @ 11¾
37 Julia ..... 9¾@9¾
200 Ju tice ..... 2 ¾@2¾
10 Kentuck 12¼
100 Kniker 10c
1810 Lady Bryan ..... 1.20@1¼
160 Leviatha 90c
1085 North Con Vir ..... 70@75c
500 New Coso ..... 2½@3c
200 Niagara 17c
100 Occidental ..... 1 @4¾
170 Ophir ..... 47@48¾
110 Overman ..... 76@75
675 Panther ..... 2 a 1¾
240 Silver Hill 7¼
100 Succor 25c
150 Seg Belcher 70
720 Wells Fargo ..... 13@12½c
460 Ward ..... 1¾@2
1495 Yellow Jacket ..... 30@29½

WEDN'SDAY, A. M., AUG. 2.

675 Alpha ..... 41@42¼
1170 Belcher ..... 17¾@18½
255 Best & Belcher ..... 48¾@49
55 Bullion 42
130 Chollar ..... 88@89
205 Caledonia 10¾
1875 Con Virginia ..... 59½@59
605 Crown Point ..... 12@12¼
1535 California ..... 68¾@68¾
2100 Con Imperial ..... 6½@6¾
415 Exchequer ..... 16@15¾
880 G & Curry ..... 16½@16¾
1730 Hale & Nor ..... 12¼@11¾
1170 Julia ..... 9¾@9
455 Justice ..... 25@24½
50 Kentuck 1¼
1280 Lady Bryan ..... 1@1¼
3615 Mexican ..... 37½@36½
835 Ophir ..... 48¾@48
545 Overman ..... 81@80
2020 Savage ..... 22¾@21¾
40 Seg Belcher ..... 70@80
545 Sierra Nevada ..... 16¾@15
50 Union ..... 15¾@15¾
1480 Union Con ..... 15½@15
1220 Yellow Jacket ..... 29½@30

AFTERNOON SESSION.

100 Alps ..... 1¼@1½
240 Alta ..... 4¼@3¾
245 Andes ..... 2¾@2¾
1170 Alpha ..... 41@39
130 Best & Belcher ..... 48½@48
100 Con Imperial ..... 6½@6¾
425 Chollange ..... 4½@4¾
225 Cromer 2
110 Eureka Con 12¾
1345 Exchequer ..... 15¾@16
625 Gen Thomas ..... 1¾@1¾
500 Golden Chariot 40c
1590 Gen Thomas ..... 1¾@1¾
580 Golden Chariot 40c
1255 Globe 10c
2200 Hussey ..... 1½@1.05
185 Julia ..... 9¾@9¾
695 Knickerbocker ..... 45@50c
20 Kosauth 1¼
820 Leonard ..... 11@11¾
1-0 Mexican 37¾
380 Leviathan ..... 67½@65c
1250 Lady B 1¼
50 Metallic 50c
50 Meadow Valley 50c
1 0 Mint 30c
380 Maryland 75c
870 Mexican ..... 36¾@ 37¼
6-5 Nortcrn Belle ..... 21@18½
445 New Coso ..... 2½@2¾
365 New York ..... 1.0@1.05
400 North Con Vir 5c
70 Ocoidental ..... 3¾@3¾
255 Panther 2¼
519 Prospect ..... 6½@6¾
220 Confidence ..... 18@19¼
100 Chollar 87
1885 Con Virginia ..... 58½@59
845 California ..... 66¾@67
195 Exchequer ..... 15¾@16
440 G uld & Curry 17
3170 Hale & Nor ..... 12¼@12¾
2750 Con Imperial ..... 6¾@6¾
280 Kentuck ..... 13½@ 3¾
1440 Lady Bryan ..... 1¼@1½
740 Mexican ..... 35¾@36¾
385 Ophir ..... 54@55
1185 Overman ..... 82½@83
440 Savage ..... 22½@23
3-5 Sierra Nevada ..... 16¾@17
10 Seg Belcher 82
1955 Union ..... 15¾@15¾
120 Utah ..... 18¾@19
2770 Yellow Jacket ..... 31¾@32½

THURSDAY A. M., JULY 27.

400 Alpha ..... 39¼@40
50 Andes 2¾
330 Baltimore Con ..... 2¼@2¼
150 Best & Bel ..... 47@47½
115 Belcher ..... 17½@ 18
45 Chollange ..... 82½@83
440 California ..... 60½@61
10 Crown Point 10
1105 Con Virginia ..... 56½@56¾
1725 Con Imperial 6
525 Caledonia ..... 9½@9¾
1400 Cusmopolitan 30c
70 Challenge 4½
75 Exchequer 15
200 Flo ida 1¼
70 Gould & Curry ..... 15¾@15¾
765 Hale & Norcross 9¾
529 Julia ..... 7¾@8
1145 Justice ..... 24½@24½
110 Kentuck ..... 11¾@12
1400 Lady Bryan ..... 1¼@1⅜
100 Leviathan 70c
200 Lee 1¼
1250 Mexican ..... 34@34¼
20 Maryla d 80c
25 New York 1
150 North Con Va 7½c
25 Ophir 47
421 Overman ..... 72½@73
85 Prospect 6¼
115 Rock Island 1½
40 Savage 19¾
165 Sierra Nevada ..... 15¾@15½
10 Silver Hill 7¼
1665 Utah ..... 40@39c
85 Utah ..... 18¼@18½
825 Union Con 15
200 W Belcher 24c
260 Wells-Fargo ..... 47¾@48
35 Ward 1¾
135 Y Jacket 26

AFTERNOON SESSION.

100 Advance 11
55 Alpha ..... 40@39
130 Best & Belcher ..... 48@47¾
415 Belmont ..... 3¼@3
2060 Con Virginia ..... 58½@58¾
790 California ..... 61@61¾
400 Cosmopolitan 30c
85 Eureka Con 12
100 Gila 50c
140 Gen Thomas ..... 2¼@2⅜
105 Gould & Curry ..... 15¾@16
320 Hale & Norcross ..... 10@10¼
100 Jackson 3¾
570 Julia 8
435 Justice ..... 24¾@25
285 Leopard ..... 9¾@10
280 Meadow Valley ..... 5@62½c
1125 Mexican ..... 34½@34¾
670 Northern Belle ..... 21@20
183 New Coso ..... 2¾@2¾
1400 Ophir ..... 47¾@47¾
240 Raymond & Ely ..... 8⅝@8¾
150 South Chariot 30c
530 Sava e 2
50 Sierra Nevada 15¾
5 0 Union Con ..... 14½@14¾
500 Yellow Jacket 26¾

THURSDAY A. M., AUG. 3.

385 Alpha ..... 43½@44
580 Best & Belcher ..... 49½@51
635 Belcher ..... 22½@23½
100 Bullion 42¼
795 Crown Point ..... 11½@11¾
2750 Con Imperial 5¾
220 Confidence ..... 18@19¼
100 Chollar 87
1885 Con Virginia ..... 58½@59
845 California ..... 66¾@67
195 Exchequer ..... 15¾@16
440 G uld & Curry 17
3170 Hale & Nor ..... 12¼@12¾
2750 Con Imperial ..... 6¾@6¾
280 Kentuck ..... 13½@ 3¾
1440 Lady Bryan ..... 1¼@1½
740 Mexican ..... 35¾@36¾
385 Ophir ..... 54@55
1185 Overman ..... 82½@83
440 Savage ..... 22½@23
3-5 Sierra Nevada ..... 16¾@17
10 Seg Belcher 82
1955 Union ..... 15¾@15¾
120 Utah ..... 18¾@19
2770 Yellow Jacket ..... 31¾@32½

AFTERNOON SESSION.

450 Alps 1½
480 Andes 2¾
535 American Flat 2
350 Amazon 50c
695 Baltimore Con ..... 2¼@2½
3-5 Caledonia ..... 10¾@10¾
365 Challenge ..... 4½@4¾
40 Dayton 3¾
555 Eureka Con ..... 12½@12¾
125 Florida 1½
20 Gen Thomas 30c
170 Globe ..... 10@ 50
1715 Hussey ..... 1.05@1.00
500 Jackson ..... 3¾@3¾
1580 Julia ..... 9@10
300 Knickerbocker ..... 50@37c
1 0 Leonard 11¾
6-5 Leopard ..... 9¾@10
185 Lady Wash ..... 2¼@2½
850 Leviathan 91c
120 Meadow Valley ..... 50@55c
40 Metallic 50c
50 Mansfield 25c
3 Modoc 4
200 Mint 30c
1295 Northern Belle 22
450 New Coso ..... 2¾@2¾
590 New York 1
100 North Carson 25c
160 Occidental ..... 3¾@3¾
100 Panther 1½
5 Ray & Ely 9
730 Rock Island ..... 2¼@1¾
120 S Hill 8
240 Silver Hill 7¼
470 Ward 1½
850 Wells-Fargo ..... 14@15c

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertiseemnte in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Deling'nt. Sale.	Secretary. Place of Business.
Chollar Potosi M Co	Washoe	10 5 June 28	July 28 Aug 16	W E Dean 419 California st
Con Imperial M Co	Washoe	1 25 July 25	Aug 29 Sept 19	W E Dean 419 California st
El Dorado South Con M Co	Nev	10 2 00 Aug 2	Sept 6 Sept 26	W Willis 309 Montgomery st
Europa M Co	Washoe	6 25 June 19	July 25 Aug 15	R E Noyes 419 California st
Florida M Co	Washoe	5 25 June 19	July 27 Aug 21	L Herman 320 Sansome st
Geddes & Bertrand M & M Co	Nev	1 50 July 24	Aug 30 Sept 23	J A Vance Stevenson's Bldg
Gila S M Co	Nev	1 25 July 10	Aug 19 Sept 14	W A Knapp 309 Montgomery st
Golden Chariot M Co	Idaho	17 50 July 11	Aug 18 Sept 8	L Kanlan Merchants' Ex
Ida Elmore M Co	Idaho	20 1 00 June 26	July 31 Aug 21	W Willis 309 Montgomery st
Lady Washington M Co	Washoe	8 10 July 26	Aug 28 Sept 16	D L Thomas 419 California st
Newark S M Co	Ely Dist	13 25 July 26	Sept 1 Sept 23	J A Fairweather 3-6 Pine st
North Con Virginia M Co	Nev	4 25 July 27	Aug 30 Sept 18	J Maguire 419 California st
North Dayton M Co	Nev	2 10 June 21	July 31 Aug 18	R S Chilverwoll 330 Pine st
Overman S M Co	Washoe	25 3 10 June 26	July 31 Aug 21	G D Edwards 414 California st
Peyton M Co	Washoe	11 10 July 13	Aug 15 Sept 2	S Phillips 408 California st
Rock Island G & S M Co	Washoe	11 50 June 26	July 31 Aug 22	J W Clark 418 California st
Silver Hill M Co	Washoe	8 1 00 July 18	Aug 23 Sept 12	W E Dean 419 Califo nia st
Succor M & M Co	Washoe	15 50 July 11	Aug 14 Sept 1	W H Watson 302 Montgomery st
Trojan M Co	Washoe	2 30 June 14	July 20 Aug 10	D Wilder 328 Montgomery st
U h S M Co	Washoe	13 2 00 July 11	Aug 16 Sept 4	G C Pratt 309 Montgomery st
Yellow Jacket M Co	Washoe	23 1 00 July 18	Aug 22 Sept 22	G W Hopkins Gold Hill

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Alhany Q M Co	Cal	2 3 July 7	Aug 11	Aug 28	W H Widman 414 California st
Antilles M Co	Cal	20 July 7	Aug 6	Sept 8	H M Morgan 208 Sansome st
Anreola G & S M Co	Nev	1 10 June 17	Aug 5	Aug 25	T S Fitch 240 Montgomery st
Brooks O & S M Co	Nev	2 1 00 July 10	Aug 16	Sept 5	E T Allen 535 California st
Cherokee Flat Mine Gravel Co	Cal	36 5 July 8	July 18	Aug 5	O H Bogart 328 Montgomery st
Coos Bay Coal M Co	Oregon	4 40 June 20	July 27	Aug 15	T P Beach 424 Montgomery st
Coquille Black Sand M Co	Oregon	3 20 June 24	Aug 5	Sept 21	F P Reynolds 111½ Leidesdorff st
Defiance M Co Coso Dist	Cal	1 50 July 17	Aug 26	Sept 16	W G Hughes 314 Montgomery st
Eclipse & Lee M Co	Cal	25 June 22	July 22	Aug 5	D Buck 309 Montgomery st
Enterprise Water & D G M Co	Cal	14 1 00 July 22	Aug 22	Sept 7	H Ellas 524 Sacramento st
Enterprise Con M Co	Cal	8 15 June 2	July 15	Aug 8	F J Hermann 418 Kearny st
Gen Thomas M & M Co	Nev	2 50 July 29	Sept 1	Sept 21	W Willis 309 Montgomery st
Hidence Con G M Co	Cal	1 5 June 12	July 14	Aug 9	L Leavitt 309 Montgomery st
Great Eastern Con Quick M Co	Cal	4 20 July 21	Aug 21	Sept 9	W W Widman 415 California st
Hayward Con M Co	Nev	1 5 July 24	Aug 27	Sept 18	J Gilroy 27 Drumm st
Hurricane M Co	Cal	25 July 7	Aug 8	Aug 26	W O M Berry 240 Montgomery st
Kearsarge Con Quick M Co	Cal	15 July 1	Aug 28	Sept 16	Jas McHaffee Stevenson Bl ck
Mariposa L & M Co	Cal	6 1 00 July 6	Aug 7	Sept 2	L Leavitt 309 Montgomery st
Montezuma M Co	Cal	25 July 7	Aug 8	Aug 26	W O M Berry 240 Montgomery st
New England F & S Co	Cal	2 10 June 10	July 20	Aug 10	C O Tripp 401 California st
New York Hill M Co Grass Valley		1 70 July 29	Sept 4	Sept 23	F J Hermann 418 Kearny st
Occidental R, R & M Co	Cal	25 July 21	Aug 24	Sept 11	A C Hammond 401 California st
Omega Table Mt M Co	Cal	1 5 June 23	July 31	Aug 21	David Wilder 32 Montgomery st
Pittsburg Con	Nev	12 5 00 June 16	July 17	Aug 12	A Cerrigan 107 Front st
Santa Rosa O & S M Co	Washoe	22 25 July 16	Aug 22	Sept 14	J M Oilam 113 Davis st
Oro Fino M Co	Idaho	2 75 June 6	July 12	Aug 8	W H McClintock 419 Calif rnia st
Renton Coal M Co Washington Ter		2 1 00 June 5	July 20	Aug 24	T H Henderson 24 Sacramento st
Silver We t Con M Co	Nev	6 10 May 24	July 8	Aug 5	F R Bunker 606 Montgomery st
Table Mt. Alpha M Co	Cal	11 10 July 5	Aug 15	Sept 5	L Leavitt 309 Montgomery st
Umpire Tunnel & M Co	Utah	5 5 June 23	July 24	Aug 14	W W Davis 605 Montgomery st
Wall Street Q M Co	Cal	2 20 July 11	Aug 14	Sept 4	D K Tripp 401 California st
Washington Blue Gravel Co.	Cal	1 60 00 June 1	July 15	Aug 15	H Steinegger Britton & Rey
Woodside M & M Co	Cal	5 25 June 16	July 17	Aug 17	S M Cutler 226 California st
Young America M Co	Nev	4 10 July 18	Aug 21	Sept 9	B H Brown 416 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date
Carrie Hale Hydraulic M Co	Cal	F W Van Reynegom	331 California st	Annual	July 31
Cerbat Con M Co		T E Jewell	307 Montgomery st	Annual	Aug 14
Dayton G & S M Co	Nev	W E Dean	309 Montgomery st	Annual	July 29
Defiance M Co	Nev	W G Hughes	314 Montgomery st	Annual	Aug 7
Europa M Co	Nev	R B Noyes	419 California st	Annual	Aug 10
Gedd s & Bertrand M & M Co	Nev	J A Vance	331 Monteomery st	Annual	Aug 8
Julia Con M Co	Nev	A Nesbit	419 California st	Annual	Aug 8
Kennedy M Co	Cal	A Wissel	Jackson Amador Co Cal	Annual	July 31
Mariposa Con M Co	Cal	F P Reynolds	11 ½ L deidesdorff st	Annual	Aug 4
Monitor Belmont M Co	Nev	B B Minor	309 Montgomery st	Annual	Aug 7
New York Hill G M Co	Cal	P J Hermann	418 Kearny st	Annual	July 29
Newhall Petroleum Co	Cal	Wm Parsons (Pres)	515 California st	Special	Aug 7
Oceanic Quicksilver M Co	Cal	O G F nk	438 California st	Annual	Aug 17
South Comstock G & S M Co	Nev	J M Buffington	311 California st	Annual	Aug 21
Tunt: M Co	Utah	H Clay Miller	310 Sansome st	Annual	Aug 14
Trojan M Co	Nev	D Wilder	328 Montgomery st	Special	Aug 5
Union Petroleum Co	Cal	S L Thipley (Pres)	515 California st	Special	Aug 7

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	O D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H O Kibbe	419 California st.	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	June 19
California M Co	Washoe	J M Gordon	309 Montgomery st	2 00	July 11
Darwood Stated Amador	Cal	F B Latham	426 California st	25	July 8
Con Gold Hill Quartz M Co	Washoe	R Wegener	411 California st	25	April 17
Cons Virginia M Co	Washoe	Chas H Fish	401 California st	2 00	July 11
Comsnche M & M Co	Nev	W W Traylor	Nevada Block	25	June 19
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	2 00	April 11
Empire M Co	Sierra Co Cal	Chas Collishonn		5 00	Mar 15
Empire M & M Co	Washoe	W K Dean	414 California st	25	April 17
Imperial S M Co	Washoe	W E Dean	414 California st	25	April 17
Northern Belle M & M Co		W Willis	309 Montgomery st	1 00	July 15
St Patrick M Co	Cal	D F Verdenal	408 California st	50	May 10
West Comstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Feb 24

California Board—Latest Sales.

WED'SDAY, A. M., AUG. 2.

250 Alta ..... 4¾@4¼
20 Alpha 4
100 Baltic 3
70 Best & Bel ..... 50¾@50
250 Columbia 3
100 Con Virginia ..... 60¾@61
280 Con Imperial ..... 5¾@ ¾
100 Cosmopolitan 35c
200 C Pt R 30c
300 Con Barcelona 2
40 California 63¾ 68
200 Edinburgh 37¾c
240 Emigrant 4¼
50 Gila 60c
100 Hussey 1.05
10 Hale & Norcross 12½
70 Julia ..... 9¾@9¾
200 Jenny Glynn ..... 1.15@1.20
50 Knickerbocker 40c
100 Leopard ..... 9¾@10
1-5 Mexican ..... 37¾@37¾
470 Monitor 25c
75 Mexican ..... 37¾@38
1000 Monumental 2½c
10 New York 1
100 N San Francisco 1

The Lumber Mills, Factories, etc., of Truckee and Vicinity.

[By our own Correspondent.—No. 5.]

Truckee was in great part destroyed by fire only a few years ago, and this accounts for the rawness of its appearance. It is not very large. I never once thought of asking the number of inhabitants, being too much taken up with the life, activity and hustle around me to count the bees swarming about its different hives of industry.

As their season is short, say from five to eight months, they have learned "to make hay while the sun shines." On every hand was heard the noise of hammer and anvil. The whistle of the steam saw mill responded in harmony with that of the swiftly passing locomotive, conveying away its lumber to supply the distant mines of California and Nevada, to build the village on the hill-side, a home for the valley farmer, or the palatial mansion of the richer inhabitant of the city.

The Amount of Business

Done here within a very limited area, along the line of the railroad from Truckee to Boca, a station less than 10 miles distant, is almost astounding, saying nothing of the wood, numbered not by the cord but by the car load, of planing mills, shingle machines, or ice storing. There are not less than one dozen saw mills, with aggregate capacity for cutting daily 350,000 feet of lumber, and turning out annually, perhaps 60,000,000 feet or more.

Mr. E. Ellen,

An appreciative reader of the MINING AND SCIENTIFIC PRESS, seemed gratified when asked for some items for publication. He had recently lost a large planing mill valued at $18,000, but, with an energy that knows no bulking, will soon be able to resume at his new mill in process of erection, three miles from Truckee. The lumber will be floated by flume to the railroad, the usual mode of conveyance in this region. His old mill cut last year 3,000,000 feet. Capacity of new mill will be, according to his estimate, about 5,000,000 feet, which is both modest and moderate as compared with some figures received.

Messrs. Martin & Leach, of the

Banner Mill,

Land their lumber at Camp 16, near Boca.

The mill is situated in the midst of what is claimed to be the finest timbered country on this side the Summit, and about eight miles from Truckee, on the line of a projected railroad from this point to Sierra valley, a preliminary survey having already been made. Capacity claimed for mill per season, 8 000 000 feet; actual cut for present year will probably reach 6,000,000.

The mill of Messrs. Lonkey, Smith & Hall, five miles from their two yards at Prosser Creek station, is run by a Myer & Leffell turbine wheel, and was reported as cutting, when visited, about 80,000 feet per 24 hours.

Their retail yards are at Virginia City, where they readily sell all they can cut, besides a large amount procured at other mills.

The Truckee Lumber Company's

Two saw mills are giving out their 50,000 feet per day, and may exceed 10,000,000 feet the present season, if expectations of the proprietors are realized. Their factory, with average of 45 men, is annually turning out 6,000 pair of blinds, 25,000 doors, 40,000 pair of windows, of which 20,000 are glazed; 20,000 boxes, 400,000 fancy dressed picketts, 3,000,000 laths, and of shingles 6,000,000 at least, besides a vast amount of turned work. Their mouldings will approximate 12,000,000 feet. Mr. Ware, the superintendent, has invented a new fancy door moulding, wholly of cast iron, made very thin and light. The preference given to it over wood is, that it is said not to swell nor shrink as wood, and to be far cheaper.

A Useful Invention.

Richardson Bro's. have a mill and also a planer, six miles from Truckee, where I had the pleasure of observing the working of a patent, secured sometime since through the MINING AND SCIENTIFIC PRESS Agency, the invention of Mr. W. Richardson, which seemed so useful and ingenious as to astonish me that it had not been brought into general use.

It is an incline block for carting logs on the carriage, enabling the mill to cut at least 3,000 more feet per day than by use of ordinary block. The blocks are hung on a hinge at one end within slotted floor-beams, and are elevated by an eccentric shaft, worked by a worm-screw, the sawyer raising a lever attached by merely pulling a rope, and readily managing the machinery without leaving his position.

Time and space forbid a detailed mention of the Schafer, McFarland, Alder creek and other mills about Truckee, so I pass to the

Vicinity of Boca.

The daily cut of Messrs. Bragg, Folsom & Co's., mill as ascertained on the ground, is 40,000 feet. The average yearly cut of the saw mill belonging to the Boca mill and ice company, is about 6,000,000 feet. The Pacific shingle company, Thompson and Ferguson, proprietors, have two of Huntington's machines, and are averaging for run of 24 hours, 85,000 shingles, and will probably reach for season 15,000,000, having estimated for bolts to that amount. The machinery is run by water, and the bolts by a device of their own, or rather by a special application of a well-known principle, are elevated by means of blocks fastened at suitable distances on a chain, being in this way passed into the mill from the flume, saving considerable labor in handling.

Mr. Doane and others have just finished a very large brewery at Boca, at a cost of $150,000, and fitted it up with the latest improvements, turning daily the barley of the farmer into 75 barrels of beer, and giving employment to about 25 men.

One of the great products of this vicinity is

Ice.

Formerly almost the entire supply was from Sitka. Now, with the exception of what is produced by artificial means in San Francisco, all is furnished either by the Peoples' ice company at Truckee, which stored last winter about 4,000 tons, or by the three following companies, viz: The Summit, the Nevada, and the Boca, now consolidated into the Pacific ice company, with principal office in your city. The Boca company has a house 480 feet by 40. Capacity, 8,000 tons. The quota of the Nevada company is at present furnished by

The Summit Company,

Which has houses at the summit, and also at Prosser creek, at which place the most of the business is now done. The reasons assigned for transferring their business here are there is less snow to contend with, and that it is much colder, although 1,000 feet, at least, lower than at the summit, owing to the currents of air produced by the peculiar topography of the surrounding country, as connected with the valleys nearer or more remote, or adjacent mountain ranges. The capacity of the Summit company's house is 10,000 tons, and owing to the increasing demand, the intention is to erect another building as large as the former.

The Dam

On Prosser creek, covers 36 acres, giving employment to 150 or 200 men in the winter, scraping the snow from the ice, cutting it into blocks, usually about 22 inches square, and sliding it down an incline to the house, where it is stored for the summer market. The cutting is done by plows made expressly for the purpose, and drawn by horses, one occasionally sharing the fate of an icy grave.

I examined with some considerable interest here

A Fish Ladder,

Of somewhat peculiar construction, modeled, it is said, after the design of that at South Hadley falls. It was built under the superintendence of the State Fish Commissioner, the Hon. B. B. Redding, and is certainly worthy of imitation elsewhere. In consequence of the numerous offsets in the ladder, some 12 feet in width, and the endless zigzagging, requiring a mile of travel, perhaps, to make the distance of 100 yards, the ascent to the dam can be made as easily by the fish as in almost any other portion of the stream. K.

SIX companies of volunteers have gone from Halifax to the Sydney, C. B., coal mines. The manager of the mines was shot at on Thursday, and the striking miners tore up the railway track and emptied the coal wagons. The miners say they are determined to resist a reduction of wages, and will prevent the shipment of coal during the strike.

A NORTONVILLE dispatch reports two more deaths from the mine explosion on Monday week. The deceased were Thomas D. Davis and Thomas D. James.

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE.

TO BE PATENTED.—Alpine *Chronicle*, July 29: Robert M. Folger, attorney in fact, has been instructed to apply for a United States patent for the Globe mine, located at Monitor.

BEING SURVEYED.—U. S. Deputy Surveyor Hawkins is this week surveying the Balaklava mine for the purpose of having it patented.

ACCIDENT.—On last Thursday week, at Monitor, Supervisor Mercer fell from a scaffold while at work at the hoisting works of the Advance mine. The shaking up he received necessitated a settlement by a retirement for about a week.

EXPECTED.—Parties from San Francisco are expected here next week to examine some of our mines.

CALAVERAS.

SHEEP RANCH MINES.—Calaveras *Citizen*, July 29: The mining news from this camp is encouraging. The tunnel of the Good Hunter is being pushed forward, and we believe that a contract to continue the Pioche tunnel 100 or 200 feet will soon be let. The Sheep Ranch mine still continues to pungle and is likely to do so for an indefinite period of time—so miners say.

FOUND IN A SHAFT.—We just lately learned that a young negro boy about 18 years of age was found drowned in a shaft, near Angels. The body was so decomposed that it was thought best to bury it by filling up the shaft. The boy, whose name was Bell, had been missing for several days when discovered.

MARIPOSA.

BARRETT MINE, HUNTER'S VALLEY.—Mariposa *Gazette*, July 29: This well known quartz mine, owned by Messrs. Barrett, Carson & Pillians, has, as we are informed, been sold to a company for the sum of $15,000. It is expected that this company will soon put on a large force of men. They are now prospecting and preparing the mine for a general upheaval of the glittering ore, of which this mine has produced in large quantities but a few years since.

NEVADA.

MOORE'S FLAT MINES.—Cor. Nevada *Transcript*, August 1: Our miners are busily at work on their claims, and the high gravel banks are rapidly disappearing under the pressure of heavy streams of water. The Boston company has just opened their upper tunnel and shaft, through which they are running the climb that had slid in last winter. They have a large monitor, running 1,600 inches of water, and this quantity will be increased as soon as the lower tunnel and shaft are opened. They have a full crew in the tunnel, working two shifts. Jim Beddington, the foreman, is decreasing the pile of pipe-clay in the Boston claims, but there is an enormous quantity of this to be washed off before the gold can be got. In the course of a few months this mine will be cleared, when the number of hands will be increased. The Blue Gravel company will be ready to start their machinery on the 1st of August. The pumping and hoisting will be done by water power. A water wheel turned by 25 inches of water, with a pressure of 216 feet, will do all the necessary work required. The people have great expectations of this mine, and think the company will get ample returns for their labor. Blue gravel has been found on the ridge above the shaft, with gold in it, and it is supposed this stratum extends along the flat on which the mine is situated. Hegarty & Co. have moved their barn, and in a few days more the store will be moved also. Much of the town will not be moved before fall. If the Blue Gravel company find a good prospect the town will be built close by the mine; if not, it will be built at Jerico. At present the store is the only building started at the new town.

CURRY & RANDALL'S quartz claim, on Rush creek, is looking splendidly. They have a very fine ledge, and are taking out a large quantity of rock, which will be crushed in a few weeks.

THE mining prospects about Wolsey's flat are looking better than they have for a long time. We understand Marks & Co. will soon give employment to several hundred men in drifting some ground they own there.

PROVIDENCE.—We saw a nice bar of silver on Saturday, which was part of the result of a working of a lot of sulphurets at the Providence mine. Heretofore the silver in the rock of that mine has not been saved by the process used. Verily there is a new era inaugurated in mining here. There are three new processes now in operation in the county, either one of which will save a large percentage over the old methods. We shall give a description and fuller particulars about them shortly.

SISKIYOU.

CLEANED UP.—Yreka *Union*, July 29: The mill of the old Mecklenburg company, which has been running for the past few weeks on rock from that claim, was cleaned up yesterday, but we have not learned the result. It is not expected to be very large, however, as it is generally supposed that Eisenbeck, who was one of the proprietors and amalgamator until recently, and absconded last week, has taken a good deal of amalgam with him. The quartz of this ledge looks well, and prospects well, though in the mill under Eisenbeck's manipulations it has not paid well. The men in the mine who got out the rock express the greatest faith in its quality, and think that with an honest mill-man the mine will pay well.

PAID WELL.—Trinity *Journal* July 29: We were this week shown a small bucketful of gold dust—45 pounds of the precious metal—taken from the Ward mine, on Oregon Gulch mountain, and being the result of the final clean-up in that claim. This is about one-half the yield for the season, $17,000 having been taken out altogether. When the limited amount of gravel washed is considered, the yield is regarded as a splendid showing for the mine. Early in the season there was a great deal of trouble with the ditch, it being new and causing much delay and expense through slides and caves. An extensive deposit of clay and slide bedrock, containing no gold, had to be removed before the gravel was reached, and it was therefore rather late in the season before any pay dirt was washed. The result was such, however, as to give satisfaction to parties interested, and prove that the gravel is very rich. Mr. O. M. Loveridge, the superintendent, now has everything about the claim in tip-top shape, so that but little expense will be required to place it in working order for another season.

Nevada.

ANTELOPE DISTRICT.

ENCOURAGING.—Eureka *Sentinel*, July 25: Antelope district is situated in the Sulphur range of mountains, about six miles east of Garden Pass, on the Eureka and Palisade railroad. It is most eligibly located for economical mining, and is well supplied with both wood and water. There are about 30 miners in the district, all busily engaged in developing their claims. The principal mines are the Manhattan and Justice, both of which are showing remarkably well. These claims are supposed to be on the same ledge, which is easily traced for a long distance. Shafts have been sunk to a depth of 70 feet, disclosing three feet of ore that goes $75 to the ton. The formation of the country rock is especially favorable for the existence of permanent veins. We are glad to hear these encouraging reports from Antelope, and hope the mines of that locality may turn out to be as rich as the hardy owners could wish them.

CORNUCOPIA DISTRICT.

LIVELY.—*Silver State*, July 24: Asa Moore arrived from Cornucopia district last Saturday, bringing as return freight 18 tons of old coatings. He informs us that the camp is quite lively. The Leopard mill is running and the furnace is in full blast. The mines are looking well, and some of the principal companies paid their men last week. Everybody in the camp feels confident that the dull times in that section are over, and they anticipate a bright future.

ELY DISTRICT.

LOCAL NOTES.—Pioche *Record*, 23: The amount of bullion shipped by Wells, Fargo & Co., during the past week was $10,183, a decrease of $3,000 on the previous week. The mill of the Raymond & Ely will probably start up on the 25th or 26th. In the mine the same work continues; the pump is run at the usual speed, keeping the water at the same level; still but little benefit will be derived from the running of this pump until the new and powerful pumping machinery of the Meadow Valley is in active operation and working well to assist in taking out the water, so that the explorations in this mine can be pushed downward below the present level. In the Meadow Valley the engines are being put down; a gallows frame also is being erected. Chloriding going on as usual in the mine. The American Flag's main shaft has advanced in depth about a foot a day for the past week. The main shaft of the Pioche mine is also being pushed ahead as rapidly as possible and are now working in quartzite. The Alps mill keeps busily employed running on custom ore and ore from the mine. The mill is running out some fine bullion. A new rope for the mine arrived during the past week, so that no difficulty will now be experienced in hoisting the ore. The same number of hands continue at work on the Washington & Creole, hoisting nearly three tons of ore daily. The usual work of extracting ore continues in the Hahn & Hunt. Nothing being done at present with the Newark. A change was made in the board of trustees during the past week. The building of the smelting furnaces by the citizens, is still under discussion, about $4,500 having been subscribed, with which amount it is proposed to organize and sell stock to make up the necessary balance. A meeting will be held for this purpose tomorrow evening, at 8 o'clock, at the house of Protection hose company. The building of this furnace will be the only salvation for Pioche, until such time as the Meadow Valley and Raymond & Ely can push their explorations below the water level.

EUREKA DISTRICT.

THE BEAT MINE.—Eureka *Sentinel*, July 22: Probably the best mine in the State to-day is the Richmond of this district. The ore on the lower levels is not only rich but abundant. In all of the metals, gold, silver and lead, it carries greater value than ever before. Persons who have lately been through the mine assure us that it is the greatest mining property in the world.

BONANZA.—We understand that Col. Robbins is about bonding the Antelope, Kit Carson and New Law mines for the Chicago market. The aggregate sum to be paid amounts to about $10,000. The Colonel expects to make the turn in 90 days. The mines are all valuable and each for itself shows up well.

RUBY HILL.—Work has been resumed at the ninth level of the Eureka Consolidated, the water having abated. There are good prospects ahead, and, from appearances, not very far ahead either. Work has been considerably retarded at the E. K. on account of the closing together of the bottom of the shaft. When the water was taken out the pressure from the outside was so great as to cause the sides to close in to such an extent as to prevent the working of the large tank which was formerly used for hoisting the water. A smaller one had to be substituted, and of course the work of clearing the mine of water progresses with proportionately less rapidity. Quite an accident occurred at the E. K., Tuesday night, which would have resulted seriously if there had been any one in the shaft. The large wire cable used in the south compartment unwound entirely from the reel and dropped down the shaft without doing any damage.

HUMBOLDT DISTRICT.

BYRON AND PALACE MINES.—Cor. *Silver State*, July 25: The Byron is looking exceedingly well; the vein is about two feet wide and the ore very rich in gold, with some silver. It is beyond doubt the richest mine yet found in this part of the country. Samples of the ore, in which no gold is visible to the naked eye, assay $4,000 or $5,000 per ton. The owners are running a drift on the lead, and are now some 75 feet from the surface. The Palace ledge, which is situated on the north side of Humboldt canyon, is also prospecting very well. The ore in this lead is principally silver. Four samples assayed at the reduction works yielded as follows: No. 1, $1,190 26; 2, $1,041 73; 3, $224 62; 4, $76 26. These samples embraced the different varieties of ores found in the lead and were an average of each kind.

JERSEY DISTRICT.

ON THE MEND.—*Silver State*, July 31: S. J. Chambers arrived to-day from Jersey. He says times are on the mend in that district. The working force in the mine has been increased, and there are now 30 men at work. The Jersey company talk of erecting a concentrator, that being considered a more economical and cheaper method of treating the ore than smelting.

REESE RIVER DISTRICT.

A SIX MONTH FOR BULLION.—*Reese River Reveille*, July 26: The shipment of bullion for the present month by the Manhattan company is the largest ever made during any one month since the discovery of this district. Shipments to date aggregate $200,180, and there are still five days for production and the clean-up left in the month. The shipment of this amount of bullion is quite positive in support of the statement made by the *Reveille* that the mines of Lander hill are now better than ever before since their discovery. For many years they have poured out a steady stream of silver, but have never before given such promise for the future, nor shown such rich and extensive ore bodies for the present as they do now. Austin is obscure and isolated, but she is sure to make herself known abroad by the steady and fruitful production of silver which is assured for years to come. The mines of the Manhattan company, though they have been worked for so long a period, are to-day as good as virgin ground, and mining in them is just commencing in earnest. Heretofore it has been comparatively but mere scratching of the ground.

SPANISH BELT DISTRICT.

QUICKSILVER.—Pioche *Record*, July 22: A rumor comes from Spanish Belt district of the recent discovery of a quicksilver mine. The find is situated between Barcelona City and the Mariposa mine, about seven miles southwest from Belmont. There are, however, conflicting opinions as to the ore being cinnabar, though it is claimed that cinnabar experts have made assays and obtained large yields in quick-liver. The ore is of a reddish cast, but not as high a color as usual for that class of ore. Anyway, for miles the country has been staked off, and great excitement prevails among the inhabitants of that district.

TRINITY DISTRICT.

WORK RESUMED.—*Silver State*, July 22: Work has been resumed on one of the mines in old Trinity district, and the prospects of its being a good mine are very fair. The district, which boasted of having a mill in the early days of the Humboldt, and produced thousands of dollars in gold and silver bullion, has been abandoned for at least eight years. It is situated about eight miles west of Creana.

WARD DISTRICT.

PROSPEROUS.—White Pine *News*, July 20: Just now this young and prosperous mining camp is attracting much attention. New mills are being put up and several furnaces are already completed. From some of our business men who have just returned from there we learn that the camp is lively, and high hopes are entertained of its permanency.

WHITE PINE DISTRICT.

PERSONAL.—White Pine *News*, July 29: During the past week personal movements have been made as follows: Capt. Drake, superintendent of the Eberhardt and Aurora mines, left Wednesday for San Francisco on business for his company, the depreciation of silver having much to do with his visit. Mr. W. H. Gauley, one of the largest stockholders in the Ward district mines, passed through on Wednesday last for San Francisco. He informs us that his company had purchased the 20-stamp mill at Troy mining district. Perley Rowell, foreman of the Eberhardt and Aurora company's mill, was in town on Wednesday. He informs us that the mill is running nicely, and that the silver is flowing out in great amounts.

MILL SOLD.—The English company's mill at Troy, in this county, has been sold to the Martin White company, of Ward, for the low price of $11,000, and is now being removed to that company's mines.

WASHOE DISTRICT.

ROCK ISLAND.—Gold Hill *News*, July 27: The flow of water on the 850-ft level is still strong, requiring a steady use of the pumps to keep it down to permit work on the 850-ft level. The drifts on that level have all been repaired, and work in the face of the drifts, both north and south, resumed.

JUNCTION.—Daily yield, 70 tons of ore. The ore breasts are looking well and yielding finely. The repairs to the Sherman mill are completed, and it is again crushing ore from the mine. The east cross-cuts on the 900-ft level are showing more favorable every day. The north and south drifts on the 1000-ft level are also showing some fine ore prospects.

NEW YORK.—Work has been resumed at all points on the lower levels of the mine. The determination of the present management appears to be only to develop a paying mine, and they are undoubtedly starting out in the right way to do it.

NIAGARA.—Sinking the main incline shaft is making splendid progress. It is now down 405 feet. Indications at the bottom still continue of a favorable character.

AMAZON AND GLASGOW.—Sinking the combination shaft is making splendid progress, the bottom still in good blasting ground.

KOSSUTH.—The main drift on the 360-ft level is showing better and better as it advances to the south

ward. The prospecting drifts on the 500-ft level are being put in excellent shape to do a big amount of cross-cutting in a very short time.

SUPERIOR.—The pumps are at work in good earnest and keep down the strong flow of water. The sinking is going ahead lively, the bottom of the shaft being in very favorable ledge matter.

BELCHER.—Daily yield, 300 tons of ore. The ore breasts and stopes are still showing quite favorably.

WEST BELCHER.—The opening drifts are being pressed ahead at a lively rate. The new ore dump is completed, and the extraction of ore will be commenced in a very short time. The breasts of ore are from 20 to 40 feet in width and show well.

BULLION.—Nothing is yet doing in the Alpha drift, on account of bad air.

LADY BRYAN.—The foundations are fast approaching completion. A portion of the new and powerful pumping machinery has already been shipped from the foundry in San Francisco.

UTAH.—Owing to an accident to the hoisting machinery, but slow progress has been made with the sinking during the past two or three days.

SUCCOR.—The old pumps and rods have been taken from the shaft; the old machinery has been torn out and the deep excavations for the reception of the new powerful pumping machinery is fast approaching completion.

CON. VIRGINIA.—Sinking and raising up on the shaft between the 1500 and 1550-ft levels is making good progress. It will take a week or ten days yet to finish the shaft ready for work. The amount of ore extracted is still limited by the other uses of the shaft, although the introduction of most of the timbers through the drift connecting the 1500-ft level with the C. & C. shaft is making a very favorable diversion in favor of a greater amount of ore extraction. The prospecting drifts in the southern portion of the mine are showing a much better extension of the ore body in that direction than has heretofore been expected. On the 1700-ft level the north drift is still being advanced to connect with the bottom of the south winze. The stories put in circulation that the rise in the stock during the past few days has been caused by the operation of diamond drills on this level, is without any foundation whatever, as there has never yet been a diamond drill used in that portion of the mine. The new amalgamating mill is fast approaching completion.

SAVAGE.—The new pumping engine is completed, ready to attach the pumping rod and commence the hoisting of water. The putting in of the pumping rods, pump columns and pumps is progressing as fast as it is possible for such work to be done. The flood of water has decreased several feet during the past few days from some cause; just what the cause is, is yet hard to tell.

CALIFORNIA.—Daily yield, 700 tons of ore, keeping the mills running up to their full working capacities. The yield of bullion up to the present date is nearly $400,000 in excess of the yield at the same date in June. The ore breasts are looking well, and are yielding finely as usual. The different points at which the ore is being extracted on the 1600 and 1600-ft levels show no material change. The machinery at the C. & C. shaft is repaired, and will be in readiness to commence pumping water by 6 o'clock or 7 o'clock this evening. The new battery mill east of the C. & C. shaft is fast approaching completion.

OPHIR.—Daily yield, 300 tons of ore. The ore breasts both north and south on the 1500-ft level are showing splendidly. The mills are kept running up to their full crushing capacities, and the yield of bullion for this month will not vary much from what it was last month. Raising up and sinking the main incline is being pressed ahead with all possible vigor, the work being driven ahead at three different points. The north drift on the 1600-ft level has nearly reached the north line, at which point a cross-cut has been started to the northwest to cut and prospect the main ledge.

YELLOW JACKET.—The north drift from the east winze on the 2040-ft level is in 42 feet. The south drift from the north winze on the same level is in 28 feet, the two drifts having 69 feet yet to penetrate to complete a connection. Both drifts are perfectly dry, and the face of each is in soft green porphyry. As soon as the connection of the winzes is completed and ventilation obtained, a cross drift will be started east from the bottom of the east winze; a drift will also be started south from the same point. The lateral drifts on the 1740-ft level have been connected and preparations are now being made to start the cross drifts.

SIERRA NEVADA.—The stations and drifts on lower levels at the old shaft are being thoroughly timbered and secured, preparatory to abandoning permanently the operations at that point. This is being done on account of the inefficiency of the old machinary to prosecute the sinking to a greater depth. At the new shaft a station is now being opened at the 1700-ft level. As soon as the station is completed, drifts will be started to cross-cut and prospect the ledge at that point.

PHIL. SHERIDAN.—Sinking the shaft is going steadily ahead, the bottom in good working ground and the sinking making splendid progress.

JULIA.—The hob-pit on the 1700-ft level is about completed. The main south drift on the 1600-ft level is steadily advancing, the face still in quartz and low grade ore, which shows a steady improvement. The main southwest drift on the 1800-ft level is being driven forward, the quartz in the face being much more compact and solid than for some time past.

IMPERIAL CONSOLIDATED.—The north drift on the 2000-ft level is steadily advancing to the northward to connect with the Alpha drift. The north drift from this winze, 100 feet below the 200-ft level, is showing very favorable.

CROWN POINT.—Sinking the main incline below the 1700-ft level is going steadily forward. The main south drift on the 1700-ft level has been pushed forward to the south line without making any valuable ore developments. It is now being continued in Belcher ground to connect with the bottom of the combination air shaft.

OVERMAN.—Sinking the shaft is going steadily forward, the bottom still in very hard blasting rock. The north and south prospecting drifts on the 1200-ft level are steadily advancing.

CHOLLAR-POTOSI.—Sinking the main incline is going steadily forward about 18 feet per week. The old ore stopes are still yielding about 76 tons of ore daily. The assay value of the ore is $33 per ton. Sinking the combination shaft is making splendid progress.

GOULD & CURRY.—Repairing the shaft is going steadily forward. There are yet no new prospecting operations commenced on the lower levels; a few tons of ore is hoisted for the Consolidated Virginia between times when the shaft is not in use for other purposes. The exhaust air fan is working admirably. The erection of the new machinery is steadily advancing. The combination winze now being sunk on the Savage line on the 1600-ft level is now down 210 feet below that level, the bottom still being in perfectly dry ground, although it is nearly 100 feet deeper than the level of the water in the Savage shaft.

FLORIDA.—Face of north drift at the 400-ft level shows considerable improvement, very promising streaks of quartz coming in. The drift is now turned in a westerly direction so as to cross-cut the vein, and is liable to make some interesting developments before long. Water decreasing.

MEXICAN.—Two cross-cuts have been started in a northwesterly direction to cut the ore vein. One of these is on the 1600-ft level and the other on the 1465-ft level, and both are near the north line of the Ophir. On the 1465-ft level the face of the cross-cut is in fine ledge matter, carrying occasional small streaks of ore. On the 1600-ft level the face of the cross-cut is in a very favorable formation.

BALTIMORE AND AMERICAN FLAT.—Sinking the main incline is making fair progress, considering the strong flow of water at the bottom. Tha pumps handle the water with ease, but the flow considerably impedes the progress of sinking.

SUTRO TUNNEL.—Face of header in hard working porphyry, with streaks of quartz and clay. The Burleigh and Ingersoll drills make very fair progress in this material, although it is more difficult to work than harder and more compact rock met with heretofore. Total length of tunnel last evening, 13,742 feet.

EAST JUSTICE.—Good progress is being made in the sinking of the shaft, the rock is becoming softer and works to good advantage. A streak of soft brownish quartz, six inches in width, running north and south, has been met with during the past few days in the bottom of the shaft.

WARD.—Sinking the shaft is going ahead at the rapid rate of five feet per day. It is now down 340 feet. The south drift of the Julia is rapidly approaching the Ward line, the face in quartz and low grade ore.

LADY WASHINGTON.—Sinking the main shaft about two and a half feet per day. The bottom is now in the most favorable looking material yet encountered.

HALE & NORCROSS.—The pumps and pump columns are all in place in the shaft, and the rods are now being lowered into position. The pumping engine is in place.

ALABAMA.—Sinking the shaft is going rapidly forward, the bottom still in splendid blasting ground.

ALTA.—The erection of the new machinery is steadily approaching completion.

DAYTON.—The water at the bottom of the shaft is still giving considerable trouble.

PROSPECT.—Total depth of shaft, 421 feet. Material at bottom somewhat softer, composed of porphyry with considerable red jasper and streaks of white quartz.

NORTH CARSON.—The mine is showing well at all developing points, and more good ore is being encountered.

NORTH CON. VIRGINIA.—The erection of the new pumping machinery is going rapidly ahead. The drain tunnel is steadily advancing.

TAHOE.—Sinking the joint shaft on the Lady Bryan line is going rapidly forward, the bottom still in soft working ground.

CALEDONIA.—The flow of water is still strong in the shaft and greatly impedes the progress of sinking.

EUROPA.—North drift on the 600-ft level is showing a fine streak of quartz with some clay.

TWIN PEAKS.—Sinking the new working shaft will be commenced in a few days.

HERALD.—Sinking the shaft is going forward, the bottom still in soft ledge matter mixed with quartz and streaks of very rich ore.

COSMOPOLITAN.—Considerable pay ore coming from the north drifts. Ventilation of mine perfect, allowing of excellent work being done.

NEVADA.—Face of west drift in low grade ore. No signs of west wall as yet.

(Continued on Page 100.)

The Lixiviation Process for Silver Ores.

Mr. Henry S. Brooks, who has had great experience with the above process in Mexico, writes as follows concerning it to the *Bulletin*:

The reduction of rebellious silver ores by lixiviation, instead of by amalgamation, is now almost in universal use in Sonora, Mexico, and Lower California, and is rapidly gaining favor in Sinaloa and the interior. It is not, as many suppose, a new discovery, but merely a modification of an old and well known process, with cheaper chemicals than those formerly in use.

The Method at Present Adopted

Is to crush dry through a No. 18 or 20 screen, then treat in reverberatory furnaces with salt in exactly the same way as for amalgamation. The ore should be more carefully chloridized, if possible, than for treatment with quicksilver. When thus prepared the ore is placed in large tubes or vats with false bottoms covered with canvas or burlaps. The vats hold about six or seven tons. The ore is then leached or lixiviated with water for a few hours to dissolve and carry off the soluble salts of the base metals. The salts of silver not being soluble in water are not affected by this process. After the base metals are thus eliminated the ore is leached with a solution of hyposulphite of soda, in which the silver *is* soluble. This lixiviation takes from six to ten hours, or even more, according to the richness of the ore and the strength of the solution. This solution is carried to a large vat. It is transparent, and scarcely distinguished from common water, except by its taste. The silver thus obtained in solution is precipitated by a polysulphide of lime, which is prepared by boiling sulphur and lime, proportioned according to the metals under treatment. This solution can be boiled either by fire or steam. A portion of the sulphur and lime solution is then added to the hyposulphite of soda solution when the silver is at once precipitated as a black powder, which is sulphide of silver, SAG. After straining, this sulphide is roasted in a reverberatory furnace to expel the sulphur, during which process it granulates, assuming much the appearance and color of blasting powder. In this condition it will assay from five to six hundred fine. It is then refined in a refining furnace, or in the crucible, according to the quantity under treatment.

Its Economy

Is very great. A skillful operator will work up to 95 per cent. of the assay. The ordinary average loss by amalgamation is at least 15 per cent., making a gain of 10 per cent. All the wear and tear, as well as the original outlay for pans or barrels is avoided, and no power whatever is requisite. The vats can be built for a mere trifle, and will last an indefinite length of time. Hyposulphite of soda is worth in this market from five to six cents per pound, sulphur from four to five cents, while lime is abundant in nearly every mining district. In the hacienda managed by the undersigned, producing, say, $60,000 a month, the following saving is effected:

Eight per cent. say, additional product	$ 4,800
Two per cent. less duties, the silver being 970 fine instead of 750	1,200
Four cords of wood less per diem, at $7.50 per cord	900
Saving in use of quicksilver	1,000
Saving in labor	250
Wear and tear of machinery	500
Additional gold saved, at least	1,600
Making a direct saving per month of	$10,120

But in addition to this we use a No. 20 screen instead of No. 40, as in the amalgamation process, thus more than doubling the power of the battery. Experience proves that crushing with an 18 or 20 screen expedites the lixiviation process without producing any additional loss. In addition to all these items, the first cost of building a mill is greatly reduced.

Ores Suitable for Treatment by Lixiviation

All rebellious ores not containing free gold can be advantageously treated. It has been urged as an objection, even by parties acquainted with the process, that the proportion of gold frequently found in silver ores cannot be saved by lixiviation. Our experience is decidedly to the contrary. It is true our ores have but very little gold, varying from a trace only to five or six dollars a ton. By the process of amalgamation this yields, in a bar of 1,500 ounces, only about $20 gold. By lixivation we obtain $100 and upward in each bar.

It is the opinion of those having the greatest practical experience as well as scientific knowledge, that there are no ores so base, no combinations so stubborn, but they can be treated successfully—say to within 90 per cent. of the assay, by lixiviation. Of course there is much to learn in a process new at least in its application to the economical treatment of ores in large quantities; but I have not as yet heard of any failure where ordinary intelligence has not been wanting; while on the other hand the use of quicksilver has been almost entirely if not entirely abolished in Sonora. I should add that the process is now used frequently without even the use of soda, with sulphur and lime only. By this method the treatment is somewhat slower, and is said not to save the gold, at least not to an equal extent, but it is even more economical. Although the process appears so simple I should strongly recommend any person without experience to employ a skillful man. They are plenty in Sonora.

Other Questions to be Considered.

Of almost equal importance is the question of chlorination. Where labor is so high as it is in California and Nevada, it is ruinous to treat ores in the old reverberatory furnace, employing three eight-hour watches to chloridize a ton and a half of ore. The economy of fuel, too, is becoming of paramount importance. The Stetsfeldt furnace has been very successful in Nevada under skillful management, but in Mexico it has in every instance proved a failure. If it were not for the fact that an unusual number of very able and experienced men are engaged in mining in Mexico, one would not be inclined to attribute the failure to a want of merit in the furnace. It is probable, however, that the Mexican ores, being so excessively rebellious, are not sufficiently chlorinized by falling down the shaft and the subsequent roasting. I have been informed, though, that Mr. Stetefeldt has made several important improvements of late, including an antomatic discharge, rendering the furnace suitable for any class of ores. For my own part, I have very little doubt but that the Stetsfeldt furnace can be successfully used anywhere—perhaps with some slight modifications.

A new furnace, at present but very little known, is the "White furnace," a working model of which can be seen at the Ætna foundry. It is very simple, economical in the extreme, and not liable to get out of order. It is probable that some unimportant modification of this also might be required for some ores, such as changing the position of the upper flues, etc., but it is worthy the careful attention of all practical mill-men.

A very large proportion of the wealth of the Pacific States is to be found in the abundant veins containing ores of a more or less rebellious character, for the successful treatment of which improved methods of reduction are necessary. There are few questions of greater importance at the present time, with silver at such an enormous discount, and all our industries so seriously depressed thereby.

CONSUMPTION OF WOOD ON THE COMSTOCK AND VICINITY.—The consumption of wood on the Comstock and in mills and other works connected with the mines will be, for 1876, about 260,000 cords, worth, at $12 per cord, $3 120,000. Of this 200,000 cords will be shipped by rail, 20,000 by the Carson river to its destination and 20,000 cords will be taken out of the river at points between Empire City and Dayton and hauled by teams to mines and mills. To this must be added 20,000 cords consumed by the locomotives of the Virginia & Truckee railroad. About 180,000 cords of wood will be delivered by flumes between Genoa and Reno on the line of the railroad and branch tracks. The amount of wood sent down from the mountains through the flumes has been yearly increasing, while the amount of wood floated down the Carson river is steadily decreasing. The amount of wood floated down the river in 1874 was 140,000 cords; in 1875 it was 75,000, and this year, all told, it will not exceed 60,000. The reason of the decrease of the amount coming down the river is owing to the fact that the pine forests are each year cleared off to a greater distance from the stream and its tributaries. Eventually the standing forest trees remaining will be at such a distance from the river that it will be cheaper to build flumes through which to send down the wood than to haul it to the stream and then drive it. It is estimated that the amount of lumber and mining timbers which will be shipped to the Comstock during the year will be between 90,000,000 and 95,000,000, feet. Nearly all of this will come by rail.—*Virginia Enterprise.*

A New Fungus on the Pine Trees.

Dr. H. W. Harkness, who is devoting the summer to scientific studies in the eastern counties of the State, has discovered a new fungus on the young pine trees, which promises to harm the trees and of which our readers should be forewarned. In a communication to the San Francisco microscopical society, Dr. Harkness writes as follows: I have to-day forwarded for the society's cabinet a specimen of *Peridermium*, a fungus which is attacking the small pine trees in the vicinity of Colfax, at which point Mr. Moore and myself discovered it on the 26th of May last. On the 20th inst. I again visited the locality for the purpose of noting the changes which had occurred during this interval. The fungus belongs to the genus *Peridermium*, order *Æcidacie*, and appears both on the limbs and trunks of young trees of the variety *Pinus Ponderosa*, generally forming a complete circle around the tree, its sporidia appearing as a zone of bright orange yellow. The spaces first germinate beneath the cuticle, which it destroys. Owing to the irritation of this presence, an abnormal thickness of the cambium is produced, which, in turn, gives place to an excessive growth of wooly fiber. This process being repeated from time to time, a large bulbous expansion is soon formed, so that, as often occurs, a stem of but an inch in diameter is enlarged to that of four or five. Above this bulb the further development of the stem is retarded or arrested altogether, its place being supplied by a dense tuft of minute branches.

As no reference to this fungus is found in any of the books at my command, I am inclined to the belief that it is a new variety. Yesterday I received a letter from Prof. W. G. Farlow, of Cambridge, Mass., in which he says: "I send you a specimen of *Peridermium*, which is attacking the *Pinus Ponderosa* of this vicinity. Do you find it in California?" As the specimen sent by the Professor agrees in every essential particular with the one sent to this society, it would appear that the fungus is attacking the forests in the Eastern as well as the Western portion of the United States. But one other variety of *Peridermium* is yet known upon this coast, and that is found upon the foliage of the *Pinus Insignis*, growing in the Golden Gate park, San Francisco, in the month of January last. This variety we then identified as *P. Pini*, which so far has not produced any special damage.

In the vicinity of Colfax the fungus appears to be limited to an area of but a few acres in extent. Within that area, however, it is destroying the young growth, and should it become generally disseminated, it bids fair to do great harm to the timber trees of this coast.

The North Wind.

At a late meeting of the Agassiz Institute, of Sacramento, J. H. C. Bonte submitted a long essay on the hot, dry north wind, which frequently does serious damage in the Sacramento-San Joaquin valley in the summer. This wind evaporates an inch of water in 24 hours, at Sacramento, and still more at the ends of the valley, bakes fruit on the trees, chars tender leaves, kills buds or sprouts of cherry and peach trees, cuts down young orange trees like frost, sometimes kills old apple trees, blights and ruins wheat when in the milk, kills young turkeys and chickens, affects cows so that they give one-third less milk than usually, weakens horses so that they do not travel well, and has a depressing and irritating effect on the nervous system of man. It is sometimes called the "poison wind." Such a wind prevailed on Monday and Tuesday, the 26th and 27th of June last, and on the latter day the following temperatures were observed:

Towns.	Temperature. 7 A. M.	12 M.	9 P. M.	Lat.
Redding	84	104	90	40.35
Red Bluff	88	113	94	40.12
Tehama	84	110	100	40.00
Chico	76	111	85	39.40
Marysville	83	96	92	39.10
Sacramento	65	98	76	38.30
Stockton	70	96	89	37.56
Modesto	80	103	82	37.40
Merced	80	104	89	37.20
Goshen	78	111	73	36.20
Delano	81	103	92	35.50
Sumner		101	89	36.35
San Francisco	64	76	66	37.40

The latitudes are guessed at from a common map, and are not exact. The towns, save San Francisco, are all in the Sacramento-San Joaquin valley, on the line of its railroad, about 90 miles on the average from the ocean—none more than 100 and none less than 70. It will be observed that the heat is greater near the ends of the valley than in the center, which is cooled by the ocean breezes blowing in through the Golden Gate. Delano and Sumner are cooler than Merced, because they are south of Tulare lake, the evaporation from which reduces the heat of the atmosphere.

Mr. Bonte argues that while the north wind does much harm it also preserves man from many diseases, and protects grain from pernicious fungi. The planting of trees through the valley, by protecting the soil against the sun, preventing the early evaporation of the moisture from the winter rains, and checking the force of the wind on the surface, will have a tendency in time to reduce its influence in the future; and irrigation, by diminishing the heat and consequent rarification, will contribute also to the same result.—*Alta.*

A FINE bell metal consists of 71 parts copper, two zinc, and one iron.—*Scientific American.*

Spanish Dry Diggings, El Dorado County.

Spanish Dry Diggings, says a correspondent of the El Dorado *Republican*, is situated in the northern part of El Dorado county, on the summit of the hill above the Middle fork of the American river, five miles from Georgstown and four miles from Greenwood. Spanish bar, El Doradn Slide, Dutch bar, Rocky Chucky, Canyon creek and other noted localities of the early mining days are within a short distance.

In 1848 Don Andreas Pico, brother of ex-Governor Plo Pico, organized a company of Mexican miners, chiefly Sonoranians, for the purpose of a prospecting tour through the Sierras, to test the extent of Marshall's discovery of gold. The company thus organized under the leadership of Don Andreas proceeded north to the Yuba river, and from thence south to the Stanislaus, traversing and superficially prospecting all the since celebrated central mineral belt, known to the world as California's richest placer diggings. In the course of his trip Don Andreas passed through what is now known as Spanish Dry Diggings. Resting a short time here, the most experienced of his men, detailed for prospecting, were at work in the ravines, obtaining rich prospects in course gold of a quartz nature.

In 1849, the report of Don Andreas having become generally known among the Mexicans, others of that nationality became in many instances the pioneers in mining settlements. It was thus here. The first settlers were of Spanish-American origin. Soon after came Americans, Germans and others. The name of the first trading-post or permanent settlement was Dutchtown, after which the name of the village was changed to correspond with that by which the mines in the vicinity were known, and thus came the name of "Spanish Dry Diggings."

In 1855 the first quartz-seam diggings were discovered here, which has since resulted in the development and working of many valuable mines, the most celebrated of which are the Grit, Barr, Short Handle, Cherry Hill, Summit, Davis, Taylor, and others of less note. The amount of gold taken from these claims has been very large, the best authority here estimating the Grit and Barr claims alone to have yielded $500,000 and $300,000 respectively, and the others named many thousands each.

Our location is pleasant, degrees of heat and cold seldom approaching an extreme. Our population approximates 100, with comfortable residences, and surroundings which compare favorably with those of our sister villages throughout the county. Like our neighbors, we have a sense of local pride in our mines, our school, the honor and integrity of our people, etc., but if driven to the wall we invariably fall back on our mines, and instance the large and beautiful nugget of gold taken from the Grit claim in 1865, a nugget weighing 16 pounds, which if broken in small pieces would have presented a beautiful specimen in each and every one of them.

Aside from our seam-diggings we have also the celebrated Sliger quartz claim, a true and well defined quartz lode, owned and worked by Messrs. Hunter, Wade, Roush, Simpers, Hines and Grinnell, a claim undoubtedly among the best in the county, if not also in the State. The owners are content to themselves quietly work their claim without the aid of outside capital, which fact of itself is its best recommendation.

About one mile north of the Sliger mine, and on the same lode, is the claim of Messrs. Hines & Co., worked continuously and profitably.

From the character of our mines and their extent, a practical miner, although a stranger, could not fail to pronounce the chances for the future as favorable as in the past. On the second Centennial of American independence the writer hopes and confidently believes that mining will be profitably and extensively carried on in what is now known as the northern portion of El Dorado county.

ENGLISH STEEL IN OUR MARKET.—The *British Trade Journal* says: It is no longer possible to disguise the fact that English steel has had its best day in the American market. Everything points to that conclusion, and our consul, writing from San Francisco, says "it is only a matter of time when the foreign manufactured article will cease to be imported. Large consumers of steel are using American in the manufacture of axes, chisels, scythes and edge tools generally, and hammers and sledges."

TO JOIN LEAD PLATES.—The joints of lead plates may be made as follows: The edges are brought together, hammered down into a channel cut out of wood, and secured with a few tacks. The hollow is then scraped clean with a scraper, rubbed over with tallow, and a stream of hot lead is poured into it, the surface being afterwards smoothed with a red hot plumber's iron.

THE project of building a bed-rock flume from Klamath river to Cottonwood creek, Siskiyou county, has had to be abandoned, on account of insufficient fall for the flume. The ground which it was intended to work is immensely rich, but has only been worked superficially, owing to the difficulty of draining it.

THE deepest Atlantic soundings ever made were 3,875 fathoms, 90 miles north of the island of St. Thomas. The pressure at this depth broke the bulbs, which were made to stand a pressure of three tons.

USEFUL INFORMATION.

Hints for Thought and Practice.

The following are useful memoranda for hydraulic calculations: 1 cubic foot of water = 62.425 pounds; 1 cubic inch of water = 0.03612 pounds; 1 gallon = 10 pounds, or 0.16 cubic foot. The pressure of water per square inch in pounds = the head in feet multiplied by 0.4335. Sea water = 1.027 weight of fresh water, or 64.11 pounds per cubic foot.

As the result of very many experiments, Professor Kick recommends the following solution for engraving iron and steel, to show the grain, etc.: Equal parts of hydrochloric acid and water, with a trace of antimonial chloride.

Camphorated oil is highly recommended as a furniture polish. This is simply sweet oil in which gum camphor is dissolved. The camphor serves an additional purpose of driving away moths.

An ordinary boiler furnace requires 300 cubic feet of air for the consumption of each pound of coal. From 13 to 20 pounds of coal may be consumed per superficial foot of fire grate. Three-quarters of a foot of fire grate are required to evaporate a cubic foot of water.

The bindings of books may be preserved from mildew by brushing them over with spirits of wine. A few drops of any perfumed oil will secure libraries from the consuming effects of mold and damp. Russia leather, which is perfumed with the tar of the birch tree, never molds or sustains injury from damp. The Romans used oil of cedar to preserve valuable manuscripts. Russia leather covered hooks, placed in a stationer's window, will destroy flies and other insects.

To make fly-paper: Dissolve, in one gallon of warm water, one ounce of arsenic and half a pound of lump sugar, in which steep sheets of white filtering paper for a few moments, until they are thoroughly saturated, during which time the solution should be kept agitated. Then hang the sheets on lines, and when dry, cut up into pieces of convenient size for sale. When required for use, place them in shallow plates or saucers, and moisten by pouring on them just as much water as they will absorb. They will be found to attract and instantaneously kill flies, wasps, gnats, mosquitoes and similar insects.

The actual horse power of pumping engines = quantity of water raised per minute in cubic feet multiplied by hight elevated in feet, multiplied by 0.0023. The indicated horse power of engines is found by dividing twice the product of the area of the piston in square inches multiplied by the average pressure of steam in pounds per square inch in cylinder multiplied by the number of revolutions per second multiplied by the length of the stroke in feet by 550.

Useful numbers for pumps: The square of the diameter multiplied by the stroke, multiplied by 0.7854, gives capacity of the pump cylinder in cubic inches; by 0.002833, in gallons; by 0.0004545, in cubic feet; by 0.02833, in pounds fresh water.

Resistance in pounds per ton on different roads, exclusive of the gravity: Stone tramway, 20; paved roads, 33; macadamized roads, 44 to 67; gravel, 150; soft sandy and gravelly ground, 210.

The following are the ordinary dimensions of windmill sails: Length of whip, 30 feet; breadth at base, 12 inches; depth at base, 9 inches; breadth at tip, 6 inches; depth at tip, 4½ inches. The effective horse power is found by dividing the product of the total area of sails in square feet and the cube of the velocity in feet per second of the wind by 1,080,000.

FRENCH VEGETABLE LEATHER.—A material invented by M. Gollissaint Voneche, of Paris, has recently made its appearance on the German market, which goes by the name of French vegetable leather, and which is manufactured in the following manner: A wadding of wool waste, or even of wool itself, of uniform thickness, is laid upon a hot polished zinc plate, and a concentrated decoction of *Fucus crispus*, or pearl moss, or any other fucus-like material, poured over it, and then it is pressed down between two rollers which are placed at a distance between each other corresponding with the intending thickness of the leather; after being rolled, it receives a coat of boiling linseed oil, and is then dried; lastly, the dried sheet receives a thin coating of vegetable wax, and, in order to make it supple, it is once more rolled between hot chamfered rollers. In order to produce a cheap substitute for sole leather, the slimy decoction is largely mixed with flock-wool until a thick pap is formed; this is spread over zinc plates and covered on each side with a thin layer of wool waste, then dried, and afterwards coated with boiling linseed oil, being lastly subjected to a heavy pressure between zinc plates in a hydraulic press.—*Ironmonger.*

THE CONVEYANCE OF EXPLOSIVES.—Revised regulations for the conveyance of gunpowder, gun-cotton and explosives generally, have been issued to the British army. As an ordinary rule, the gunpowder, small arm ammunition and other explosives will be sent by contract. Carriers, and articles so conveyed, when they leave the ordnance store department, and until they reach their destination, will be under civil custody. Care is therefore to be taken by the officers making issues that proper packages are used. On an emergency explosives may be conveyed under the Secretary of State's warrant in charge of a conductor, in which case precautions of a very special character are enjoined. One of the new rules is that gunpowder and gun ammunition may be sent together, but never with other explosives. Gun-cotton may accompany small arm ammunition, but filled shells and war rockets will be sent separately from either. Specific orders are given against smoking and against the possession of lucifer matches by any one employed in the conveyance of explosives.

Alloys to Resist Incrustation.

Oliver Holden, of Chicago, writes for the *Scientific American Supplement* an account of some alloys which he employs to resist incrustation: The alloy consists in a compound of zinc, from thirty-three to fifty parts, by weight; tin, thirty-three to fifty parts, by weight; lead, one to ten parts, by weight, and antimony, one to ten parts, by weight. These are combined by melting them together, or by melting separately, and mixing the same, forming a homogeneous metal.

To make a compound of these metals which shall be homogeneous, proper fluxes must be used, and great care exercised in melting, preference always being in favor of a close vessel—as a crucible with cover. First, melt the antimony, keeping the molten metal covered with a flux of powdered borax and resin (each four parts), and one part potash, thoroughly mixed, to which add the lead. Melt the other two metals in separate vessels—the tin first; then add the flux, and then the zinc. When melted stir thoroughly with a stick of white wood. Now, pour the molten antimony and lead into the zinc and tin, stirring the whole thoroughly during the pouring out, keeping the mass covered with the flux to prevent oxidization by exposure to the atmosphere. Different waters require different proportions of the metals.

The rendering of iron electro-negative (and hence preventing its affinity for oxygen) can only be done at some cost or force, but the cost or force required can be regulated by my mixture of metals so perfectly as to make the cost or force almost nothing. To illustrate: When iron is subjected to the action of saline water I would use, zinc, 40 parts by weight; tin, 50 parts; lead, 10 parts; antimony, 5 parts; but, if the same water were above a boiling heat, I would use—zinc, 33 parts; tin, 50 parts; lead and antimony, each one part. In fresh neutral waters I would use—zinc, 50 parts; tin, 33 parts; lead, 10 parts, and antimony, 5 parts. In acidulated water I would use—zinc, 33 parts; tin, 50 parts; lead and antimony, each one part; or in proper proportions to resist the action of the liquid in which they may be placed.

This alloy I attach to the iron at convenient points, somewhat distant from each other, by applying it in the form of rivets or bolts inserted in various portions of the boiler or vessel; or in the shape of rings, bands, or plates, which are hung upon the tubes or flues of the boiler, or otherwise fastened to the structure in any convenient manner.

NEW COVERING FOR THE OUTSIDE OF STEAM BOILERS.—A novel material for jacketing boilers has been introduced by Messrs. A. H. Leenw & Co., of New York. It is composed of cork, and is claimed to have considerable advantages over other materials used for the same purpose in being easily and rapidly applied or removed, preserving boilers exposed to the weather from unequal expansion or contraction, being non-combustible, non-conducting in a high degree, and not affected by the action of steam, heat, or the weather.

GOOD HEALTH.

Poultices and How to Make Them.

A poultice usually is only a desirable vehicle for imparting heat and moisture. By softening the tissues, poultices facilitate the passage of inflammatory products outward. The heat and moisture relax the tissues, and to that degree relieve the tension due to the inflammation, and to that extent relieve pain. The pain can further be eased by adding laudanum and such substances to the surface of contact of the poultice.

The materials best calculated to take up and give out the heat and moisture spoken of, are in common use. There must be enough of the mass to secure and retain enough heat to be of use, and therefore a poultice should be at least an inch thick. To prevent cooling in spreading, the cloth upon which the mass is to be spread should be laid out on a heated plate or dish, and the poultice, with not enough free liquid in it to "drip," rapidly and evenly spread over the muslin. A thin piece of quite old muslin should then be spread over the surface of the poultice, so the mass will not come into immediate contact with the skin. The spread area of the poultice should be just the size required; and the fabric upon which it is spread should extend beyond the edges of the poultice material, so the unspread selvage can be turned over the edges of the mass. This will keep the poultice from leaking away.

After having been applied as warm as can be borne, a piece of oiled silk—or even oiled paper might answer—should be spread outside to retain the moisture, and something outside of that again to keep in the other useful feature of the poultice—the heat.

Such applications must necessarily be removed and renewed every little while. If poulticing is to be done at all, it must be done well, and that is, properly. A few hours of poulticing applied every half hour, will do more good than many hours of poulticing done in the usual way.

BREAD-AND MILK POULTICE.—Remove the crust from the part of a stale bread, and crumble the bread into a bowl. Pour on this enough sweet milk to cover it, and simmer over a fire, stirring it all the while until the bread becomes completely broken up. This poultice is now to be applied to the patient as warm as can be borne.

FLAXSEED POULTICE.—Take of flaxseed meal a sufficient quantity, and pour on it, little by little, enough cold water to make of suitable thickness. Then heat the entire mass. A small piece of lard is sometimes added to keep it from adhering to the part.

YEAST POULTICE.—Mix a pound of linseed meal or oatmeal into half a pint of yeast. Then heat the mixture over a gentle fire, stirring carefully to keep from burning. When it becomes warmed through, it can be spread on linen like any other poultice. Yeast poultices are often ordered by physicians when there is a fœtid discharge from ulceration, which it is supposed to correct.

BREAD-AND-WATER POULTICE.—Take a slice of stale bread, carefully pare away the hard brown crust which lies around the edge, and then dip it into a vessel of hot water; lift it out at once, and if not too hot, apply to the part where it should go.—*Mechanics' Magazine.*

The Manufacture of Doctors.

It is becoming notorious that a Harvard diploma in medicine is the most valuable diploma procurable in this country. The consequence is that the better class of students will seek it, until the other schools adopt the same plan, and do away forever with the present cheap and ineffioient one. A Harvard medical diploma means something; the ordinary diploma means very little, even to those who get it. A Harvard diploma means work, achievement, scholarship, honor, success; and the best material in preparation for the profession will try for it at any sacrifice. The medical schools of New York and Philadelphia must wheel into line with Boston, or be left behind, where they ought to be left. Nothing will be gained to the profession or the world by any other course, or, in the long run, to the schools themselves.

These matters of health and sickness, life and death, are very serious ones, and there are few things more sad—more horrible, indeed—than to see a sick or an injured man in hands utterly incompetent to treat him. The truth is that a physician should be always a first-class man—first-class in his moralities, his character, his acquirements, his skill. No course of education can be too thorough for him, no preparation for the stupendous work of his life too exacting. Medical students are not apt to think of this. By becoming familiar with diseases and death, they are too apt to grow thoughtless, and to forget the preciousness of that possession which they are to be called upon to protect. They certainly will not think of it if their instructors make it easy for them to acquire their profession. The commission of a single unworthy man to practice the profession of medicine is a direct means of demoralization, of which no faculty can afford to be guilty. Let us manufacture no more doctors; let us educate them.—*Dr. J. G. Holland; Scribner for August.*

POISONING FROM ANILINE COLORS.—The *Scientific American* notes the first authenticated case of poisoning by aniline dye, which it says came under its immediate observation. The garments were of a light woolen material, and, having been somewhat worn, were sent to an extensive dyeing and scouring establishment in New York city to be dyed a dark blue. The owner, after wearing the clothes for a few days in hot weather, observed that the blue color stained his undergarments, and in the localities of the stains he became sensible of a cutaneous eruption. The latter soon extended on a large area, which became excessively inflamed; and a pustular state followed, resulting in excruciating suffering and prostration. The case was carefully examined by several eminent physicians of New York city, who pronounced it one of the most severe attacks of poisoning that they had ever encountered, and unhesitatingly ascribed it to the dyeing of the fabric with aniline blue. Had the sufferer been a child or an invalid, the opinion was that the disease was sufficiently malignant to prove fatal. Perhaps the safest rule is to watch all colored goods when worn, and promptly to discard the clothes on the first appearance of the dye's discoloring the garments or person wherever it comes in contact.

ANTIDOTE AGAINST MERCURIAL AND LEAD POISONING.—The Commission des Arts Insalubres is studying the system proposed by M. Melsens for remedying the injurious effects of lead and mercury. Ordinary therapeutics avail little in the numerous cases of injury from the white lead used by painters, or the mercury used in the looking-glass trade. But iodide of potassium taken in draft brings the poisonous metals into a state of solution, in which they are easily removed from the organism.

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W. B. EWEB.....SENIOR EDITOR.

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THE ORIGINAL ARTICLES in this paper are mostly set in solid type, giving in our columns one-third more reading than is contained in ordinary leaded matter.

Our latest forms go to press on Thursday evening.

San Francisco:

Saturday Morning, Aug. 5, 1876.

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MINT ITEMS.—On the 1st inst., Mr. Cicott, coiner of the United States mint in this city, delivered to the superintendent the sum of $1,020,000, the largest delivery ever made in one day. General La Grange, the superintendent, with Mr. Cicott and the other officers of the mint, are running it to its fullest capacity, and turning out a large amount of coin monthly. For July, although commencing on the 7th of the month, the coinage was $4,606,000; while the coinage for July, 1875, was $2,508,000, showing an increase of $1,098,000 this year, although not working a full month owing to the Centennial celebration.

HOME-MADE STEAM YACHT.—The Marysville *Appeal*, July 29th, states that a propeller engine was shipped the day before from the Marysville foundry, for a steam yacht to be run on Lake Tahoe, by Messrs. Yerrington & Bliss. The builders guarantee 18 knots an hour. The hull is of steel. Its length, 75 feet over all; beam, 19 feet. It was shipped to Tahoe in sections, and there put together. The boiler is also of steel. The whole was designed by William R. Eckhart, of Marysville foundry.

SAYS the Winnemucca *Silver State*: "A copper ledge has been discovered near Greggsville, in Gold Run district, which is said to be 25 feet wide. The ore is principally red oxide, of which there is a large quantity in sight on the surface. The location is about 17 miles from the railroad, Golconda station being the nearest point."

THE debt statement shows a reduction of $1,138,033. Coin balance, $59,843,684; currency, $12,500,349; coin certificates, $2,931,300; specie deposits for redemption of certificates of deposit, $32,815,000; outstanding legal tenders, $36,919,228.

Our Industrial Exhibition.

Before another issue of the PRESS the great fair of the Mechanics' institute will be under full headway. As far as the managers are concerned all their arrangements are already completed, but exhibitors have not as yet all come in. They are busily engaged, however, in arranging their displays, fixing up their stands, etc. The large engine which furnishes the power for the machinery department, and which was described in our last number, is in perfect running order ready for work. This is the first time, we believe, in the history of our fairs that such was the case, and the Fulton foundry is deserving much credit for being so prompt.

The opening exercises will take place at Wade's opera house, on Tuesday, August 8th. The programme it as follows:

1. Music.....By the Band.
2. Anthem.....By Aimee Chorus.
3. Prayer.....Rev. Dr. Elken Cohen.
4. Chorus.....By 500 pupils from High School.
5. Opening Address....Preet. of Mechanics' Institute.
6. Song.....By Chorus.
7. Poem.....By Hon. Frank Soule.
8. Chorus.....By pupils from High School.
9. Oration.....Henry Edwards, Esq.
10. Grand Chorus.....
11. Tableau...Repreeenting the various tradee at work.

The programme is an interesting one and will be much more enjoyable than usual, as it is carried out in a theater, instead of the pavilion where there is sure to be a great deal of noise on opening day. We understand that Mr. Edwards' oration will be on an industrial subject and we are sure it will be worth listening to. We hope to see a large attendance of all classes of the community, especially of mechanics, who are specially interested. On the same day the exhibition will be open to the public, so that those who have not yet procured season tickets would do well to do so now. Holders of season tickets are admitted to the opening exercises of course.

We shall give a full report of all of interest at the fair during its continuance, selecting especially those things worthy of mention from their novelty. The publishers of this journal will also publish the MECHANICS'-FAIR DAILY, which will be printed at the pavilion every evening and be devoted to the interests of the Eleventh Industrial Exhibition.

Gold in Talc-slate.

The *Mines, Metals, Arts and Railroad Journal*, of St. Louis, under the heading of "Premium Stupidity," says:

A statement of a "discovery of gold in talco-slate" with a prosy "description of the material and its constituents" has been running around, set forth and by some commented on, by nearly every paper in the country devoted either to science or mining. This "wonderful new phase in gold mining" is no new phase at all. Gold bearing slate constitutes nearly one-half of the gold-bearing material of the globe, and as such has been a most productive source of that metal. Most of the placer gold has washed out of the talco-slates. In Siberia, South America, Australia, Africa, Southern United States, etc., gold bearing slates have been long worked, in the case of Africa, for thousands of years. It must be a dry time throughout the craft.

As the item referred to originated in this journal we feel called upon to inform our contemporary that it has the terms "slate" and "talc-slate" somewhat mixed. While it is perfectly correct that gold has been found in slate for centuries, we can assure the learned editor that its discovery in "talc" and the slaty formation of talc in regular well defined ledges, and the method of working the same, is of quite a recent date. We will send our learned friend by mail a specimen of the auriferous talc-slate, which he will acknowledge a novelty, especially if we inform him that the specimen was taken from a 22-foot ledge, which is traceable for miles.

The statement that "it must be a dry time throughout the craft" our contemporary proves conclusively to be the case by taking a three column article on the "Mindeleff Procesa" from this journal without the slightest hint at a credit. An elementary mineralogy would be a good book for *Mines, Metals and Arts* to have in its library.

ABOUT 1,000 workingmen met in Tompkins square, New York, one day last week. They declare that 30,000 men are out of employment in the city, daily searching for work, without success, and are living on the charity of friends and neighbors. They formed in procession, headed by 15 policemen, and marched to the Mayor's office, in the City hall. The long-shoremen struck for an increase of wages, and the police reserves were out to preserve peace.

SAN BENITO *Advance* reports that the Red Rock coal mining company, in Chalome valley, recently struck good bituminous coal in a stratum of over 20 feet thick. Experts pronounce it a first-class article of cannal and splint coal, very like the bituminous coal of Newcastle and the splint coal of Scotland. This coal field lies on the line of the railroad survey between Hollister and Goshen.

COMSTOCK PAPERS.—The article of this series now running in the PRESS is unavoidably postponed this week.

Gems and Precious Stones.

[Written for the PRESS by HENRY G. HANKS.]

K. Agate, Amethyst, Aventurine.

Bloodstone, Brazilian pebble, carnelian, cat's eye, chrysoprase, cairngorm, false topaz, heliotrope, jasper, mocha stone, onyx, praise, rock crystal, siderite, sardonyx are all varieties of quartz. Quartz has the following chemical and physical properties:

Crystalline, form rhombohedral; colorless when pure, otherwise blue, green, brown, red, yellow, black and variegated; fracture conchoidal, brittle crystals, often enclosing impurities and foreign crystals, as chlorite, cinnabar, titanic acid, etc. When massive often carrying gold, silver, galena, zinc blende, magnetite and other minerals. Quartz is the matrix of our best mines. Specific gravity = 2.5 to 2.8. Hardness 7; scratches glass easily but is scratched by topaz. All varieties have nearly the same chemical composition and physical properties; the clear colorless crystals of quartz are often mistaken for diamonds. The fact that they are softer than topaz will serve to distinguish them from that gem. The color of the different varieties is owing to the accidental presence of the oxides of different metals.

The principal constituent of all of these varieties is silex in its insoluble state, that is, not soluble in caustic soda solution. Before the blowpipe alone, they undergo no change, but with soda dissolves with effervescence and form a transparent glass. Insoluble in acids. If previously fused with carbonate of potash and soda, they become soluble in hydrochloric acid.

Agate

Is a variegated chalcedony generally in layers, sometimes clouded. Moss agate is chalcedony with dendritic crystals of oxide of manganese and iron imbedded in it which take the form of vegetation.

The ancient "achates" was probably fortification agate. Pyrrhus, who lived 318 years before Christ, is said to have had an agate of this nature, on which was represented by the hand of nature a picture of the nine muses as perfect as a work of art. Achates was the name of an ancient town in Sicily. The moss agate was known to the ancients as dendrachtes (dendritic agate).

Amethyst

Is a purple red variety of quartz crystal, which was formerly supposed to owe its color to oxide of manganese, but specimens having been analyzed which contained no manganese, the color is now thought to be due to some peculiar compound of iron or soda. Rose quartz is a variety of amethyst only slightly tinged purple.

The amethyst was well known to the ancients, and was highly prized by them. They gave this gem the name of "aphrodisiace," or gem of Venus. By some strange supersition they believed the amethyst to be a cure for drunkenness. A good, well cut amethyst of one carat is worth from $3 to $5. A large and fine stone of good color has been sold as high as $500 The best amethysts come from Ceylon, Brazil and Siberia. Good specimens are found on the shores of Lake Superior. I have seen very good specimens in the quartz formation of the Comstock ledge and from Grass Valley.

The true amethyst must not be confounded with the violet sapphire, which is sometimes called oriental amethyst, which is much more valuable and of entirely different composition. This gem has already been described.

Bloodstone and heliotrope are names for the same variety. The color is deep green, interspersed with spots of red, like drops of blood. Good specimens command as high as $20 each. Heliotrope takes its name from having been used under water as a mirror to observe a solar eclipse.

Pliny describes the heliotrope as being "prasius," which was "horrid with spots of blood."

The carnelian is a clear bright red chalcedony. It takes its color from oxide of iron. Fine specimens come from Lake Superior. The first specimens found their way to us from Siberia, India, Arabia, Nubia and the Tyrol.

Carnelian is sometimes diversified by stripes of white, which can be cut into beautiful jewelry. It does not command a high price, but good specimens find a ready sale. The sardonyx is a variety of carnelian with stripes of white, of a thickness to admit of cutting into cameos. That is to say cutting away portions of the red, and leaving figures of red in a white base, or the reverse. A good sardonyx commands a high price. Carnelian takes its name from its flesh color.

The ancient name for carnelian was "Sard," because it was found at Sardes, an ancient town in Asia Minor, on the banks of the Pactolus. Afterwards found near Babylon.

The name sardonyx was the same anciently as now. It is the onyx in which some of the bands are carnelian, as before noticed. The first historical record of the use of this stone as a seal is the case of Scipio Africanus, from whose time it was much used, as it was found that the wax did not stick to it.

False Topaz

Is a clean yellow variety of crystallized quartz. It resembles yellow topaz when cut, but may be distinguished by its hardness, which is less than that of true topaz, and by its specific gravity. Beautiful specimens are found occasionally on the Comstock, near Gold Hill, Nevada.

Chrysoprase always occurs massive. It is of an apple or leek green color, which it takes from a portion of nickel it contains. It is translucent; luster, vitreous. It loses its color when heated. It is composed of silex, carbonate of lime, alumina, oxide of iron and nickel. A good chrysoprase suitable for a ring is worth from $25 to $30. A remarkably fine specimen has been sold as high as $60.

The chrysoprase of the ancients resembled in color the juice of the leek, a golden color, whence its name.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

CAR WHEELS AND AXLES.—Jno. W. Emerton, S. F. The invention relates to the improved car axle and wheel, the improvement consisting in a novel arrangement for providing a loose wheel at one end of the axle, which will rotate independently where a torsion, such as results when a car is moving around a curve, is applied to the axle, but which will ordinarily, when the car is running on a straight track, rotate with the axle like the fast wheel. Upon the opposite end of the axle from the fast wheel is secured a fixed disk, which is about half the diameter and half the thickness of an ordinary car wheel. In the rim of this disk is made a groove of any suitable shape, which extends entirely around the circumference of the wheel. The loose wheel, which fits on this end of the axle, is constructed with a concavity, which concavity corresponds in diameter with the diameter and thickness of the disk, so that when the wheel is slipped on the axle the disk will fit snugly in the recess. In the projecting face or rim of the socket is also made a groove corresponding with, and directly opposite the groove in the rim of the disk, and when the wheel has been properly fitted over the disk the chamber which is formed by the two grooves is run full of Babbit or other soft anti-friction metal, so that it will serve as a key to hold the two parts of the wheel together. The shaft is then secured in a vise and power applied to turn it whereby the wheel is freed so that it will rotate readily about the disks. It will be noticed that the invention does not impair the value of the wheel by cutting out its entire face and fitting the disk therein, as has been done heretofore, but the wheel is a complete one with a solid outer face which prevents sand and grit from entering between the moving faces of the socket and disk, thereby obviating a great difficulty heretofore experienced. A cap ring can cover the joint if thought necessary. The strength of the wheel is retained by preserving its center, so that viewed from the outside the wheel has all the appearance of a fixed solid wheel.

CHOPPING MACHINE.—N. A. Olsen, S. F. This invention relates to an improved machine for chopping meats and other substances into fine pieces, and it consists of a series of radial knives, which are secured to the upper end of a stem. This stem passes down through a hole in the center of the chopping block, and is operated by a cam and tappet below the block, by which the knives are given the proper chopping action. The curved face of the cam moving against the under face of the tappet will also partially rotate the spindle and knives during each lift, so that the knives are continually shifted, and thus drop in a different spot each time, thus giving the best possible effect of chopping knives. The force of the drop can be regulated as desired by weighting the lower end of the spindle. The knives are lifted and dropped vertically, and at the same time are shifted after each stroke, thus rendering them quite effective in their action.

FARM GATE.—Richard C. Whetlock, Pacheco, Contra Costa county. The object of this invention is to provide a cheaply constructed farm gate which can be opened and closed by persons on horseback and in vehicles, without the necessity of their dismounting. A person approaching the gate has only to push a crank on the shaft, on whichever side of the gate he happens to be, and turn it from him; this causes a shaft to rotate and opens the gate. When he has passed through, a similar winding of the opposite crank rotates the shaft in an opposite direction and closes the gate.

LOCK.—J. H. Woodrum, Portland, Oregon This invention relates to an improvement in locks, and it consists in a lock operated by a knob from the inside of a door in the ordinary way, and by an adjustable spindle carrying combination rings and devices, upon the outside of said door, whereby said lock may be operated from either the inside or outside, as an ordinary bolt, or be locked from the outside by a combination locking device.

THE Stevens battery, which cost its erratic builder $1,800,000, is to be sold for $52,500.

A SERIOUS rebellion is brewing in China.

[Editorial Correspondence.]

The Centennial at Philadelphia.—No. 10.

The extreme heat of the past two weeks has rendered locomotion or even writing, especially to one long accuetomed to the cool and genial climate of San Francisco, so grievous a burden that your correspondent hae been barely able to endure the same by keeping as quiet as possible within the shady precincts of the Grange encampment, which haa been universally voted by all visitors, as one of the coolest and most quiet pieces of resort in the vicinity of Philadelphia. On Sunday last, however, the 16th instant—three days ago—the thermometer marked a most welcome change by falling from well up in the nineties to a little above eighty, under which condition I have again ventured to find my way once more to the Centennial grounds, for the purpose of jotting down a few more notes for the benefit and possible instruction of the readers of the PRESS.

The exhibition has how advanced a little over two months in its progress, and still continues the theme of universal commendation. Foreign commissioners, exhibitors and visitors all commend it, both in the manner in which it has been gotten up, and in its management as well. They bear willing witness that all has been done that it has been possible to do to expedite business, and to ensure comfort and safety within the grounds. The means of transportation to and from the same are all that could be expected, and prove adequate to the largest demands. Your correspondent, in a recent interview with each of the two French delegations of workingmen now here, was pleased to hear them express their most unqualified approbation both as regards the matter and manner of the exhibition.

The Attendance.

The number of paying visitors gradually increases, notwithstanding the extreme heat, and has already raised the average daily attendance, from the opening to July 9th, to about 26,000. This average will no doubt be largely increased by the rush which will come in as cool weather approaches, fully up to the figures which I gave in one of my early letters—some 32,000—which, however, is only about one-half the estimate made and published by the Centennial commission just before the opening. In this connection it may be interesting to note the average attendance at the various European international exhibitions, which has been set down as follows:

Year.	Place.	Number of Visitors.	Days open.	Av'ge No. per day.
1851.	London	6,039,195	141	42,831
1855.	Paris	5,162,330	200	25,811
1862.	London	8,211,103	171	36,322
1867.	Paris	10,000,000	210	47,619
1873.	Vienna	7,256,687	186	39,003

As already stated, the average at our Centennial has as yet reached only about 26,000; but it is possible that with the increased numbers who will come near the close of the exhibition the attendence may go up to the general average of European exhibitions—a little over 38,000. The time of continuance of the Centennial has been fixed at 157 exhibition days—the smallest number of any of the European exhibitions, with the single exception of that of the first one at London in 1851.

I have thought it might be more interesting to the readers of the PRESS, before completing my review of machinery hall, to turn for a while to other features of the exhibition and make at least some general reference to the exhibits contained in the other principal buildings. With that view we will now enter

The Main Building.

This is the largest structure which has ever been erected for exhibition purpose, if indeed it is not the largest ever erected for any purpose whatever. It is over a third of a mile, or 1,876 feet in length—a foot for each year of our era. Its width is 464 feet, and it covers an area 21½ acres of ground. It is constructed almost entirely of iron and glass. The facades at either end are 90 feet high, while the ornamental corner towers are 70 feet in hight. The exterior is gay with turrets, flags and trophies. Empty, it would afford standing room for 450,000 people—about one-half the entire population of California. Its sides and ends are provided with galleries about 30 feet wide, which are devoted mostly to exhibits, connected with education. Although built with the intention of being taken down at the close of the exhibition, it is nevertheless a substantial and highly ornate structure, and one which presents a fine architectural appearance. Its cost was about two millions of dollars, and the wonder is how it could have been built for so small an amount of money. Readers may become familiar with the appearance of this building from the prospective view given of it in the engraving on this page.

In arranging the exhibits a grand central aisle, some 35 feet wide extends, unobstructed, except by a few minor matters, entirely through the center of the building; this aisle is crossed at its center by another of the same width, running north and south across the width of the floor. The exhibits are arranged, by nationalities, on either side of the main aisle, as shown in the accompanying diagrams—the small and more distant nations being given the place of honor, near the main entrance.

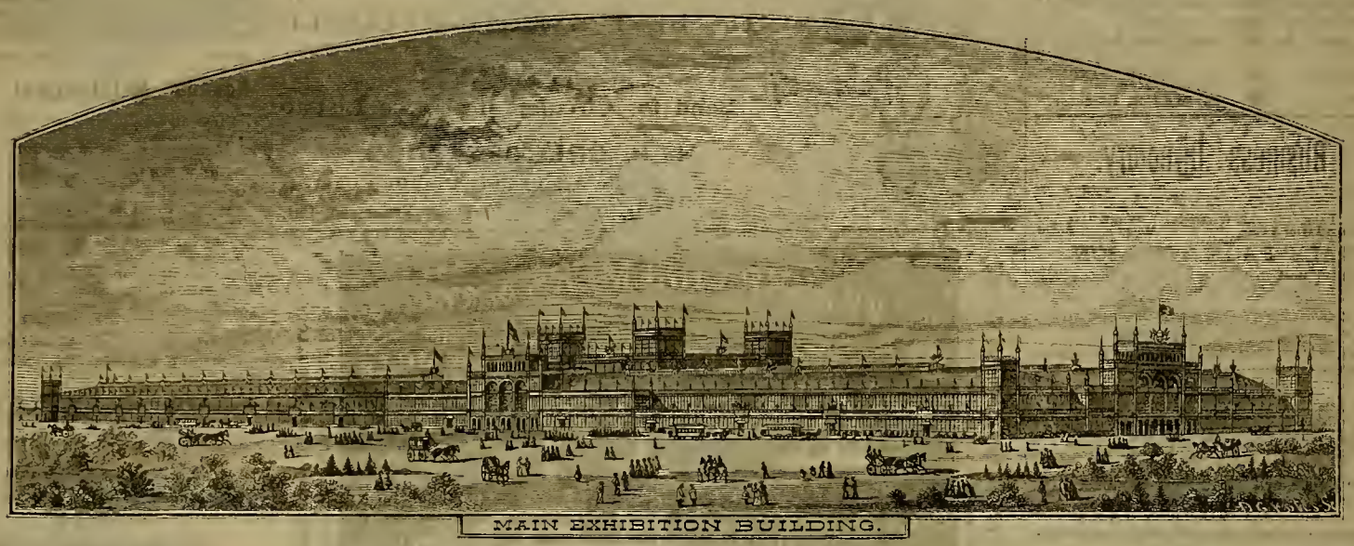
As the visitor enters this vast structure for the first time, and passes up a short distance into the main aisle, his eyes encounter one of the most magnificent sights that can well be conceived. A perfect wilderness of costly elegance, in every branch of manufacture and art, is spread out before him in a great panorame, along which his eyes wander until he is lost in wonder and amazement.

It is obviously impossible to give the reader any adequate conception of the interesting and imposing character of the exhibition in this building. At the first glance the eye is completely bewildered, as was the case with my lady friend, at the unique and dazzling exhibit which is encountered on all sides. The many beautiful articles in glass, steel, bronze, lacquer, gold, silver and plated ware, China ware, cabinet ware, elegant shawls, silks and every description of dry goods, fancy articles, etc., etc., all go to make up a grand aggregate, which has never before been seen upon this continent, although its counterpart and better, perhaps, may have been seen at Paris or Vienna; for Europe excels in this class of exhibits.

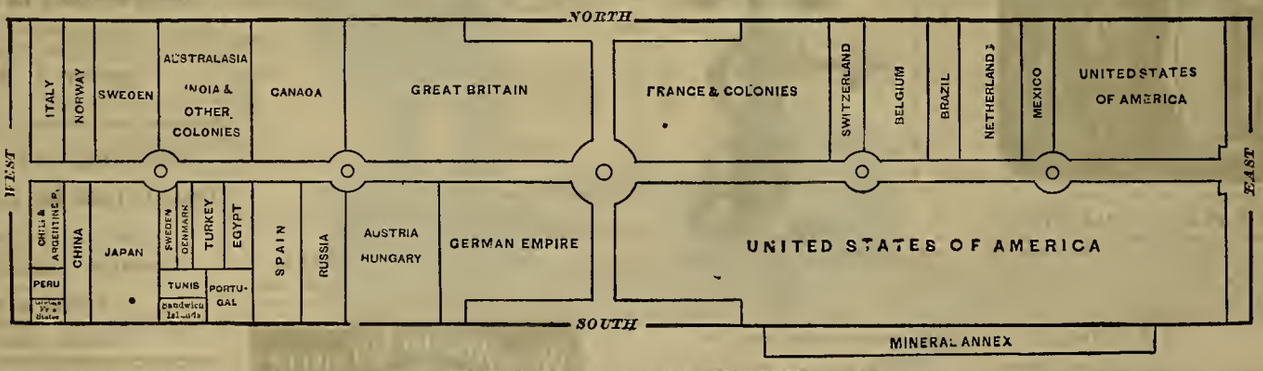
A Bird's Eye View

From the gallery at the eastern end, will perhaps give the visitor the best general idea which can be obtained of the variety, beauty and grandeur of the display in this building. From that elevated point a fine view can be obtained looking down the broad, central aisle. The whole space of nearly 22 acres of the collective industrial products of the world is spread out before the observer, almost entirely unobstructed by column, roof or gallery. Twenty-eight distinct nationalities are there represented—the United States occupying but a little over one-quarter of the space. The mass and distance is so great that it is of course impossible to particularize the various exhibits or to give anything more than a faint idea of the grand whole. Directly before the observer on either side are seen first the products of our own country. The cotton and woolen mills of the United States, and particularly the peerless exhibit of the Mission mills of San Francisco, are largely and most creditably represented. The goods are mostly shown in elegant cases, and generally in the various grades of the manufacture, from the raw material and inferior goods up to those showing the highest progress of the several exhibitors in the textile art. Of Brazil sandwiched between the two little nationalities of Belgium and the Netherlands. Passing still further in the same direction and skipping over Switzerland, we come to the great nationalties of France, Great Britain, Germany and Austria. Still further on in the distance, not observable by the eye, but known to be there by the diagram, which we still hold in our hand, may be dimly seen, most of the other foreign nationalties, all located with a most happy disregard for geographical position.

The diagram shows the relative proportion of space occupied by the respective nationalities, as well as their positions in regard to each other and in the building. With few exceptions, as shown, the space occupied by each country has a frontage on the main central aisle, and in this particular portion of its space each nation seeks to place its chief and most attractive treasures. Hence the superior views obtained along the main aisle. Some countries have enclosed the space allotted them with architectural structures of pannel work, with ornamental and emblematic archways opening into the main aisle, and lesser ones furnishing connections with the various avenues and alleys by which the space is divided up into convenient areas for displaying and examining the exhibits. Miniature marble palaces are placed at intervals along the central aisle which are devoted to the sale of that great American hot weather beverage—soda water. The central position is occupied by a raised circular platform on which, in the early days of the exposition, Gilmore's famous band was wont to discourse sweet music to the loitering crowds, which, when the band was playing, filled all the available standing room and occupied the numerous rows of seats which were placed fronting the center for quite a distance along the main aisles which diverge



MAIN EXHIBITION BUILDING.



GROUND PLAN OF MAIN BUILDING

The Exhibits in the Main Building

Are chiefly confined to the following groups:

Materials and manufactures used for food or in the arts—the results of extractive or combining processes.

Textile fabrics—wearing apparel, costumes and ornaments for the person or parlor.

Furniture, musical instruments and manufactures of general use in construction, as of dwellings, etc.

Apparatus and methods for the increase and general diffusion of knowledge. Illustrations of engineering operations and aids thereto.

Objects illustrative of the present and past

(Continued on Page 101.)

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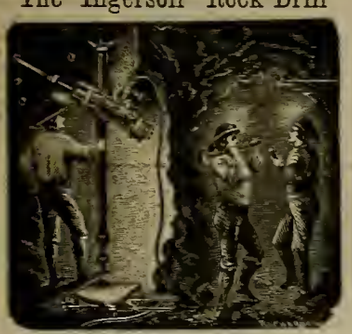

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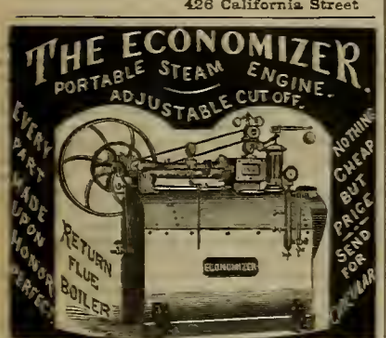

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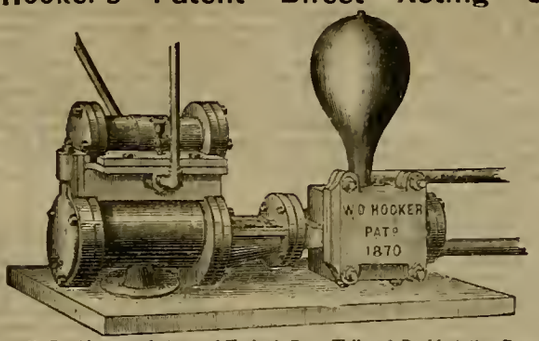

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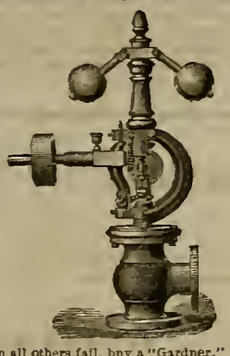

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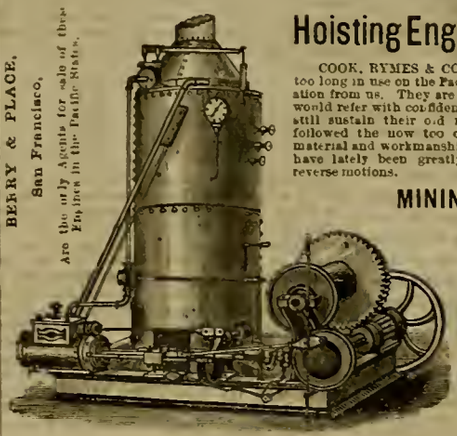

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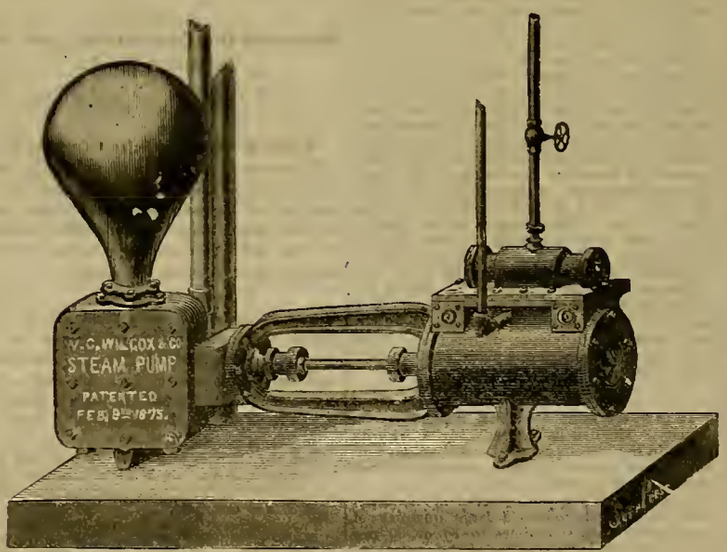

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(Continued from Page 94.)

Idaho.

THE POORMAN.—Idaho *Avalanche*, July 29: Work is being steadily prosecuted in this mine and with the most promising results. The force of men employed is not very large, but they are operating to the very best advantage, the work for the past few months consisting principally of prospecting and opening up. The seventh level drift has been run in the north of the shaft about 700 feet, and has now reached a splendid quality of ore. From a point 450 feet north of the shaft, operations have resulted in showing up considerable rock, although not existing in heavy bodies. Much of it, however, has been unusually rich, and there are no doubt large veins in the immediate vicinity. A winze has been sunk a distance of 475 feet north of the shaft and is now down about 50 feet, from which point they are drifting northward. At nearly every point of these operations the ore has presented a very promising appearance, and also south of the shaft in the fifth level, where there have been some first-class developments. Between the fourth and fifth levels, where an air shaft has been raised, much good rock was found. The principal part of the work done recently was carried on the north side of the shaft, the object being to get beneath the old works and open up the ground so as to make a connection with the same. All these and other operations looking to the prospecting and opening up of the mine with a view to working it on a larger scale have been attended with the most promising results. The developments are unusually satisfactory.

THE REVENUE.—This mine, which in former years was one of the best paying little mines in this immediate vicinity, was recently leased by the owner, Mr. Frank Hunt, to Messrs. Duffey, Shaw and Jones, a trio of experienced miners, who have already commenced to remove the water and make preparations for an active campaign. Work will be vigorously prosecuted for the coming year, the period for which the mine has been leased.

CHESA MINES.—Work is progressing splendidly at the Potosi mine, near town. Mr. Peck has increased his force of workmen recently. A connection has been made with the old works and the quartz now being taken out is quite rich. Nearly 50 tons of ore are now on the dump. In the Belle Peck the tunnel is making good progress. A rich ore body will be approached in a few days. W. H. Dewey has purchased the Columbia mine not far from Oro Fino, and put men to work there. In former days this mine turned plenty of bullion out and it is generally supposed that plenty of good rock exists there yet. Frank Hunt's Wagontown bonanza, the Last Chance, is looming up more brilliant every day. The Leonard mill is running day and night on Wagontown rock.

Montana.

MINING ITEMS.—Butte *Miner*, July 25: The Butte placers are yielding $500 per day. Mr. Esele continues work on his claim in Silver Bow creek, and is doing well. The Dexter mill will start up again to-morrow, all breakages having been repaired. There are rumors of more mills being put up in Butte within the next three months, but we are unable to give facts at present. In the Mountain shaft at a depth of 15 feet, foul air was encountered, and Messrs. Cameron & Co. are running a day and night shift and hoisting large quantities of first-class copper ore daily. In German gulch the placer mines are working full time. The waters had commenced to fall on last week, but the recent rains have had the effect of filling the ditches again to their full capacity. The diggings are paying fair wages to those employed. The number of white men in the gulch is quite small, 15 in all, while the Chinese engaged at work count up to 92. The Purvine pan which has been under construction at the Centennial mill, for some time past, has been completed, and is now being put in place, and will shortly be in operation. The work upon the reverberatory furnace is being rapidly pushed forward, and they are fast assuming a finished appearance. The mill is working upon ore taken from the Rainbow lead, which has every indication of running to an average grade, though taken principally from croppings. Geo. D. C. Hibbs, of the Rumley mine company arrived in Butte this morning from Argenta, en route home. Mr. Hibbs interviews as follows about the Argenta country: Messrs. Kelly & Kinney are running a drain in Rattlesnake creek, commencing about three and one-fourth miles below the town. They expected to find a big placer mine when bedrock is reached, and are displaying commendable nerve in opening and developing this mine. A Bannack company have bought the Kelly placer ground above Argenta, on the old Bannack trail, and are bringing a ditch in from Rattlesnake creek to work on the same. Ore is now being hauled from the Trapper mine to Stapleton's works at Argenta, and they will start up running on full time at an early date. Argenta looks lively and wears the visage of a bustling business town.

Oregon.

GALICE MILL AND MINING COMPANY.—Ashland *Tidings*, July 27: A large amount of working stock is taken up, and with a fair show of being full in a short time. The working stock is sold at 50 cents a share, when 200 shares or upward are taken by one party. The company have bought in San Francisco a full set of assaying apparatus and all necessary accontrements for testing ores.

GROUSE CREEK MINES.—Parties returning from these mines give very favorable reports of their richness. There seems to be a little history connected with them. At the time of the great exodus to the mines in Idaho and British Columbia, there were a number of miners working on Grouse creek, who were induced to leave by the fabulous stories of these northern gold fields. The location being isolated and away from any thoroughfare, it has lain unnoticed until recently. It was discovered that some Chinamen were at work on the mouth of the creek, and apparently doing well. Coarse gold is found in good paying quantities.

MACHINERY ARRIVED.—Oregon *Sentinel*, July 26: The machinery for working the Queen of Bronze copper mine, at Althouse, Josephine county, arrived in Crescent City on the last trip of the steamer *Empire*, and will be hauled to the mine and put in working order shortly. The owners of this mine have great confidence in its richness and are determined to develop it as soon as possible.

PACK TRAIN.—A pack train left town yesterday for Beaver creek, carrying provisions, tools, etc, for the miners who are working on the China bar ledges.

A BIG PROSPECTING PARTY.—Hundreds of miners, pilgrims and others are in the Black hills, unable to obtain property or work. Efforts are being made at Deadwood City to form a prospecting party, 1,000 strong, armed and equipped for the undertaking, to go into the Big Horn and Wind river countries, and give those regions a thorough inspection. It was believed extensive and paying mines would be discovered in the sections named. It is evident that the time approaches when a strong column of adventurous men, disappointed in their expectations and ventures, will move in organized shape out of the Black hills and into the reputed, but comparatively unexplored, gold sections of Eastern Montana. The Hills, according to the best authorities, are already overrun, with not one in a score backing in the smiles of fickle fortune.

Facts about Peat.

No. 1.

[Written for the PRESS by SAMUEL PURNELL.]

Peet is a species of fossil fuel, occurring in almost every country, and is one of the most extensive sources of fuel known. Its formation is progressing at the present day. Scotland, it is said, contains a peat bog area of 1,000,000 acres, and Ireland of nearly 3,000,000. Canada contains very large areas, the amount of which is not definitely known, but it is thought that a great part of British America is covered with peat. The United States is abundantly supplied in its northern part. Massachusetts is known to contain at least 125 square miles of peat, with an average thickness of six feet. The great Dismal Swamp, of Virginia, is a peat bog. It is generally found in moist climates, in level countries, and where imperfect drainage exists.

Formation.

Peat is a product entirely of vegetable origin. In atomic composition it differs less from wood than in appearance, and in the change it has undergone chemically through the agency of time and pressure. In low places where ponds collect, and the evaporation, drainage, and percolation are not sufficient to carry off all the water, there grows around the borders of these ponds various kinds of plants, such as rushes, mosses, etc. These by reproduction increase and soon creep toward the center, till the whole surface becomes covered. In the course of time race succeeds race, the covering grows thicker, sinks down into the water, grows upon the top, and the whole pond becomes a mass of vegetable matter. These bogs often rise by gradual accumulations and overwhelm the adjacent lands, which also become a marsh, thus spreading the borders of the bog constantly. Sometimes whole forests are found at the bottoms of bogs. Their extent and depth vary with the location. The bogs of Holland are about six feet in depth; many of those in Ireland are from 30 to 40 feet in depth, and some of those in California are 30 feet deep. A peat bog dug out will renew itself every five or ten years.

Varieties of Peat.

Being the product of the decomposition of various plants during a long succession of ages up to the present, it is natural to expect that when cut vertically differences in its composition should be shown. Thus peat may be classed into recent and older. The first, bears distinct traces of its origin in the roots, stems and leaves of plants, the structure of which is still retained. Sometimes it is porous, tough and elastic, often very brittle. Recent peat glides into that of older, where no traces of a fibrous mass are observed. When cut it is fine in the grain. Old peat is often semi-gelatinous. Preference is always given to old peat, both from its superior density and the greater heat which it evolves when undergoing combustion. The color of peat, which is usually a brownish black, is no indication of its quality. In appearance it resembles pressed hay. The presence or absence of earthy matter and sand is the chief cause of the difference in the heating force of peat. These impurities are always found after combustion, in the ash, causing this residue to form from 2 to 50 per cent. of the whole. In all bogs the quality of the fuel improves, and the percentage of carbon increases with the depth. The many varieties of peat will in part account for the widely different views held in relation to this fuel. What has been found true in one place is often found to be totally inapplicable in another.

Density.

In part, the value of a fuel depends on its density. The density of peat varies with its depth in the bog, its original composition, and the mineral matters which it contains. When freshly cut it is saturated with water to the extent of 80 or 90 per cent. Ordinary air dried peat mechanically retains a large quantity of water, amounting sometimes to 30 or 50 per cent.; and this is irrespective of the water developed from the combustion of its oxygen. It always contains at least 20 per cent. of moisture, and this expends a large amount of the heat resulting from its burning carbon for its evaporation. When intended for commercial purposes it is much improved by pressure or condensation; it thus acquires strength and solidity enough to bear transportation and to burn to a firm charcoal. It may also then be burned more economically.

The want of density has been called the "characteristic fault" of peat. Its density is never as great as that of wood; consequently it is much less than coal—about one-fourth as much. There is little or no advantage in drying peat artificially, as it will re-absorb moisture from the air, and become as the ordinary air dried article. The density of air dried peat is rarely more than .3 or .4 that of water, and a cubic foot of it weighs only from 13 to 15 pounds. Peat in the bog may be estimated to weigh from 2,000 to 2,400 pounds per cubic yard; drained *in situ* from 1,300 to 1,500 pounds per cubic yard. Ordinary air dried Bavarian peat weighs 18 pounds per cubic foot. Weight for weight, dense and ordinary peat have about the same calorific value.

Composition.

The centessimal composition of the average European peat, not considering ash, is as follows:

	Carbon.	Hydrogen.	Oxygen.	Nitrogen.
Surface peat....	60.	5.8	33.16	.9
Dense peat.....	61.2	5.6	32.	1.5

A specimen of German peat, air dried, gave the following results: Carbon 60 63, hydrogen 6.04, oxygen 33 32. Supposing all the oxygen combines with the hydrogen to form water, it would contain carbon 60., hydrogen 2., and water chemically combined, 38. This specimen of peat had therefore the following composition (neglecting ash): Carbon 45., hydrogen 1.5., water chemically combined 25 5, and hygroscopic water 25.

No centessimal analysis of California peat has yet been reported, but when made it is not likely to be more favorable than the above. The amount of oxygen in a fuel largely determines its calorific value; the more oxygen the less value. For the sake of comparison between the composition of peat and the lignitic coals of this coast, the following analyses are annexed:

	Mt. Diablo.	Coos Bay.
Carbon.....	59.72	56.244
Hydrogen.....	5.078	3.379
Nitrogen.....	1.008	.42
Oxygen.....	15.69	21.315
Sulphur.....	3.916	.810
Water.....	8.94	13.285

By comparing the above with the analyses of peat, it will be seen that the amount of carbon (on which the value of a fuel mainly depends) in the two fuels is about the same, also the quantity of hydrogen. But in the amount of oxygen (a diminisher of value) the coal has much the advantage, having but about half as much. In moisture, also, the coal has the advantage, containing only from eight to 15 per cent., as against at least 20 per cent. constant moisture in air dried peat. These analyses show that of these two fuels the peat has a less calorific value or heating power, weight for weight, than the lignitic coals of about 33 per cent. It will be shown further on that compared with good bituminous coal peat is but one-half as valuable.

Good peat contains usually from five to eight per cent. of ash; and inferior may hold as much as 35 per cent. Best Irish peat contains about four and one-half per cent. of ash. A partial analysis of peat from Venice island, California, showed six and one-half per cent. of ash. Peat contains naturally no sulphur or arsenic, but its ashes are rich in phosphorus. Peat should be thoroughly air dried before being used, as a few per cents. of water will sometimes condemn that which otherwise would be of good quality. When bought by weight not only is all unnecessary water paid for, but the heating power is greatly injured; and if bought by measure the most interior kinds are the most voluminous. In California it should be purchased by weight after at least 60 days of air drying.

[Copyrighted.]

Mechanical Ore Concentration and Separation.—No. 2.

(Written for the PRESS by FRANCIS F. M. CAZIN, M. E., Santa Fe, New Mexico.)

Metallurgy—What this Science Consists Of.

Metallurgy is the science of profitably treating metallic ores, so as to concentrate or reduce the valuable parts contained in these ores or to transform them into marketable material. To the realm of metallurgy belong as well chemical as mechanical metallurgy.

Chemical Metallurgy

Has as its object, the changes that will result in any process applied to ores or minerals in the chemical combination of elements composing such ores or minerals. (In this distinction, dissolution, although not involving a change in the order of atoms, is considered a chemical action.) Mechanical metallurgy has as its object, the changes that will result in any process applied to ores or minerals in the local arrangement of the visible particles composing such ores or minerals.

The processes belonging to the realm of chemical metallurgy are designated as dry processes when heat is applied; as wet process when a liquid is applied.

Dry processes applied in chemical metallurgy are: Roasting, smelting, sublimation, distillation, evaporation (by heat), and crystallization.

Wet processes applied in chemical metallurgy are: Amalgamation, extraction, precipitation, cementation and solution. The four last actions are designated as "leaching."

Both dry and wet processes are called "reduction." The processes belonging to the realm of mechanical metallurgy are designated as dry processes—"concentration" and "separation."

Concentration is the increasing of the percentage of valuable particles. Separation is the dividing into valuable particles of one or of different nature, and into particles of waste material. The concentration and separation is effected by the dry process or wet process. Dry concentration is the process where air is utilized as a medium for mechanical action. Wet concentration is the process where a liquid (water) is utilized as a medium for mechanical action.

Mechanical Metallurgy, or Mineral Dressing.

Mechanical metallurgy is also called the art of mineral dressing, and as the object of mineral dressing is designated especially as the concentrating of valuable particles contained in ores to a higher percentage by separating the waste parts therefrom; also the separation of valuable particles, one kind from the other when differing in quality.

By mechanical separation (mineral dressing) only such materials (particles) can be separated as are mechanically combined, but none which exist in a chemical combination. Thus galena may be separated from quartz, fluor spar or baryta by mechanical separation, but the lead and sulphur contained in the galena can only be separated by a chemical process. Thus the nature of the combination of materials, whether mechanical or chemical, determines the line of application of one or the other metallurgy for separation. Mechanical metallurgy will never be able to separate a chemical combination, but chemical metallurgy may separate as well mechanical as chemical combinations. Therefore chemical metallurgy will be resorted to even for the separation of mechanically combined materials where either the science of mechanical separation has not been sufficiently developed to effect separation, or where it proves more expensive than the other. As long as there is a difference in specific gravity of materials mechanical separation may be applied, and as mechanical separation is the cheaper one in general, it should be applied to the outside line of its realm.

As long as two different particles of minerals differ in their specific gravity they can be separated by the art of mineral dressing. To separate mineral particles not differing in their specific gravity is an achievement which, in general, is not attained by this art, but only in some special cases. In these special cases the difference in the crystalline or amorphous shape of particles is the quality on which the work of separation is based. Thus the limits of mineral dressing are in general reached where there is no difference in specific gravity, but it may in special cases be carried further by experience and ingenuity; but before attempting in this line anything supposed to be new, mine owners should apply to some experienced and scientific mineral dresser, because what may appear to be new to the adventurer may be old to the science, and if experience has already proved it to be inadequate, an expense in a wrong direction may be saved and applied to some apparatus, well established for appropriateness and efficacy, by long experience. Ingenuity without experience is in mineral dressing a danger—a perilous contribution, resulting in all instances without hardly any exception in resultless expense, failure and ruin.

To separate the different parts constituting a mine product (ore), according to their difference in specific gravity will not in all cases be synonymous with "mineral dressing" or "concentrating." In cases where the ore contains two different kinds of valuable parts, one kind of higher specific gravity than the particle without value (gangue matter, rock), and at the same time another kind of the same specific gravity as the matter having no intrinsic value, mineral dressing would come in only with a limited applicability; and if the higher value was in the matter of a specific gravity equal to that of the particles without value, mineral dressing must be considered as inapplicable.

CASSIAR MINES.—A dispatch from Victoria says: News from Cassiar intimate that every one is confident that the district will prove as remunerative as in the preceding seasons. Rich ground has been struck on Snow creek, a tributary of McDame creek, and four men in one week, ending July 3d, took ont $6,000. Provisions are scarce and dear.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

DE HARO M. CO.—July 29th. Location: Storey county, Nev. Capital, $10 000,000. Trustees—J. W. Tripp, John Linehan, Frank Moyer, I. N. Thorn and S. D. Barstow.

YOLO M. CO.—Same location, same trustees and same capital.

GEORGE DOUGLAS M. CO.—Same location, same trustees, with the addition of L. C. White, and same capital.

MOUNT HOON M. CO.—Same location, same trustees, with the addition of John Skinker, and same capital.

VANCOUVER M. CO.—Same location, same trustees, with the addition of Frank Moyer, and same capital.

SABINE M. CO.—Same location, same trustees, with the addition of John Skinker, and same capital.

ETNA MILL & M. CO.—July 29th. Location: War Eagle ledge, Bradshaw district, Arizona. Capital stock, $3,000,000. Trustees—H. H. Allen, Henry Sweetapple, Geo. B. Gamman, Geo. B. McAneny and W. Lent.

SKIPPEL G. M. CO.—July 29th. Location: Dogtown district, Butte county, Cal. Capital stock, $3,000,000. Trustees—J. V. P. Mathis, W. F. Thomas, Newell Winants, J. L. Willits and J. B. Onstine.

SOUTH UTAH M. CO.—July 29th. Location: Storey county, Nev. Capital stock, $2,000,000. Trustees—J. J. Seville, E. D. Wright, Geo. W. Townsend, James H. Ryan and F. G. Bouton.

MELBOURNE M. CO.—July 28th. Capital stock, $10,000,000. Trustees—C. R. Jones, E. R. Warasw, S. N. Putnam, R. G. Brush and E. F. Stone.

PYRAMID LAKE M. CO.—July 28th. Capital stock, $10,000,000. Trustees—S. Coop, D. Cook, W. F. Myers, W. M. Lent and F. Oshiston.

VOLCANO G. M. CO.—July 28th. Location: Amador county, Cal. Capital stock, $10,000,000 Trustees—Geo. Mack, J. Bluxome, J. W. Farren, B. F. Smith, N. G. Young, A. Neatte and E. L. B. Brooks.

GOLD STRIPE M. CO.—July 28th. Location: California. Capital stock, $8,000,000. Trustees—R. E. Brewster, Abraham O Heisey, Edmund Green, H. C. Bidwell and Angus McIntyre.

PEOPLE'S TELEGRAPH CO.—July 28th. Object: Operating a line between Mohair station and Darwin, Cal. Capital stock, $50,000. Trustees—Patrick Reddy, Geo. H. Willard, J. G. Riley, S. E. Holcomb and H. H. Pearson.

Continued from Page 97.

efforts for the improvement of the physical, intellectual and moral condition of mankind.

Articles of vertu, taste and coriosity. Objects, statuary groups, elo., illustrative of various nationalities.

Egypt and Japan have introduced their exhibits into this building. Each nation here makes such exhibits as are best illustrative of its social relations, of the condition of the arts and sciences within its dominions, past and present. Sweden, Australia and Chile have been suffered to depart somewhat largely from the general plan, in order to bring all their exhibits more closely together at a single point. There is no machinery in the main building.

National Characteristics.

One of the chief and most interesting features connected with the main building is the effort made to illustrate there the national peculiarities of the several peoples there represented. Going through this buildlog is very much like making a tour of the world. You meet the inhabitants of the several nations in their various costumes; you behold their national characteristics truthfully and literally portrayed. This feature of the exhibition was pleasantly illustrated in the early part of the exhibition by a little incident, which may be told as follows: Three little boot-blacks, with their boxes over their shoulders, more intent on seeing the show than in the prosecution of their calling, sauntered into this building and stood for a while gazing upon the novel scene around them, when, with a happy thought, one of them fully took in the situation, and exclaimed to his two companions:

"Boys, let's take a trip to Germany"

"Yes," responded another, "and I'll make the trip pay by giving you two fellers a job."

Off they started into one of the alleys where he placed his feet on the boxes of the other two, set them to work polishing his ragged shoes, at the same time thrusting his hands into his pockets with the most nonchalant air imaginable, drew out his handful of change from which to select the pennies to pay for his "shine." A number of bystanders who had been drawn together by the off-hand notice and novelty of the occurrence, were not a little amused by the scene. W. B. E.

Exhibition Grounds, July 18th, 1876.

Aid for Boys and Girls.

The Boys' and Girls' aid society of this city is doing a good work and is worthy of all encouragement. The object of the society is to improve the condition of the homeless and neglected boys and girls of San Francisco. The society's rooms are at 68 Clementina street, S. F.

One branch of the society's work is to secure homes for the destitute, and perhaps some of our interior readers could secure from them boys and girls if they have need of them, or a warm place for charity's sake. From the second annual report of the society, we take the following outline of the work in this branch of the organization's effort:

"It is our purpose to give a home to all applicants destitute of friends, until we can find permanent homes for them, and thus far we have had to turn none away, though the scarcity of desirable places causes this branch of our work to be attended with many difficulties. Thus far we have made provision for 65.

"Our efforts have been directed of course, chiefly to children, but destitute men and women often apply to us for help. These we send out of the city if they will go, believing the country the better place for them. One young man who had traversed the city for days unable to find employment even for board, was furnished with transportation to the farming regions of San Jose valley, where he found work the same day at $20 per month. Of the others sent out in this way we have not heard, but as their faces have not since appeared to us, we trust they are safely harbored."

CARSON VALLEY.—Of the probable future of Carson valley, the Genoa *News* draws this very doleful picture: A few more years and the beautiful pine forests that surround Lake Tahoe and cover the eastern slope of the Sierras from the Truckee to Silver King, will have been laid low by the woodman's ax. The splendid mountain lake, the wooder and admiration of the world, will then look like a frog-pond in the desert, and the grand old peaks of the Sierras will lift up their bald heads to the sky, the very emblems of desolation. The snow that falls on them during the winter months will dissolve almost instantly when exposed to the hot rays of the summer sun, and pass off in a body to flood the valleys below. This done, Carson valley will be left a barren waste for the remainder of the summer and fall, and the mills along from Empire to Dayton be run by the drainage from Sutro's tunnel.

IN regard to the recent action of Congress, deciding that articles on exhibition at the Centennial exposition might be sold and removed from the grounds at any time, the Customs authorities of the exhibition gave an explanation that it is only duplicates of exhibited articles that are permitted to be taken away.

GLENN'S SULPHUR SOAP is a positive inspiration. It was a happy thought to combine the remedy, which of all others is beneficial in the majority of cutaneous diseases, with a pleasant and pure soap, by means of which it can be brought in contact with affected parts. Sold everywhere.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING JULY 25TH, 1876.

John W. Emerton, S. F., car wheels; Samuel Green, Los Angeles, Cal., compositions for manufacturing illuminating gas; George Greiner, Sacramento, Cal., violin pianos; John Q. Grinnell, Stockton, Cal., field derricks; Caspar T. Hopkins, S. F., street railroad rails; Anson Scott Levake, S. F., car wheels; Nills A. Olsen, S. F., ment choppers; John W. Platt, Mineral City, Nev., fuse lighter-; Geo. C. Price and Thos. G. Morgan, Santa Rosa, Cal., earth boring machines; Richard Whitlock, Pacheco, Cal., farm gates; John H. Woodrum, Portland, Ogn., combination locks; Samuel H. Wheeler, S. F., valve motioo for steam engines.

——The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect secrecy and in the shortest possible time.

General News Items.

BELKNAP has been acquitted.

SCATTERING cases of smallpox are reported in several places in the State.

SILVER at Amsterdam has risen from 93 to 95 gilders per kilogram.

TEXAS has now over 80,000,000 acres of public land.

THE gold excitement in Northern Georgia is at fever heat.

TWENTY-ONE wheat vessels cleared for Europe last month.

"SMUGGLER" beat "Goldsmith Maid" at the Cleveland races.

MOST REV. SAMUEL BUTCHER, Premier Bishop of Ireland, is dead.

THE enrolled militia of San Francisco this year numbers 13 814. Last year the return was 14,420.

THE Atlantic coast has been visited by a heavy and continued rainfall, which is of vast benefit to the country.

THE new Liverpool docks are completed, so that now the docks of that port cover an area of 420 acres, and are valued at $100,000,000

THE appropriation for the expenses of the Congressional committee to inquire into the Chinese immigration has been passed.

GAANT is said to have remarked the other day that he should go to England in March and visit his daughter. He thought he might travel in Europe a year or two, and then return home by way of China and California.

THE mother of Charlie Ross is stopping at Rockfield, Mass., with her five remaining children. She believes that her boy will yet be recovered, or that she will receive positive evidence of his death.

IT is reported that Garner, by his will, has left $1,000,000 for the support of an opposition ferry running to Staten Island, and that the New York club house at Stapleton is made a present to the olnb. The house cost $174,000.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

METALS.

[WHOLESALE.

THURSDAY, M., Aug. 3, 1875.

American Pig Iron, ₩ ton	32 00	@	—
Scotch Pig Iron, ₩ ton	31 50	@	32 00
White Pig, ₩ ton	49 00	@	50 00
Oregon Pig, ₩ ton	31 50	@	32 50
Refined Bar	— —	@	— 4¼
Boiler, No. 1 to 4	— —	@	— 6¾
Plate, No. 5 to 9	— —	@	— 5¾
Sheet, No. 10 to 14	— —	@	— 5¾
Sheet, No. 16 to 20	— 5¾	@	— —
Sheet, No. 22 to 24	— 6	@	— —
Sheet, No. 26 to 28	— 6½	@	— —
Horse Shoes, per keg	7 00	@	8 50
Nail Rod	— 10	@	— —
Norway Iron	— 8½	@	— 9½
Rolled Iron	— 4	@	— 8
Other Irons for Blacksmiths, Miners, etc.	— —	@	— 4¼
COPPER—			
Copper Tin'd	— 37	@	— 40
Sheathing, ₩ lb	— 24	@	— 40
Sheathing, Yellow	— 21	@	— 12½
Sheathing, Old Yellow	— 10	@	— 11
Composition Nails	— 21	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ₩ lb	— 20	@	— 25
Anderson & Woods' ordinary sizes	— —	@	— 15
Drill	— —	@	— 16¾
Flat Bar	— 16	@	— 19
Plow Steel	— 8	@	— 9
TIN PLATES.—			
10x14 I C Charcoal	11 00	@	— —
10x14 I X Charcoal	13 00	@	— —
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	— 21	@	— —
Australian	— 25	@	— —
ZINC.—By the Cask	— —	@	— 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₩ lb	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 12½
do do 8x4 ft, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	3 60	@	3 75
QUICKSILVER, per lb	— 43	@	45 —

Gold, Legal Tenders, Exchange, Etc.

(Corrected Weekly by SUTRO & CO.)

SAN FRANCISCO, Aug. 2, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 89¾ to 90¼. Silver, 53 — ¾.

GOLD in N. Y. 112.

GOLD BARS, 880 to 890. SILVER BARS, 16@25 per cent. discount.

EXCHANGE on N.Y., 50-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, 12 per cent. discount.

LONDON — Consols, 93 to 93⅞; Bonds, 102⅝

QUICKSILVER in S. F., by the flask, per lb, 45@

LEATHER.

[WHOLESALE.

WEDNESDAY M., Aug. 3, 1876.

Sole Leather, heavy, ₩ lb	25	@	29
do do light, ₩ lb	20	@	25
Jodot, 5 Kil., per doz	48 00	@	50 00
Jodot, 11 to 13 Kil., per doz	68 00	@	70 00
Jodot 14 to 19 Kil., per doz	82 00	@	84 00
Jodot, second choice, 11 to 16 Kil., ₩ doz	57 00	@	74 00
Cornellian, 12 to 16 Ko	57 00	@	67 00
Cornellian Femalos, 12 to 13	53 00	@	57 00
Cornellian Femalos, 14 to 16 Kil	71 00	@	76 50
Simon Ulmo Femalos, 12 to 13, Kil	58 00	@	62 00
Simon Ulmo Femalos, 14 to 15, Kil	66 00	@	70 00
Simon Ulmo Femalos, 16 to 17, Kil	72 00	@	74 00
Simon, 18 Kil., ₩ doz	81 00	@	83 00
Simon, 20 Kil., ₩ doz	65 00	@	67 00
Simon, 24 Kil., ₩ doz	72 00	@	74 00
Robert Calf, 7 and 9 Kil	35 00	@	40 00
French Kips, ₩ lb	1 00	@	1 15
California Kip, ₩ doz	40 00	@	50
French Sheep, all colors, ₩ doz	8 00	@	15 00
Eastern Calf for Backs, ₩ lb	1 00	@	1 25
Sheep Roans for Topping, all colors, ₩ doz	9 00	@	13 00
Sheep Roans for Linings, ₩ doz	8 50	@	10 50
California Russett Sheep Linings	1 75	@	4 50
Best Jodot Calf Boot Legs, ₩ pair	5 00	@	5 25
Good French Calf Boot Legs, ₩ pair	4 00	@	4 75
French Calf Boot Legs, ₩ pair	4 00	@	—
Harness Leather, ₩ lb	24	@	32½
Fair Sizdle Leather, ₩ doz	48 00	@	72 —
Skirting Leather, ₩ lb	35	@	37½
Welt Leather, ₩ doz	70 00	@	90 00
Rough Leather, ₩ foot	17	@	¾
Wax Side Leather, ₩ foot	17	@	—

The Mechanics' Fair Daily.

This journal, printed and issued in the Pavilion of the ELEVENTH INDUSTRIAL EXHIBITION, and circulated free, will be a superior publication. It will contain all OFFICIAL INFORMATION during the Exhibition, commencing Aug. 8th, 1876 ITS ILLUSTRATIONS will furnish accurate views of NEW INVENTIONS AND MACHINERY.

The volume will give a substantial and readable RECORD OF THE FAIR, quite valuable for reference and preservation, in addition to a goodly variety of other reading matter, daily embracing GRAPHIC PARAGRAPHS AND HUMOROUS INCIDENTS, making altogether a paper eagerly sought for (both in and out of the Pavilion) by nearly a QUARTER OF A MILLION OF READERS during the term of the Exhibition—a circulation reaching a greater number of different individuals than that of any publication yet issued.

We shall make a specialty of inserting ATTRACTIVE ADVERTISEMENTS, representing the leading firms in nearly EVERY BRANCH OF TRADE AND INDUSTRY on this coast, upon favorable terms, soliciting such as we believe will be most benefited by advertising in a well conducted, enterprising and everywise meritorious journal.

This beautifully illustrated sheet, issued upon such an occasion, will receive close attention, and its contents—both reading and advertising being original—will be closely scanned throughout.

THE IMMENSE PAVILION has been improved for the coming Fair. An unusually large amount of space for exhibits has already been engaged. Special exhibitions and new and attractive features will be introduced, calculated to make the Fair of 1876 a GRAND SUCCESS.

Orders for advertising, sent in early, will receive careful attention.

The undersigned, publishers of the MINING AND SCIENTIFIC PRESS, have successfully issued a popular daily in the Mechanics' Fair during seven Industrial Exhibitions since 1864, and we are now confident of making the coming volume surpass all its predecessors in its standard of value as a reading journal of art and information and a medium of first-class business announcements.

We have been awarded by the managers of the Exhibition the EXCLUSIVE PUBLISHING AND ADVERTISING PRIVILEGES of the Eleventh Industrial Exhibition, and are determined to accomplish a work creditable to the MECHANICS' INSTITUTE, to OUR PATRONS, AND TO OURSELVES.

DEWEY & CO.,

Publishers and Patent Agents, No. 224 Sansome street, S. E. Cor. of California, S. F.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Antilles Mining Company—Location of

principal place of business, San Francisco, Cal.

Notice is hereby given, that at a meeting of the Directors, held the seventh day of July, 1876, an assessment of 20 cents per share was levied upon the capital stock of the corporation, payable immediately, in U. S. gold coin, to the Secretary, at the office, No. 327 Sansome street (third floor), San Francisco.

Any stock upon which this assessment shall remain unpaid on August 16th, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, September 8th, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

H. M. MORGAN, Secretary.

Office, 327 Sansome street, San Francisco, Cal.

Cherokee Flat Blue Gravel Company—

Location of principal place of business, San Francisco, Cal. Location of works, Cherokee Flat, Butte County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, No. 30, levied on the eighth day of June, 1876, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A Caselli	17	4608	$230 40
Mrs Mary W Farrington	35	144	7 20
Mrs E M Walton, balance of certificate No. 21	128		
shares sold for assessment No. 35	81	73	3 65
George W Ramsay, balance certificate No. 36,			
320 shares sold for assessment No. 35	83	231	11 75

And in accordance with law, and an order of the Board of Directors, made on the eighth day of June, 1876, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the company, room 13, No. 328 Montgomery street, San Francisco, Cal., on Saturday, the fifth day of August, 1876, at the hour of two o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

C. H. BOCART, Secretary.

Office, Room 13, Safe Deposit Building, San Francisco, Cal.

Office South Comstock Gold and Silver Mining Company.

NOTICE.—The annual meeting of the stockholders of the South Comstock Gold and Silver Mining Company, for the election of trustees and the transaction of such other business as may be presented, will be held on Monday, the 21st day of August, 1876, at two o'clock P. M., of that day, at the office of the company. Transfer books will be closed on Wednesday, August 16th, 1876, at three o'clock P. M.

J. M. BUFFINGTON, Secretary.

Office, Rooms 3 and 4, No. 311 California street, over Ætna Insurance Office, entrance 309 California street, San Francisco, Cal.

Kearsarge Consolidated Quicksilver Mining

Company. Principal place of business, San Francisco, Cal. Location of works, Lake Mining District, Lake County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the first day of July, 1876, an assessment of fifteen cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at No. 10 Stevenson Block, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 28th day of August, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 16th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

JAMES McHAFFEE, Secretary.

Office, Room 10, Stevenson Block, San Francisco, Cal.

Mariposa Land and Mining Company

of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the sixth day of July, 1876, an assessment (No. 6) of one dollar per share was levied upon the capital stock of the corporation, payable immediately, in United States currency, to the Secretary, at the office of the company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office, No. 9 Nassau street, New York.

Any stock upon which this assessment shall remain unpaid on the seventh day of August, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the second day of September, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

LEANDER LEAVITT, Secretary.

Office, Room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal.

Office of the Tintic Milling and Mining

Company, San Francisco, Cal., July 14th, 1876. The annual meeting of the stockholders of the Tintic Milling and Mining Company will be held at the office of the company, No. 310 Sansome street, San Francisco, on Monday, August 14th, 1876, at two o'clock P. M., for the election of directors for the ensuing year, and the transaction of such other business as may be brought before the stockholders. By direction of the Board of Directors. H. CLAY MILLER, Secretary.

San Francisco, July 14th, 1876.

Umpire Tunnel and Mining Company—

Location of principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No 6), levied on the 23d day of June, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

OLD STOCK.

Names.	No. Certificate.	No. Shares.	Amount.
Allen, Jas M. Trustee	134	50	$ 6 25
Ambrose, Michael	142	10	1 25
Ambrose, Michael	144	10	1 25
Ambrose, Michael	145	5	53
Ambrose, Michael	147	5	53
Ambrose, Michael	148	5	68
Ambrose, Michael	149	5	53
Ambrose, Michael	150	5	63
Ambrose, Michael	151	5	53
Beal, W A, Trustee	205	100	12 50
Beal, W A, Trustee	212	100	12 50
Beal, W A, Trustee	214	100	12 50
Beal, W A, Trustee	262	30	3 75
Beal, W A, Trustee	263	25	3 12
Beal, W A, Trustee	276	4	50
Beal, W A, Trustee	279	10	1 25
Beal, W A, Trustee	300	100	12 50
Congdon, H B, Trustee	31	125	15 62
Congdon, H B, Trustee	135	125	15 62
Congdon, H B, Trustee	185	50	5 25
Costello, J V	338	50	6 25
Costello, J V	339	50	6 25
Costello, J V	340	20	2 50
Costello, J V	341	20	2 50
Costello, J V	342	20	2 50
Costello, J V	343	20	2 50
Costello, J V	344	20	2 50
Dempsey, Peter	192	200	25 00
Dunseth, J D	201	130	16 25
Eakins, P A, Trustee	289	100	12 50
Edgerly, Saml	65	20	2 50
Edgerly, Saml	67	20	2 50
Edgerly, Saml	68	20	2 50
Edgerly, Saml	75	10	1 25
Edgerly, Saml	80	10	1 25
Edgerly, Saml	250	100	12 50
Edgerly, Saml	255	100	12 50
Galli, A	270	100	12 50
Galli, A	271	100	12 50
Galli, A	273	100	12 50
Galli, A	273	100	12 50
Galli, A	274	50	6 25
Johnson, S W	363	100	12 50
Lynch, J F	219	100	12 50
Lynch, J F	220	100	12 50
Mangerl, S	269	50	6 25
Murphy, W A	191	2	25
Smith, J P	308	100	12 50
Smith, J P	309	100	12 50
Smith, J P	310	100	12 50
Smith J P	311	100	12 50

And in accordance with law, and an order of the Board of Directors, made on the 2d day of June, 1876, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, No. 605 Montgomery street on the 14th day of August, 1876, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

W. W. DAVIS, Secretary.

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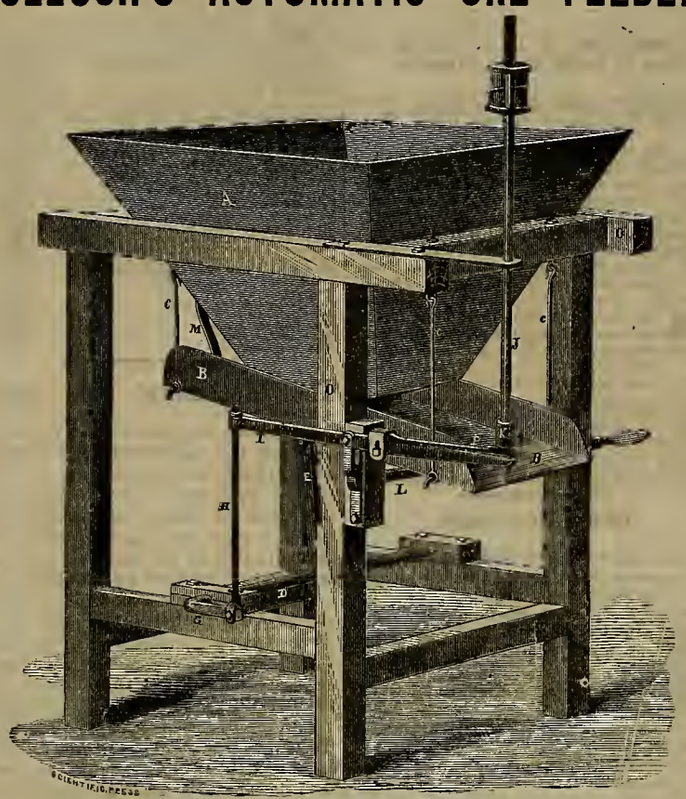

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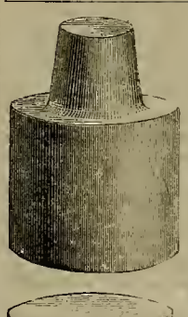

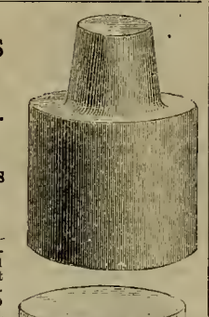

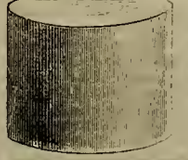

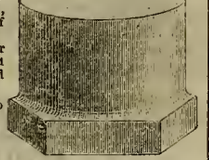

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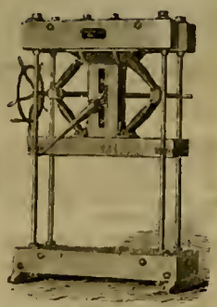

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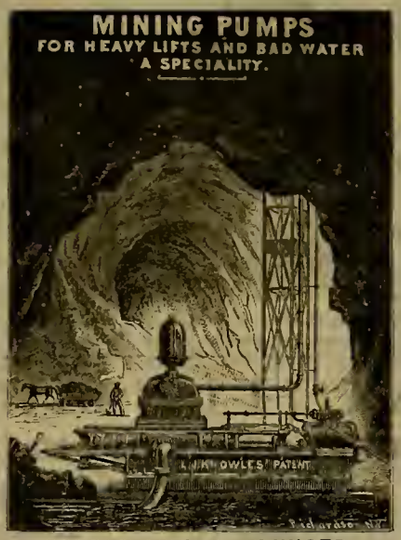

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1,000 Feet Single Lift Guaranteed.

Waters' Patent Governor.

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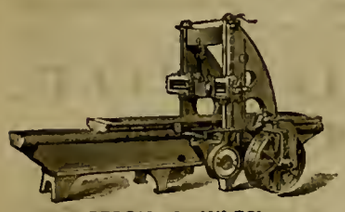

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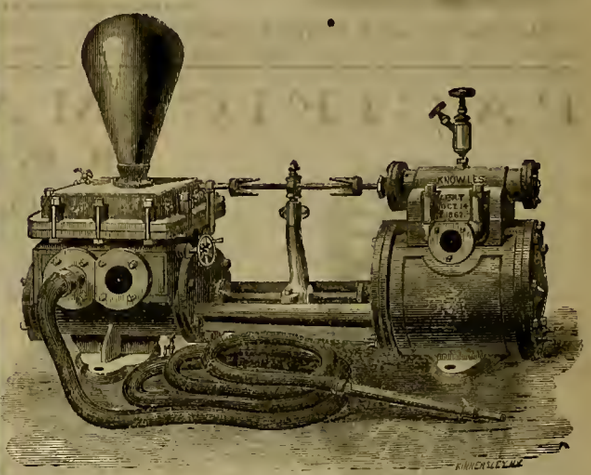

Knowles' Steam Pump; for all purposes where Pumping is require

The ALLEN ENGINE GOVERNOR.

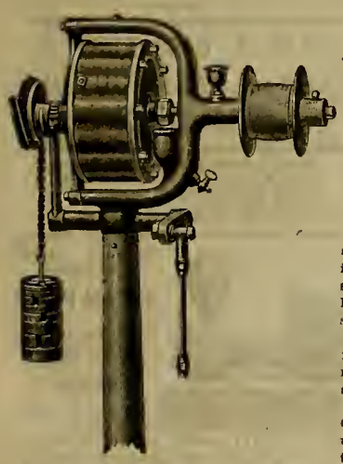

Fig. 1. For Variable Cut-Off Engine.

Uniform Speed in the Working of Steam Engines.

THE SIMPLEST AND MOST EFFICIENT GOVERNOR YET CONSTRUCTED.

ECONOMY and SAFETY.

Especially Valuable with Adjustable Cut-Offs. Capacity of Machinery Increased by Accurate Regulation of Speed.

Direct Saving of Fuel—Great Increase in Power of Engines.

The high rate of speed used acts advantageously in making the Allen Governor very sensitive; and all parts being lubricated, it works with the smallest amount of friction.

The speed of the Engine is maintained equally, without reference to the variations in amount of work being done.

The peculiar action of the Governor, which allows the use of a valve of large area, thereby admitting to the Engine cylinder the greatest possible boiler pressure at each stroke of the piston, has produced astonishing results by being attached to old engines, greatly increasing their power or effecting a direct saving of fuel, and in hundreds of instances doing both. In running an engine with the Allen Governor with high or low pressure of steam and with all variations of power, the throttle is opened wide in the morning and remains so until closed at night, thus relieving the engineer from all labor and care except keeping the engine oiled, and giving him a great deal of time for other duties.

Allen's Patent Governor Valve is constructed with a double disc in a tubular frame, and is perfectly balanced, there being no spindle as in the ordinary throttle valve to interfere with its equilibrium. The valve is moved by means of a lever, and is opened and closed by a rocking motion of a steel spindle, which is covered with brass, insuring the greatest possible durability.

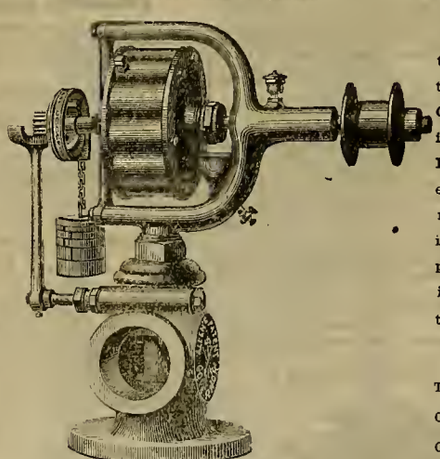

Fig. 2. Allen Governor and Valve.

We have Numerous testimonials from parties who have used this Governor, and watched its workings critically. In all cases the Governor has made the various engines to which it has been applied produce the most profitable results ever obtained.

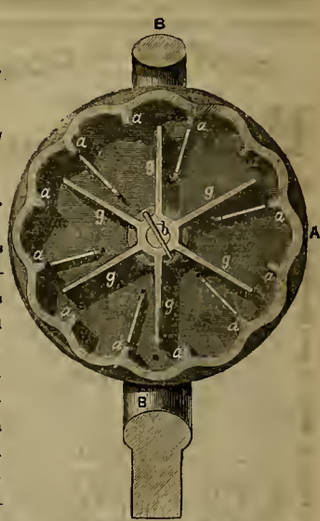

Fig. 3. Section of Allen Governor.

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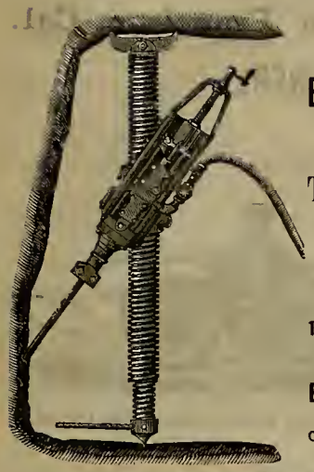

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Bucket-Plunger Steam Pump.

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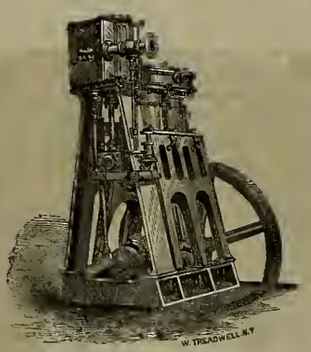

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Large Assortment of

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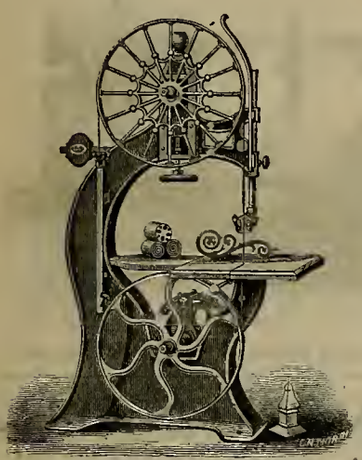

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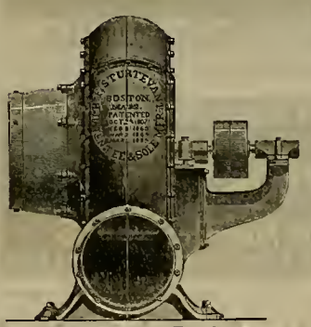

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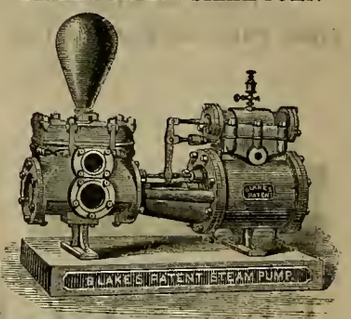

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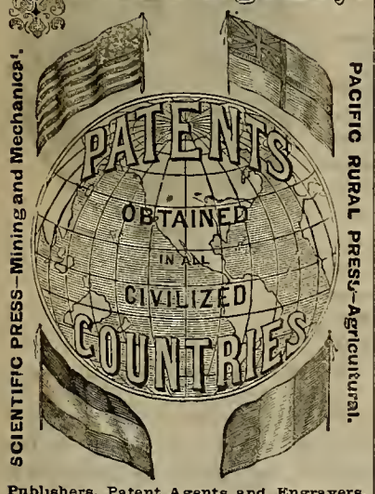

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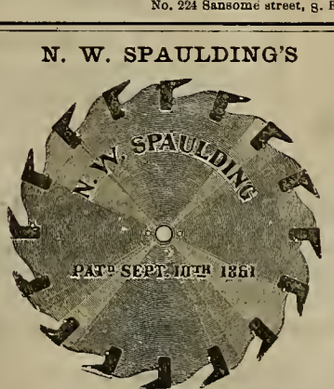

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Under the Auspices of the

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THANKS, ETC.—*Messrs. Dewey & Co.—Gents:* I write to acknowledge the receipt of letters patent on my fruit drier, which came to hand to day. Accept my thanks for the very satisfactory and successful manner in which this case has been handled.

Respectfully yours, HILAND G. HULBURD.
Placerville, July 29th, 1876.

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, AUGUST 12, 1876.

VOLUME XXXIII Number 7.

Academy of Sciences.

The regnlar semi-mnthly meeting nf the California Academy of Sciences was held on Monday evening last; Dr. Stont in the chair.

The donations to the cabinet were numerons. C. D. Gibbes donated samples of coal from Anstralia, Vnncouver's Island and Monnt Diablo; of rock salt from Cheshire, and of lignite from Cook's inlet, Alaska. Mr. Goodwin, several mineralogical cnriosities. Mr. H. Edwards, crystals of cinnabar from the interior of a quicksilver furnace chimney, and silver ore from Anstin, Nevada; also, some plants from western Mexico. Mr. John Middleton, cinnabar from Sulphur banks, Lake connty. Governor Holden, silver ore from Elko, Nevada. Mr. Glass, calc spar and asbestos from San Antonio creek, Calaveras; and from Capt. Turner, W. G. Harford, C. H. Johnson, J. P. Dameron, W. J. Fischer, W. A. Mestayer and Dr. Stout, specimens in natnral history.

W. N. Lockington read a short paper describing some California fishes.

A Flying Machine.

Mr. C. W. Krneger, read hy permission, a paper on "Flying Machines." Mr. Krueger is not n member of the Academy, but was introdnced as the inventor of a new flying machine, which is now heing made and will shortly be tried in this city. He has been for some eight years experimenting on this subject, and now believes thut he has designed a flying machine which solves the problem nf aerial navigatinn. He read an extended snd qnite interesting paper on flying machines and their history, illnstrating his remarks hy engravings of the machines which had been "tried and found wanting." Mr. Krueger is a civil engineer by profession, snd designs exhibiting the working model of his invention at the Mechanics' fair before its close, if finished in time. His argnments in favor nf the principle of constrnction which he has adopted for the machine were quite plausible, and it only remains for the practical trial to prove the correctness of the theories.

Mr. Krueger exhibited a pasteboard model of his air ship. The buoyancy comes not from a balloon, hut from extended aero-plain surface, and great propnlsive power obtained from wings rapidly revolved and propellers astern, and for guidance he relies on the propellers, which can be operated with either a reverse or forward movement, and also a rudder and tail-piece. Steam will in part be used as a motor. The wings are arranged ou a shaft which revolves in a direction parallel to the length of the machine, and there is one of these shafts on each side of the car. There are four wings on each of these shafts, and at each revolntion, the wing, which comes in towards the car, is folded np alongside the shaft, nnfolding again at the time when it is most effective. The car will he about 60 feet in length and weigh sbont 400 ponnds. It is expected to reach a speed of from 100 to 150 miles per hour. We will give a more detailed description of this machine on its completion.

A Merited Honor.—Mr. Henry G. Hanks the first president of the San Francisco microscopical society, has been unanimously elected an honorsry member of the society. He has been an active resident member since the society started, and was, in fact, one of the first promoters of the movement to organize. Mr. Hanks has made a specialty of micro-mineralogy and has a large and constantly increasing collection of mineral slides, in sddition to his fine private collection of ores. He has for some time been engaged in arranging and identifying the mineral collections of the University of California, which embrace that of the geological survey, the Voy, the Pioche and that collected by Mr. Hanks himself. This work has now been discontinned owing tn the lack of fnnds at the command of the University, so that Mr. Hanks now gives his whole attention to his assaying business.

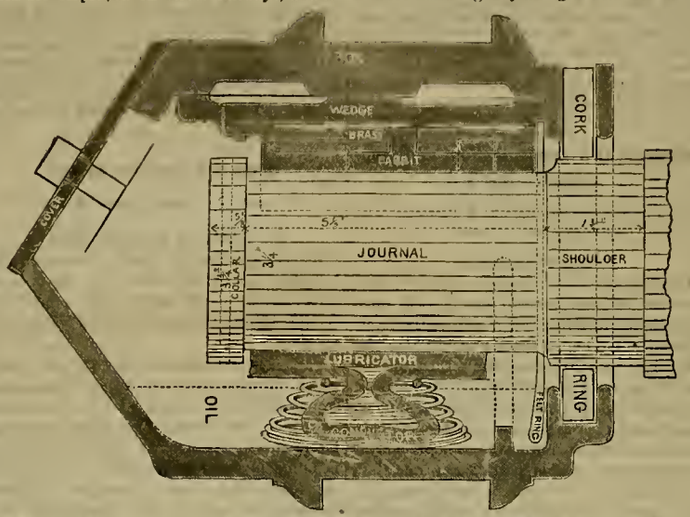
Arrangements have been made wherehy fifty tons of ore will be shipped every month from the antimony mines, situated sixty-five miles south of Winnemucca.

Notices of Recent Patents.

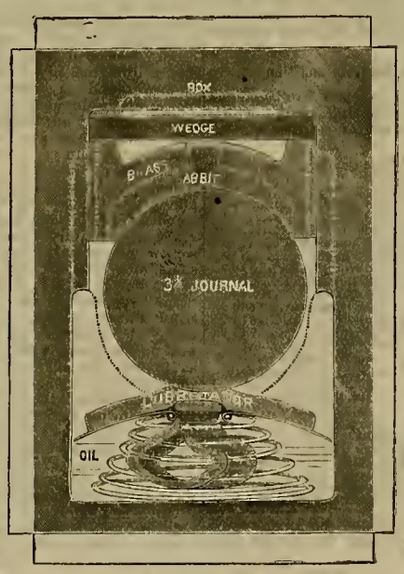
Among the patents recently obtained through Dewey & Co.'s Scientific Press American and Foreign Patent Agency, the following are worthy of mention:

Rubber Rail.—Caspar T. Hopkins, S. F. This is an improvement on that class of rails which are employed on street railways, and it consists in constrncting the rails with corrngations or indentations npon their onter edges, so that it will he easy for any vehicle to cross them at acnte angles, without the difficnlty of sliding along the edge of the rail as has heretofore heen the case. The inner edge of the rail may also be provided with notches, bnt in order to assist vehicles to leave the line of tracks where the wheels fit perfectly, it will be necessary to constrnct the track so as to stop the wheel without corrngating the inner edge, as this would interrnpt the smnoth movement of the car wheel. The inventor therefore constrncts the depressed portion of the rail which receives the flange, with its inner edge rising slightly, and the depressions or corrngations are made on this edge. The effect of this construction will be to cause the back portion of a wheel to run or bind upon the edge, as soon as it is turned to leave the track, snd when it falls into the first of the depressions it will be prevented from sliding any further until its forward part has mounted the inside of the outer part of the rail so as to leave the track. This corrugation of the rails will present such obstructions that vehicle wheels will easily cross or leave the rails, and thn strain upnn the rails and road bed caused hy the side pressure of heavy teams which are attempting to cross it at an acnte ang'e with the line, will be avoided. Rails of this construction may be more or less modified in the form of the corrngations, hnt it is the intention of the inventor to form them, so that they can be as readily rolled, as those of the ordinary form, and can therefnre be furnished to the consumer at no greater cost per yard for manufactnre than the common rail.

Field Derricks.—Johu Q. Grinnell, Stockton. The improvements patented are applicable more particularly to such derricks as are used for handling hay and grain in the harvest field. The improvements consists in the employment of a novel hoop for attaching the hoom to the derrick and detaching therefrom when desired, and also in the arrangement for connecting or hinging the boom to said hoop in order to obtain an independent motion of the boom; also in the method of attaching the hoisting pulleys and elevating rope. By these arrangements the inventor provides a very ample and convenient arrangement of the derrick, whereby he adapts it for elevating hay and grain in the field. By combining the loose hoop and the arrangement for elevating it with the hinged hoom, he can nse a much shorter boom than is ordinarily used, and therefore can handle it with much greater ease. As the stack increases in hight the hoop is elevated accordingly, so as to keep the hoom in the proper relative position, to ensure speed and convenience in lifting and depositing the grain on the stack. It also enables one to build a stack as much higher than the maat, as the hoom will project above it when the hoop is elevated to the higheat point.



SIDE SECTIONAL VIEW OF LUBRICATOR AND DUST EXCLUDER.



END VIEW OF LUBRICATOR.

Improved Railroad Axle Lubricator.

We illustrate on this page an improved device for lubricating railroad axles by capillary attraction. The arrangement was patented through the Mining and Scientific Press Patent Agency, by James M. McDonald of this city. It is an improvement in that class of lubricators in which the oil is raised hy capillary attraction through a wick, and supplied to a pan which is pressed against the journal by a spring. This is considered the most economical plan of lubricating, as it takes up just as much oil as is wanted and no more.

There have always been difficulties in the applications of this kind of lubricator, which Mr. McDonald proposes to overcome. Hitherto the lubricating pad was made concave to fit the journal, hnt in that way it forms a receptacle for dnst, metallic corrosions, etc., which cnt ont the journal in time and cause considerable friction continually. In the improvement illnstrated only one part of the pad touches the jonrnal, and the dnst, etc., runs off, giving it no chance to lodge. The spring is also better adapted to the purpose.

The whole lubricator is cheap and simple, and the engravings show pluinly the details of constrnction. A cork ring is placed just around the shonlder of the journal to prevent leakage through the back end of the box. A felt ring passes around inside of the cork ring, which not only prevents the oil getting to the cork hut lubricates the rear end of the journal. Dust is effectually excinded by this device. It is now in nse qnite extensively; it has been adopted by Woodward's, Ossebolt's, the Omnibns, snd the Cluy street hill railroad companies. The manufactnrer is Wm. J. L. Monlton, 435 7th street, in this city. It is claimed that 50 per cent. is saved by adopting this cheap remedy for hot boxes and journals.

Nevada Mines.—"Fax" sends us some items from Nevada as follows: At Egan canyon Gen. Rosecrans is still drriving his tunnel, 50 inches of water coming ont, but as yet no ore. In Cherry creek there is nothing doing. The Star mine has a half million bonanza in sight, hnt don't move. In Hnnter district the Vnlcan mine looks beantifully. It is being slowly bnt surely developed. In White Pine, the Eberhardt and Aurora 30-stamp mill is running to full capscity, and from the appearsnce of the mine will do so for a long time, if silver is not knocked ont of the market. Ward district is a No. 1 camp, and has paid from the heginning, and will for years. They have worked silently and economically, and have proved an immense mine. They are now going to hnild up a snbstantial town. At Egan canyon the San Jose mill was shnt down after having put throngh 864 tons of ore. Mr. Dahlgren worked it np to 72½ per cent. with a loss of 229 pounds of quicksilver, or about one-quarter ponnd per ton. This was the same class of ore as they had lost so much quicksilver on in previons runs. The cost was $9.81 per ton, including $1 for repairs and 50 cents per ton for snpplies and improvements. This was the most snccessful run the compsny ever had. It is said that before this they had only succeeded in working the ore from 33 to 35 per cent.

Important Suit Regarding Tailings.—An important eqnity suit has been commenced in the tenth district conrt, Sutter county. The suit is brought hy James H. Keyes, who claims to he owner of over 1,060 acres on Bear river, Sutter connty, against the Little York gold and water company, (limited) and 18 other mining, water and ditch companies and individuals in Placer and Nevada counties, on Bear river and its tribntaries, to perpetually restrain them from suffering their debris or tailings from flowing into the said river or its tributaries, also from polluting or fouling the waters of the said river or its tributaries. The plaintiff claims that the deposits caused by the tailings and debris of the mining claims in question materially injnre the value of his land and improvements, and nnless stopped will totally destroy them. Damages are laid at $10,000. The snit will come on for hearing in the November term of the district court, Yuba City, on the second Monday in November.

An Ottawa dispatch says the British frigate *Amethyst* will be at San Francisco in waiting to convey Earl and Countess Dufferin and party to British Colnmbia.

A Berlin dispatch says it seems certain that the project to solve the Eastern question hy a conference of the powers has been abandoned.

CORRESPONDENCE.

Alpine County—Its Mines and Resources, Past, Present and Future.

[Written for the PRESS by VICTOR HARLAND.—No. 4.]

Silver Mountain Dislrict, Continued.

Adjoining the Exchequer mine on ths south, and npon the same lode is situated ths property of tbe Lady Franklin G. & S. M. Co. This miue consists of 2,000 feet along the lode, and is ons of ths first locations made within the district.

The amonnt of labor p-rformed thus far upon the

Lady Franklin Property

Is hut nominal, oonsistiug of a shaft situated on the mountain side, and it tersecting the lode at the slight depth of 40 feet, a sho.t surface tnnnel has also been driven to penetrate the lode at a point nearly the same dep'h from the surface, with a drift therefrom, and following the lode southerly for a distance of about 100 feet. The character of the ore here fonnd is ideutical with that extracted from the Exchequer, its adjoining neighbor. The lode where penetrated shows a width of nearly, or quite ten feet, with smooth, true walls, a general course northerly and southerly and a uniform easterly dip of ahout 40 degs. At all points where penetrated, the lode shows a quality of ore that merits more attention at the hands of the company than it has heretofore received. Assays of ore extracted have ranged from $20 to $400 per ton, and considering the shallow position beneath the surface from which this ore was taken, the extent of the property, and other evidences of its wealth which are inevitable in their conclusions, this mine in a comparatively short period would prove self supporting under efficient management. The lode is firm, well estahlished, and well defined, and explorations in the Exchequer near the dividing liue have demonstrated the fact that the Lady Franklin, while showing well upon and near the surface, has many evidences of a larger and richer deposit at a depth of 500 or 600 feet, than can he seen in the shaft or tunnel as explored. A fine location for a permanent shaft and hoisting works can he easily ohtained within the surface boundaries of the mine, and a full supply of forest timber is also within their reach in like position. In the merry days of the past, when in mountain, valley and canyon could he seen the prospector and minor, armed aud equipped for the exciting search for the precious metals, the Lady Franklin was looked upon as the pride of the district and the key to the great store house of mineral wealth—Scandinavian canyon. A company was organized, incorporated, stock issued and work of development inaugurated. Samples nf the ore extracted were taken aoross the mountains and exhibited in various localities, their heauty and richness everywhere eliciting the favor they really merited. Visitations from prominent mining men of that period were of frequent occurrence, who were outapoken with their praise of the mine and its prospects. This feeling of security and personal consciousness of prospective wealth in the near future was doomed, however, to a

Long and Lingering Struggle

Not foreseen at that early date. For some unaccountable reason, partially bassd upon erroneous reports regarding the extent of the vein and the possihle refractory nature of the ore, work was suspended and a feeling of distrust became manifest among a portion of the stockholders residing at a distance from the mine. Efforts have heen made from time to time hy parties interested and who were acquainted with the prospective wealth of the mine, to resume work and develop it to a depth of 500 feet below the present workings, but as often were theee efforts baffled hy other parties holding equal interests; consequently from the time of suspension till the present, no lahor of note has been performed.

Whatever may have been the feeling of distrust pervading the minds of the stockholders on the "western slope," regarding the value of the mine, the dissatisfied sentiment has never ruled in any manner the opinions or actions of those interested whose knowledge of the mine and its value was gained hy practical experience and daily acquaintance during their period nf labor here. Through the efforts of the present superintendent, Wm. Mercer, Esq., who is one of the original locators, a permanent title to the property has been secured hy U. S. patent; this heing the first patent issued to a mine situated in the county.

The office of the company is in San Fransisco, and a re-organization has lately taken place for the purpose of systematio development; the capital stock having heen increased to 100,000 shares. A sufficient amount of stock will he offered for sale, and intended as a working capital, encouraging advances of support having heen made by capitalists who see in this undertaking a rare opportunity for jndicious investment.

The Present Company

Is composed of men who understand perfectly the condition and appearance of the mine, its past history and experiences, difficnlties and dslays. Their re organization which took place on ths 29th ult., is ths signal for a resumption of work upon their property after a monotonous and ill-advised rest of many years, and the owners thereof need havs no fear of a failure as regarding the ultimate value of ths mins. I do not hesitate in the assertion that had the company pursued a systematic course of developmsnt even during the two years since their application was first pending, and explored their mine to a dspth of 500 feet or more, their only rsgret would have heen that the development was not inaugurated earlier. The diminutive shaft below mentioned, together with the surface tunnsl of like proportions, is the only attention, aside from the patent, this truly valuable property has ever receivsd, but it is hoped, now that this new organization has taken place within our State, the directors of this company will evince that spirit of enterprise and interest toward a permanent development of the mine that it so justly merits, and not allow it to remain, as heretofore, the victim of delay, and seemingly abandoned to all interests and purposes.

Had the mine no existing merit the apathy and inattention of the former company could he easily explained; but knowing as they did, its actual value, as shown within their own houndaries, together with the character and quality of the ore daily extracted from the Exchequer, no disinterested person other than that mythical personage—a Philadelphia lawyer—could imagine the reason thereof. The mine is situated directly within the principal mineral helt extending through the county, and although hut poorly and insufficiently prospected thus far, it still maintains the former creditable position held in the earlier days, and will prove itself worthy, if prosecuted and developed with the vigor and system generally shown hy our own local State organizations, of far more support from its adherents than it has ever received in the past.

[Copyrighted.]

Mechanical Ore Concentration and Separation.—No. 3.

(Written for the PRESS by FRANCIS F. M. CAZIN, M. E., Sante Fe, New Mexico.)

Specific Gravity.

The annexed table of minerals, arranged according to their specifio gravity, will show the cases where valuable minerals in their narticlea are not of higher specific gravity than the rock which usually accompanies them in the ore. These cases are seldom and exceptionable.

If, nevertheless, such minerals under application of the proper apparatus give results not in accordance witb general results, this probahly is occasioned by valuable parts being in a state of corrosion from atmospheric influences, and hy the change or deterioratiou of their specific gravity hy atmospheric influences. Snrface ores are likely to disappoint the application of the general rules of mineral dressing to some extent.

Ores may he classsd as, firat, ores of favor able dressing qualities; second, ores of refractory dressing qualities.

To the first class all ores helong which contain no valuable parts, unless they surpass in specific gravity by one unit all other mineral matter in the ore.

Specific Gravity of Minerals and Gangue.

As instances of the first class can he enumerated those in the following table, which shows the specific gravity of each as well as that of the gangue:

Gold (Native)	12.7 and	Quartz	2.7
Silver (Native)	10.5 and	"	2.7
Copper (Native)	8·6 and	"	2.7
Copper (Native)	8.6 and	Granite	2.5 to 3.0
Galena	7.4 to 7.6 and	Baryta	4.2
"	7.5 and	Pyrites	4.2
"	7.5 and	Zinchlende	4.2
"	7.5 and	Fluor Spar	3.1
"	7.5 and	Hornblende	3 to 3.4
"	7.5 and	Dolomite	2.8
"	7.5 and	Quartz	2.7
"	7.5	Calcareous Spar	2.6 to 2.7
"	7.6	Limestone	2.6 to 2.8
"	7.5	Sandstone	2 to 2.6
Cinnabar	6.2 to 10.2	and any of the above quoted rocks.	
Rnby Silver Ores	5.4 to 5.8	and any of above quoted rocks except Baryta. these rocks having a ap grav of	2 to 3.4
Variegated Color Copper Ore	6.0	from rocks of	2 to 3.4
Pyrites of Iron	4.5 to 4.9	from Quartz	2.7
Pyrites of Iron	4.5 to 4.9	from Granite	2.6 to 3
Copper Pyrites	4.2	from Granite	2. 6 to 3
Zinchlende	4 to 4.2	from Calcareous Spar.	2.8
"	4 to 4.2	from Flnor Spar	3.1

Aa inatances of the aecond class (of refractory dressing qualities) can be quoted, ores containing

Variegated color copper orea	5	and baryta	4.2
Fahlerz	4 8 to 5.1	and baryta	4.2
Chlorides of silver	4.7 to 5.6	and baryta	4.2
Iron and copper pyrites	4.2 to 4.9	and baryta	4.2
Zinchlende	4 to 4.2	and baryta	4.2
Malachite	3.6 to 4	and baryta	4.2
Malachite	3.6 to 4	and fluorspar	3.1
Malachite	3.6 to 4	and tourmaline	3to3.2

All ores quoted, as of the first class (of favorable dressing qualities), have been successfully and practically treated, hy the author of this treatise, with the machinery hereafter described.

In order to ascertain whether ores carrying either gold or silver, in connection with base metals and rock, helong to the first olass or not,

A Test by Assay

Will, in all cases, bs the safest. This test should he carried out as followa: Ont of an averags sample of ths ore such particles of rock should he selected as, under a good lens, do not show any particles of metallic matter. What silver or gold such rock will prove to contain by assay, inviaible even under a good lense, cannot he recovsred by dressiug. Thus, ors consisting of argentiferous galena and rock may not carry all the silver with the galena, but partly in such intimats connection with the rock that none of the specific silver combinations can be distinguished under a good lens, and this part of the silver will be inseparahle from the rock by any mechanical cnntrivanca. The test should be completed hy the assay of hard pieces of each mineral consstituting the ore. The same assay as these hard pieces will show approximately will he the assay of properly concentrated material from the ore.

Surface Ores

Having lost hy corrosion, their metallic character (luster, crystallization, cleavage,) do not, therefore, always belong to the second class (of refractory dressing qualities) bnt nnexceptionahly require a more careful treatment on acoount of the corroded metallic matter passing under any and all appliances for breaking the ore at once into the state of fine powder (slimes). In order to concentrate this powder, special and more complicated apparatus are required than for coarser sizes, into which round and natural ores will break.

Ores heing a mixture of only a small percentage of rock, but mainly of pyrites of iron and copper, zinchleude and galena, all of which minerals contain gold or silver ahout evenly divided in value, may be separated by mineral dreasing, but not concentrated, no accumulation of value in any of the separated parts heing the result of separation. Such ores are considered as belonging to the second class and as refractory.

Gems and Precious Stones.

[Written for the PRESS by HENRY G. HANKS.]

K. Agate, Amethyst, Aventurine.

Bloodstone Brazilian pebble, carnelian, cat's eye, chrysoprase, cairngorm, false topaz, heliotrope. jaspar, mocha stone, onyx, praise, rock crystal, siderite, sardonyx, are all varieties of quartz.

Cat'e eye is a translucent vsriety of qnartz, which, when cut, presents a peculiar appearance, supposed to reasmble the eye of a cat, whence its name. This peculiarity is owing to its being intersected hy filaments of asbestos. Cat's eyo is fonud in small fragmeuts in Ceylon, never in pieces larger than a hazelnut. Common varieties are sold for $20 or thereahout, while the best specimens command $100. "Beli oculus" was the ancient name for cat's eye.

Chalcedouy generally takes a mammillary or botryoidal form, often forming a smooth lining of cavities. It is formed hy a gradual deposit from water holding silica in solution. It takes its color accidentally from the substances it is thrown in contact with. The most beautiful color is a delicate pink, which is quite common at Aurora, Esmeralda county, Nevada. Chalcedony is named from Chalcedon, an ancient city in Bythynia, in Asia Minor. This mineral is also found in many beautiful forms at Volcano, Amador county; in Monterey county, near Panoches; on Walker river, Nevada; between Williamson pass and Johnson's river, Los Angeles county. And in many locslities in other parts of the world.

Jaaper is always opaque and of a dull color, taking many colors. It is sometimes striped or clouded. It has a low value, bu: some varieties are very beautiful when cnt and polished. It sometimes occurs in enormous masses; luster sometimes resinous like wax. It scratches glass, but is scratched hy a quartz crystal Some very fine varieties of jasper occur near San Francisco. Jasper is always a metamorphic rock. It is generally the result of the action of heat on sandstone, which has been so changed as to lose the character of sand and become somewhat homogeneous. There ia a specimen in the collection at the Universlty from Knight's Ferry, ahowing the sandstone, one side of which has been changed to jasper. A fine variety of jasper is found near Murphy's Camp. It is of a brown color and beautifully variegated. Jasper under the name of "iaspis" was a favorite stone with the ancients.

Onyx is a variety of agate in which stripes of white and hlack alternate. This stone is used in cutting cameos, the white portion heing cut away so as to leave white figures on a hlack ground.

Siderite is indigo blue. It comes from Salzhurg.

Aventurine is quartz, massive, of a pearly or redish color, and containing thin plates or scales of mica, which give it a peculiar glimmering appearance, which is much admired in cut specimens. It is found in India, Bohemia, on the shores of the White sea, and elsewhere. The hest specimens come from Cape de Gate, in Spain. The artificial aventnriue is far more beautiful than the natural. I find a formula for making it, as foNows: Heat together for a long time, eight parts of ground glass, one part of protoxide of copper and two of oxide of iron, and allow the mixturs to cool slowly. Bnt an artificial productiou, said to come from Japan, is extremly puzzling. In cutting a thin section and examining it under the microscope, the spangles are seen tn be perfect tubnlar crystals. Mrs. Captain Nathan, of this city, has a magnificent specimen of this singular production.

The finest specimens of natural aventurine known, are two largs vases cut from this rare mineral, which were presnnted by the Emperor of Russia to Sir Robert Murchison. They are now in ths Museum of Economic Geology, of London.

The colorless variety of quartz is callsd rock crystal, or Brazilian pehhle; it is very valuable for making glasssa for spectacles, being harder and more durable than glass. A good deposit of this mineral wonld be very valuable. The Japanese excel in cutting quartz or crystal. Most magnificent spheres may he seen in the Japanese stnres cut from rock crystal.

There is a locality near Placerville where this valuable mineral is found, and which should be examined with a view to snpply the market. Good, olear pieces would fiud a ready sale in London or Paris.

Smoky quartz is known in commerce as cairngorm, from a celebrated locality in the Cairngorm mountains, in Scotland. It is common in California. The hest I have seen came from near Placerville.

Mocha-stone is quartz in which is imhedded irregular particles of the oxides of iron and manganese, different from the moss agate before described. It is found in Arabia, and is supposed to take its name from Mocha. Some very peonliar and beautiful specimens have lately heen brought to San Francisco from the Aleutian islands.

Quartz is too soft to rank high as a gem, but some of the varieties are held in high estesm. It is not generally known that a fine amethyst soon becomes dull and almoat lusterless if not often cleaned with soap and water. It is a good rule to wash such a stone frequently, with a small brush, and then to wips it dry with a towel. The more nohle gems do not require so much attention, hut even they may sometimes be so improved.

Centennial Chat.

[Written for the PRESS by MARY MOUNTAIN.]

Ever since I was old enough to understand the word "mummy," I have wished to see the real thing, and whoever enters the main bnilding at the upper end (nearest the gates of main entrance), and goes along the end corridor, will come directly upon the Peruvian department and a large assortment of

Genuine Peruvian Mummies,

Sitting upright in their glasa caaes. To us Americans they ought to he as interesting as the Egyptian article; and judging from the crowds that always surround them, we must conclude that all snch preserved samples nf humanity have a queer sort of fascination for us, mixed up with a feeling of repulsion.

If the pre-historic Peruvians were liable to gray hairs, these dried ones had not lived long enough; for their mnted looks are all of a dull black and give a more ghastly look to the shrunken faces. All the bodies are pitifully small, and confirm ono's notion of a race of pigmies; but here are spread out also the works of their hands; quaint old pottery, fabrics and weapons of war, all indicating a race of average strength and hra'n power.

Some of the heads are well developed and must have carried a fair sized hrain, and in the withered haod of one woman a distaff is held, all ready to start another yarn in case that doctrine ever comes true about the resurrection and quickening into life of the same old hodies. I have heard it said that those races who took so much pains to pressrve their bodies were

Earnest Believers in Resurrection;

But if they conld see themselves now an wretchedly atiff and withered, very likely they would he glad to drop the old creed along with the cast-off hodies and take a fresh start.

From Peru we step over to our near neighbor,

The Sandwich Islands,

And find a pleasant welcome among the beautiful things arranged for our reception.

A lovely, framed wreath of shells and mnssea surround the motto "Aloha America," meaning "Hallo," "Hurra," or any genial sentiment you like hest. The Hawaiian Superintendent of Public Instruction is present to interpret mottoes or explain for visitors any other interesting puzzle. The tasteful arrangement of ferns, mosses, grasses and delicate spatter work gives a cheerful, homey-look to this department; or is it the leather, looking so much like the product of our Santa Cruz tanneries, that made this acene to me such a familiar nook? Surely the leather looks no hetter than our own home made, hnt it has had the enterprise to come over to the great world's fair and so become "distingnished from the common hide." Here are well made saddles tor the islands aud native hoats for the ocean

(Continued on Page 111.)

MECHANICAL PROGRESS.

Bolts and Screws.

C. Fairbairn in the *Foreman*, an English publication, gives some interesting information concerning the manufacture of bolts and screws: Until very recently the whole of the bolts used were made by hand; and at the present time a large proportion of the better class of bolts, such as are used for machinery, are still made in this way. A preference seems to exist among engineers for these bolts, on the principle, I suppose, of being better known and proved. Forging bolts by hand is very similar to ordinary blacksmith's work, except that, there being always the same thing to make, special tools are used. A tool called an oliver is employed, which is simply a hammer, weighing about 30 lbs., mounted on a spindle, on which there is a lever connected with a treadle operated by the foot; this leaves the workman's hands at liberty to strike the heated iron with a small hammer between the blows of the large one, in order to keep it straight while being upset to form the head. When sufficiently hammered the iron is forced out of the die, and the head hammered into shape sideways and finished. A good workman, with a laborer for an assistant at the treadle, will make on an average from one to one and a half hundredweight of small bolts in a day. For large bolts enough of power could not be obtained in this way to upset heavy iron, and in this case a ring of flat iron is welded on the end of the bolt blank, and then hammered into shape.

For the coarser class of bolts, such as fish bolts for railways, etc., where strength is of more importance than superior finish, machines have been in use for some years. They are all of the same type; the bolt blank, being heated at one end, is placed in a die, and the heated part projecting sufficiently to form the head under steel heading tools operated by a crank, the pressure communicated to the header forces the heated iron into shape. It is obvious, however, that when sharp corners are to be produced, as in square-headed bolts, there is invariably a defect somewhere, probably from the sharp corners, as they are being formed, being most likely to cool first. For cup-headed bolts these machines make very fair work, provided always the iron is hot enough.

The defects of the two methods of manufacture are pretty numerous; in hand-made bolts there is the usual difficulty incidental to all hand work, want of uniformity in shape and size, and the quantity made is necessarily small; upon the other hand, the iron, if heated to a welding heat, is better worked by hand than with the machines mentioned above. It may be well to mention here that iron which has been brought to a welding heat, unless well hammered, deteriorates or goes back in quality, and this is a most important fact to bear in mind when manufacturing articles out of the smaller sizes of iron, when the heat is rapidly dissipated. The machines referred to above are not well adapted for this work, because the motion communicated from a crank to a header, either direct or by means of a lever, is slowest when it should be quickest; thus the motion is the reverse of what is required. The crank from the top center to half stroke gives the header an accelerating motion; the header will then have reached the top of the heated iron, to be pressed from this point to the bottom center; the crank gives a diminishing speed to the header while pressing the head into shape. The reduction of speed accruing from the motion of the crank has still another disadvantage; the die in which the iron is placed to form the bolt is usually kept cold by a stream of water playing upon it, and the heated iron is thus kept longer in contact with the cold die than it should be, and the iron has to be overheated in a proportionate degree to be sufficiently soft and plastic to form the head and neck properly; and here we have a liability to have the iron made short and crystalline from being overheated and not sufficiently worked afterwards.

In working small iron rapidity of motion is absolutely necessary, especially when square heads and necks have to be formed from round iron, and the quicker it is handled the better the result obtained. As we know that iron can be made hot by hammering it smartly while cold, so when heated to a high temperature the heat can be retained in the iron longer by working it rapidly. Of course there is a limit to this, and even conditions where it would not apply, as in the case of making a bar of iron longer and smaller, but in compressing iron, as in the form of a rivet or bolt-head, the statement is applicable.

A WEEDING MACHINE.—Our English exchanges contain accounts of a trial of a weed eradicator which took place under the auspices of the Highland and agricultural society. The object of the machine is to remove the weeds which grow among corn crops. A drum, about 24 inches in diameter, is placed between two carrying wheels. Three sets of projecting teeth or iron combs run horizontally along the drum. This, when the machine is in operation, revolves by the action of the gearing, the combs at the same time working in and out of the slits, and over and along the top of the crop. Supposing the ground to be soft, the teeth catch the weeds and pull them fairly out of the soil; but should the soil be hard, as was the case at the trial, and thus have a firm grip of the roots of the weeds, the combs tear off the heads, so that they are prevented from "seeding," leaving the stem in the soil. As the drum revolves and the teeth are drawn in towards the center, the weeds or their heads come in contact with the circumference of the drum, and not being pulled in at the slits are allowed to drop to the ground. The teeth exert little or no action upon the crops, the blades passing between the teeth.

MANAGING BELTS.—A mechanic gives the following directions for managing belts. He says: I have for the last 25 years on every Saturday evening turned the inner side of my engine belt outside, let the engine run slowly, and wash the belt well with warm water and soda, applied with cotton waste. Next I take a piece of sheet metal and scrape the belt well, then wash with clean warm water and dry off. I collect the waste oil from the shafting and apply as much of it to the belt as possible. The washing must be done as quickly as possible, so as not to dissolve the glued parts. I let the belt stand on the pulleys till Monday, then give another scraping and turn the belt as before. I keep the pulleys very clean. I have long been surprised at the economy I have effected within the last 10 years. There is an engine near me 14 inches by 36 inches (mine is 12 inches by 36 inches). I have nearly double the shafting and belt, and my neighbor cannot run with less than 38 pounds of steam when all the belts are on the loose pulleys. Mine will run at full speed with five pounds.

A SHOP COOLER.—To reduce the temperature in a factory in Paris, recourse was some time since had to an inexpensive form of air cooler, described as follows: A thin plate of metal, perforated with holes one-tenth of an inch in diameter, and having a total area equal to one-ninth of the surface of the plate, was set at a slight angle in a tight box; over this plate a thin sheet of water, at a temperature of 55 degrees Fah., was allowed to flow steadily, and by means of a power blower, air was forced into the box below the plate; by its pressure, the air forced its way through the holes in the plate and through the water, and was then led by pipes to all parts of the factory. By this device, the air in the room was reduced to 57 degrees. Other experiments gave varying results, according to the initial temperature of the water, but in each case the apparatus reduced the temperature of the current of air to within seven degrees of that of the water. Steam power is required for the blower, and for the best results, the supply of water must be abundant and its temperature low.

THE RUSSIAN AS A WORKING MAN.—In a paper read before the Paris society of civil engineers on the 5th ult., by M. Sergaeeff, the Russian workmen employed by him (in large soap works) are stated to be of quiet and peaceable disposition. The efforts made in other countries for the establishment of *cites ouvrieres* would have ample success in Russia, owing to the sociable character of the working man. In all large works the master finds his men a large house fitted with dormitories and a bread oven. The domicile is given up to the men, who form themselves into a copartnery and elect a manager who buys provisions wholesale, distributes them retail and gives in a monthly account checked by two auditors. The Russian workman is sober, eats little meat and lives principally on black bread and cabbage. His expenses, including washing, average 12s. a month. He puts by a little money for his clothes and his weekly bath, and sends some 12s. or 14s. home to his family. In the villages a communal constitution is found similar to that which is set up at any large works, and the men, used to obedience, are not scattered and lost among the corrupted masses of large cities.

A REMARKABLE CLOCK.—In one of the French papers we find a description of a wonderful piece of mechanism in the clock line. Here are the particulars: It chimes the quarters, plays 16 tunes, plays three tunes every 12 hours, or will play at any time required. The hands go around as follows: One, once a minute; one, once an hour; one, once a week; one, once a month; one, once a year. It shows the moon's age; the rising and setting of the sun; the time of high and low water, half ebb and half flood, and, by a beautiful contrivance, there is a part representing the water, which rises and falls, lifting some ships at high water tide as if they were in motion, and, as it recedes, leaves these little automaton ships dry on the sands. The clock shows the hour of the day, day of the week, day of the month, month of the year, and in the day of the month there is provision made for the long and short months. It shows the signs of the zodiac; it strikes or not, chimes or not as may be desired; and it has the equation table, showing the difference of clock and sun every day in the year.

RUSSIAN PRIZE ESSAY ON ENGINE AND BOILER MANAGEMENT.—The Russian technical society offers a prize for the best essay on the management of engines and boilers, drawn up in Russian, in a popular style, for the instruction of mechanics, stokers, engine-drivers and others. The mathematical acquirements of its readers are to be supposed as not going beyond a knowledge of the first four rules of arithmetic. Manuscript and printed treatises are equally admissible. The prize will consist of a medal and a sum of a thousand roubles (£154). Essays are to be sent in to the society by September 1st, 1878, at the latest.

SCIENTIFIC PROGRESS.

A Century of Astronomy.

Prof. C. A Young, of Dartmouth college, writes to the *Independent* a sketch of the American contributions to the science of astronomy during the century. We note the leading points as follows:

Since 1776 two great worlds, eight new satellites, 163 minor planets, some 40 periodic comets, and the meteoric hosts have been added to the rolls of our science. The physical connection of double stars has been demonstrated and investigated, the nature of nebulæ ascertained, and a whole body of most interesting facts in relation to the nature and constitution of the sun and stars and planets has been brought to light.

New and more precise methods of computation have supplanted the old. The power of telescopes and the accuracy of angular instruments have been enormously increased, and the art of observation has been correspondingly improved; while new inventions and appliances have opened new lines of research, before unimaginable.

To this great advance our own country has made her contributions. Not so great, indeed, as those of England, France or Germany, nor so great as she ought; but still enough to obtain for her a place and honorable mention in the history of science.

It is only within the

Last 40 Years,

However, that as a nation we have done anything for astronomy. In 1836 the first observatory in the country was built at Williams college; and in 1837 the second, by Professor Loomis, at Western Reserve college, in Ohio.

In the field of theoretical and mathematical astronomy we make, perhaps, the poorest showing. In the department of practical astronomy our record is better. Of the modern improvements in methods of observation, several, and those among the most important, are American. Of these we mention first the employment of electricity and the chronograph for recording the instant of an observation. This electrical method has worked something like a revolution, and diminished the errors of observation at least 50 per cent. in all cases where it is applicable. It is used at Greenwich, Paris, and Berlin—indeed, at all but a very few of the leading observatories of the world. It seems to have been invented in this country by several persons at nearly the same time (about 1848), the names of Walker, Locke, Saxton, Mitchell and Bond being all prominent in its early history.

Another capital improvement, due to American science, is Talcott's so-called "American method of determining latitudes," by means of the zenith telescope, or the ordinary transit instrument, fitted up in the manner first suggested and practiced by Professor Lyman. At present it is certainly more convenient and rapid than any other, and in accuracy superior to all, except the German method of prime vertical transits, which is, perhaps, its equal in precision.

Instrument Making.

In the building of telescopes and optical instruments generally our American makers are, to say the least, unexcelled. The number, magnitude and excellence of the great refractors made by Clark & Sons, of Cambridge, have secured them the first rank among opticians, and their instruments are now found in all parts of the world. The great telescope at Washington, and its sister, the McCormick telescope, as yet unmounted, are the two largest and finest refractors in existence. A few other large refractors have also been made by Fitz and Spencer, among them the instruments which, in the hands of Professor Peters, Watson and Langley, are doing such good work. In the line of reflectors we have done very little. The great Cassegrainian of 28 inches aperture, constructed by Dr. Henry Draper, of New York, is the only one of much power in the country.

As regards the

Number of Discoveries

Made by American astronomers within the last 30 years we stand fairly. In 1848 the seventh satellite of Saturn (Hyperion) was discovered by Professor Bond, at Cambridge, and in 1850 its so-called dusky ring. About a dozen comets have been first seen on this side of the water, and the keen eyes and indefatigable industry of Burnham and others have added some hundreds of double stars to our lists. In the search for asteroids, however, the greatest success has been attained. Of the 163 at present known, 47 were discovered in this country. France also claims 47, Germany 40, England 19, and other countries 10.

In the country we have about

Thirty Observatories,

More or less perfectly equipped, for the most part, indeed, better armed than manned; but among them the great establishments at Washington and Cambridge may be reckoned as two of the most effective in existence, fairly in the same rank with Greenwich, Paris and Pulkowa. Some half a dozen other observatories, also, though not so continuously active, send out good work from time to time, especially those at Clinton, Ann Arbor and Allegheny City.

If we look to the future there is fair ground for hope that our nation during the coming century will assume her rightful place as a cultivator of science. All signs seem to point that way. To be sure, there must first be a great change in the spirit and temper of our students and in the estimate of purely scientific work by the community at large. But the change seems to be already begun. An increasing number of our young men are willing to take the time needed for thorough culture and prefer the pursuit of truth to the getting of money. Some of our men of wealth, also, are finding in science a career and opportunity for honorable distinction more satisfactory than any other.

Lightning Freaks.

On June 7th a violent thunderstorm occurred at Valbonne, a large plain at a little distance from Lyons. The only objects struck were huts full of soldiers and arms, and the occurrence furnishes a good instance of the "power of points" and the attracting power of metals and living beings for lightning. Three tents were struck in succession. The occupant of the first was absent at the moment, and the effects were relatively slight, producing only the breaking of stones and dispersing of dust. In the second instance a soldier who was standing erect in front of one of the tents was struck; but the tent being located in the vicinity of an electric telegraph the lightning escaped by it, fired the wires, and broke a dozen poles. This may suggest a very easy method for protecting an encampment. The third flash struck a number of tents placed in a zig-zag line, doing much damage, several of the occupants being either killed or wounded. In one tent three men were killed and seven wounded. All of them were either touched in both legs or on the right side except one, who was wounded in the right eye. In another tent four men were wounded, all of them in both legs or in the left one. In other instances men were turned round in or heaved out of their beds. In all the instances referred to the men were lying on their beds, made of iron, and the sentry standing in front remained unhurt. In one tent a man, who was lying between two men who were killed, escaped unhurt. The uniforms of the soldiers were perforated and exhibited small spots; one, four centimetres in diameter, entirely sulphurized. A chemical analysis will be made of this part of the uniform, and the result communicated to the academy of sciences.—*Nature.*

A METAL MORE FUSIBLE THAN TALLOW.—M. Lecoq de Boishaudran, whose recent discovery of the new element, gallium, we have mentioned, has recently, for the first time, succeeded in obtaining a grain and a half of the metal in a pure state. This has enabled him to determine the remarkable fact that gallium melts at 85.1 deg. Fah., so that it liquefies when held in the hand. When solid, the metal is hard and resistant, even to a few degrees below the melting point. It can be cut, and possesses a slight malleability. When fused, it adheres easily to glass, on which it forms a beautiful mirror, whiter than that produced by mercury. It oxidizes but very superficially when heated to redness in the air, and does not become volatile. The density at 59 deg. Fah. is 4 7, that of water at 39.2 deg. Fah. being one. Excepting mercury, which only becomes solid at 37.9 deg. Fah., there is no other element which liquefies at so low a temperature as gallium. Fusible alloy of one part lead, one part tin, and one part bismuth, melts at 201 deg., and phosphorus at 111.5 deg. Wax and tallow have melting points respectively at 142 deg. and 92 deg. Fah.

SPONTANEOUS COMBUSTION OF COAL.—While cases of spontaneous combustion in bituminous coal are not of an uncommon occurrence, it is quite rare in hard or anthracite coal. The theory generally entertained is that the presence of pyrites in soft coal presents exactly the desired elements which by oxidation produce heat sufficient to develop combustion. There is every reason to believe that the sulphurets do materially assist in producing combustion, although cases have been found of coal heaps on fire where an analysis of the coal showed but the faintest traces of sulphur. It is now believed that soft coal, like charcoal, when finely divided and damp, absorbs oxygen on exposure to the atmosphere, and forming carbonic acid, develops heat. The inspector of Nova Scotia recommends, then, that coal for long voyages shall be put on board dry and in as large lumps as possible, so that the area of coal surface exposed to the action of the air and moisture may be as limited as possible.

VENEERED DIAMONDS.—Quite a notable industry is now carried on in Paris, namely, the manufacture of what are termed veneered diamonds, the method of production being briefly, according to the following fashion: The body of the gem is of quartz, or crystal, this being considered the hardest and best substance that can be made available for the purpose. Then after the crystals are cut in proper shape, they are put into a galvanic battery, which coats them over with a liquid, the latter being made of diamonds which are too small to be cut, and of the clippings and cuttings that are taken off of diamonds during the process of shaping them. In this way, all the small particles of diamonds that have heretofore been regarded as comparatively worthless, can now, by means of this ingenious French process, be made quite serviceable in the jeweler's art.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to July 20.		1 W'k to July 27.		1 W'k to Aug. 3.		1 W'k to Aug. 10.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	....	....
Advance	....	....	11	....	....	....	....	....
Alpha	41	34	41	37	40	43½	45½	41¾
Alta	....	....	3	....	4½	3	4	3½
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	....	....	....	....	....	....	1¾	....
Andes	2½	2	2¾	2½	2½	2½	2¾	2½
Alpe	1⅝	1	1¾	1⅝	1¾	1⅝	1⅝	87½c
Amazon	....	....	60c	....	55c	....	50c	....
Balt'm'r Con	2	1¾	2¼	2	2½	2	2¼	2
Belcher	17¾	16⅞	17⅝	17	19½	17¼	22	19¼
Belmont	3½	2⅞	3½	3	3	2¾	4	3½
Best & Bel	47½	40	48	44	49	46	50¼	48¼
Buckeye	....	....	....	....	....	....	....	....
Bullion	45	40	43	41	43½	42	48	43
Caledonia	9½	8	9⅜	9¼	10¾	10	10¼	9
California	64⅞	55¼	61½	56⅜	67¾	61¼	66	61½
Challenge	....	....	....	4½	4¾	4½	4	4⅜
Chollar-Potsi	83	71	83	75	101	84	96½	92
Confidence	17½	16¾	17	16¾	17⅜	16¾	19½	18
Con Imperial	5⅜	4⅜	5¼	4⅜	5½	4⅜	5⅜	5
Con Virginia	61½	46¾	58½	53	60⅜	56½	59	56
Crown Point	10	9	10	9¾	12¼	10¾	14½	12¾
Coso Con	30c	25c	35c	30c	35c	30c	30c	....
Daney	....	....	....	....	....	....	....	....
Dayton	....	....	4	....	....	....	....	....
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Empire (Nev)	....	....	....	....	....	....	....	....
Eureka Con	12	10⅞	12	10½	13½	12	12½	11½
Exchequer	16	14	15	14½	16½	15¾	17⅜	16
Enropa	....	....	....	....	....	....	....	....
Gila	62½c	50c	62½c	37½c	62½c	55c	75c	60c
Globe Con	20c	....	30c	....	30c	....	10c	20c
Golden Char	40c	37½c	40c	37½c	50c	40c	45c	10c
Gould & Cur	15	13¾	16	14⅜	17	16¼	17½	16
Hale & Nor	9⅝	8¾	10¼	8¾	12½	10¼	12½	10
Ida Elmore	....	....	....	....	....	....	....	....
Jefferson	....	....	1⅛	....	....	....	....	75c
Julia	8½	6¾	8	7¼	9¾	8¼	9½	8¾
Justice	22	20	25	20¾	26¾	24	25	24
Jackson	2¾	2¾	3¾	3½	3¾	3¼	3¾	3½
K K Con	....	....	....	....	....	....	....	....
Kentuck	11¾	10½	11½	11	13	11½	13½	12½
Knickerb'k'r	25c	....	30c	....	50c	30c	80	62½
Kossuth	1⅝	81½c	1¾	1⅝	1⅝	1⅝	1⅞	1¾
Lady Bryan	8⅜	7¾	8⅜	8	1⅜	1	1	1
Lady Wash	2¾	2¼	2¾	2½	2¾	2¼	2¾	2⅜
Leo	....	....	....	....	1⅜	....	....	....
Leopard	9⅞	8¾	10	8¾	12½	10¾	12	10¼
Leviathan	70c	....	8 c	6 c	81½c	75c	1⅝	1
Mahogany	....	....	....	....	....	....	....	....
Mansfield	57½c	45c	....	....	....	....	25c	....
Meadow V'y	....	....	90c	5 c	65c	42c	50c	....
Mexican	30½	27¾	34½	29½	40	35½	36¾	33⅜
Mides	....	....	....	....	....	....	....	....
Mint	....	....	....	25c	....	50c	25c	16c
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	75c	62½c	1	75c	2	75c	1	95c
Niagara	....	....	....	....	25c	....	23c	....
North Belle	35	27	30	21	21	17	2⅝	2¼
New Coso	2¾	1¾	2¾	2	2½	2⅛	2¾	2⅛
Occidental	....	....	3½	3	4¾	3¾	4	3½
Ophir	47	40½	47¾	44	53	46¼	53⅞	51½
Or Gold Hill	....	....	....	....	....	....	....	....
Overman	68¼	65	75	65	83½	74	83½	77½
Pacific	....	....	....	....	....	....	....	....
Phil Sheridn	....	....	1¼	....	1¼	....	1¼	....
Pioche	....	....	....	....	....	....	....	....
Poorman	25c	25c	....	....	....	....	25c	20c
Prospect	6	5¾	5¾	5¾	6½	6	7½	6½
Prussian	1¾	....	1⅝	1	....	....	....	....
Ray & Ely	8¾	8	8¾	8	9	8¾	9½	8
Rock Island	1¾	1	1⅝	1	2⅜	1⅝	2¾	2
Rye Patch	....	....	....	....	....	....	....	....
Savage	21¼	17	20½	18¼	22½	19½	21¼	20
Seg Belcher	65	....	70	....	80	70	37	79
Sierra Nev'da	14¾	13	14½	13⅞	17½	15⅞	16½	14½
Silver Hill	7¼	6¾	7¼	6¾	7	6	7½	7
Stanford	....	....	....	....	....	....	....	....
Socoor	37½c	25c	25c	....	25c	....	25c	30c
Union Con	11¾	10¾	14½	11¾	16½	15½	15½	14¾
Utah	18	16¾	18½	17	19½	17½	19	18
Wells-Fargo	17½c	15c	14c	12½c	14	12½c	30c	25c
Woodville	1⅝	1¼	1¾	1¾	1⅜	2¼	2¼	1¾
Yel'w Jacket	27¾	24	26¾	25	30	26	32½	30¾

Sales at S. F. Stock Exchange.

FRIDAY, A. M., AUG. 4.

205 Alpha	42@41¾	265 Crown Point	13¾@13½
430 Belcher	22@21¾	530 California	63½@64
35 Bullion	43¼@45	50 Exchequer	16¾
910 Hest & Belcher	50@49	170 Eureka Con	12@11¾
35 Confidence	18@19½	355 Gould & Curry	16¼
1595 Con Imperial	5¾@5¾	500 Globe	12c
70 Chollar	96@96½	568 Hale & Nor	11½@10
785 California	66@65¾	100 Justice	24¼
1975 Con Virginia	58¾@58½	410 Julia	9@9¼
985 C Point	14¾@13¾	100 Knickerbooker	75c
785 Caledonia	9¾@9¾	85 Kentuck	13
330 Exchequer	16@16½	1000 Lady Bryan	1¼@1¼
625 Gould & Curry	16¾@17	1845 Mexican	35¾@34¾
1160 Hale & Nor	11¾@12¾	100 Meadow Valley	0c
785 Justice	24½@23	150 New York	....
280 Julia	9¾@9¾	125 Ophir	52@53
160 Kentuck	13¼@13¼	160 Overman	82@81¾
2350 Lady Bryan	1¼@1¾	25 Raymond & Ely	8¾@8
1310 Mexican	36@36¾	655 Savage	20½@21
1095 Ophir	52@53⅜	460 Sierra Nevada	16¾@15¾
415 Overman	83½@82½	50 Stanford	25c
380 Sierra Nevada	16¾@16¾	80 Sil Hill	6¾
130 Seg Belcher	35@36	170 Utah	13¼
150 Utah	18@18¼	1595 Union Con	14¾@15⅛
1890 Union	15@15⅛	150 Yellow Jacket	32@31
830 Yellow Jacket	31½@3		

AFTERNOON SESSION.

445 Alta	3¼	60 Alpha	42½
170 Am Flag	1	150 Alta	3¾
270 Andes	2¼@2⅜	40 Andes	2¾
410 Baltimore Con	2⅜@2¼	200 Am Flat	1¾
245 Belcher	21¾@19½	410 Best & Bel	48¼@48¾
60 Best & Belcher	48½@48¾	70 Belcher	19¾@20
450 Challenge	4½	10 Bullion	43¾
250 Cromer	2	300 Baltimore Con	2¼
100 Cosmopolitan	45c	50 Confidence	19
450 Con Virginia	58¾@58½	175 Caledonia	9¼@9¾
450 California	65¾@64¾	455 Crown Point	13¾@13⅝
340 Crown Point	13¾@13⅝	605 Con Imperial	5¾@5¾
50 Dardanelles	1	565 Challenge	4½@4¾
350 Eureka Cou	12½	40 Dayton	4
595 Gen Thomas	2	555 Eureka Con	12½@11¾
580 Gilla	62½c	125 Florida	1½
2700 Globe	12c	20 Gen Thomas	2
275 Gold Chariot	45@37½c	2000 Globe	12c
860 Hussy	1¾@1.10	1125 Hale & Nor	11¾@11¾
1225 Hale & Nor	11¾@12	740 Justice	24½@24¾
20 Jefferson	1⅛	900 Julia	8¾@9
90 Jackson	3¼	125 Kentuck	12¾
245 Knickerbocker	.80@75c	125 Knickerbocker	67½
50 Kossuth	1½	800 Lady Bryan	1¼@1¾
140 Lady Wash	2¾	100 Leo	1¾
580 Leopard	11@10¾	2000 Mexican	34½@36
300 Leviathan	1@1⅛	200 Maryland	15c
2850 Maryland	15@62½c	250 N Con Vir	7½c
1400 Mexican	36@36¾	250 Ophir	52¼@51¾
470 New York	2@2¼	50 Overman	80@81
1020 Northern Belle	2¼@2½	100 Occidental	3¾
4 0 New Coso	2¾@3⅛	325 Prospect	6⅜@6
100 Niagara	23c	100 Rock Island	2½
200 Ophir	52¾@52¼	50 Succor	25c
170 Occidental	3¾@3½	80 Sil Hill	6¾
50 Overman	82	575 Sierra Nevada	15¾@15¾
200 Panther	1¾	1975 Savage	20@21
170 Prospect	7@7¼	80 Seg Belcher	35@36
80 Raymond & Ely	8@8¼	2470 Trojan	86c
23 Rock Island	2⅜@2¾	125 Utah	18
10 S V Water	101¼	1925 Union	14¾@15
155 Silver Hill	7¼@7⅜	175 Virginia	2¼
1080 Savage	20@21	690 Wells-Fargo	21½c
690 Trojan	.60@55c	600 Woodville	2@2¼
220 Woodville	1¾	20 West Belcher	2¼
50 West Belcher	2½	1590 Yellow Jacket	31½@32
200 Wells-Fargo	19@12½c		
425 Yard	1¾	AFTERNOON SESSION.	
1360 Yellow Jacket	30½@31		

SATURDAY, A. M., AUG. 5.

145 Alpha	43¼@42¾	110 Alpha	43@42½
260 Belcher	20@21	275 Alta	3¼@3
60 Bullion	43	300 Belmont	2½
120 Baltimore Con	2¼	230 Belcher	19¾
805 Best & Belcher	48¾@48¾	120 Caledonia	9¾
140 Confidence	18@18¼	275 California	62@61¾
1120 Con Virginia	57¼@57½	900 Coso Con	30c
568 Con Imperial	5¾@5¾	1235 Con Virginia	57@56¾
60 Chollar	94@96	325 Con Imperial	5¾@5¾
265 Crown Point	13¾@13½	70 Challenge	4½@4¾
530 California	63½@64	130 Crown Point	13¾@13¾
50 Exchequer	16¾		
170 Eureka Con	12@11¾		
355 Gould & Curry	16¼		
500 Globe	12c		
568 Hale & Nor	11½@10		
100 Justice	24¼		
410 Julia	9@9¼		
100 Knickerbooker	75c		
85 Kentuck	13		
1000 Lady Bryan	1¼@1¼		
1845 Mexican	35¾@34¾		
100 Meadow Valley	0c		
150 New York	....		
125 Ophir	52@53		
160 Overman	82@81¾		
25 Raymond & Ely	8¾@8		
655 Savage	20½@21		
460 Sierra Nevada	16¾@15¾		
50 Stanford	25c		
80 Sil Hill	6¾		
170 Utah	13¼		
1595 Union Con	14¾@15⅛		
150 Yellow Jacket	32@31		

MONDAY, A. M., AUG. 7.

60 Alpha	42½	450 Alpe	1½
150 Alta	3¾	40 Andes	2¾
40 Andes	2¾	535 American Flat	1¾
200 Am Flat	1¾	350 Amazon	50c
410 Best & Bel	48¼@48¾	695 Baltimore Con	2¼@2¼
70 Belcher	19¾@20	305 Caledonia	10⅝@10¾
10 Bullion	43¾	565 Challenge	4½@4¾
300 Baltimore Con	2¼	40 Dayton	4
50 Confidence	19	555 Eureka Con	12½@11¾
175 Caledonia	9¼@9¾	125 Florida	1½
455 Crown Point	13¾@13⅝	20 Gen Thomas	2
605 Con Imperial	5¾@5¾	700 Globe	12c
565 Challenge	4½@4¾	1715 Hussey	1.05@1.10
40 Dayton	4	500 Jackson	3½@3¾
555 Eureka Con	12½@11¾	1580 Julia	9@10
125 Florida	1½	200 Knickerbocker	50@57c
20 Gen Thomas	2	50 Kentuck	12¾
700 Globe	12c	655 Leopard	9¼@11
1715 Hussey	1.05@1.10	150 Lady Wash	2¼@2¾
500 Jackson	3½@3¾	880 Leviathan	91c
1580 Julia	9@10	2000 Mexican	34½@36
200 Knickerbocker	50@57c	200 Maryland	15c
50 Kentuck	12¾	1825 Mexican	33¾@34¾
655 Leopard	9¼@11	1200 Northern Belle	2¼@2¾
150 Lady Wash	2¼@2¾	300 New Coso	2¼@2½
880 Leviathan	91c	50 Overman	80
2000 Mexican	34½@36	295 Golden Chariot	25@20c
200 Maryland	15c	650 Hale & Nor	10¾@10¾
250 N Con Vir	7½c	850 Husse	9¾@1.05
250 Ophir	52¼@51¾	1600 Imperial	5¾
200 Mint	30c	20 Jefferson	90c
1250 Northern Belle	2¼@2½	720 Julia	8¾@9¼
450 New Coso	2¾@2¾	293 Leopard	11¼@11¾
590 New York	1	150 Meadow Valley	50c
100 North Carson	25c	200 Modoc	3¼
100 Occidental	3¾@3¾	865 Mexican	33¾@34¾
100 Panther	1¾	1200 Northern Belle	2¼@2¾
5 Ray & Ely	8¾	300 New Coso	2¼@2½
730 Rock Island	2¼@2⅜	50 Overman	80
120 S Bill	6	130 Ophir	51¾@51¾
470 Woodville	1¾@1¾	26 Gorman	2¾
850 Wells-Fargo	14@15c	10 Raymond & Ely	9
		110 Yellow Jacket	31@31¼

Pacific Board—Latest Sales.

WEDN'SDAY, A. M., AUG. 9.

2'0 Andes	2½@2⅜	290 Hale & Nor	11¾@11¾
50 Belcher	20¼@20½	60 Justice	24¾
240 Best & Bel	48¾@48¾	700 Julia	8¾@8¾
535 California	61¾@62¼	100 Knickerbocker	50c
150 Con Virginia	56¾	400 Lady Bryan	1⅛
320 Con Imperial	5¾@5.10	160 Leviathan	86c
50 C Pt R	31c	670 Mexican	34½@34¾
290 City of Bost	81½c	240 Monumental	10c
925 Crown Point	13¾@13½	160 New York	95c
120 Gould & Curry	16¾@16¾	300 Overman	79
		850 Ophir	53@52¾

MINING STAKEHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Delinq'nt. Sale.	Secretary.	Place of Business.
Alpe S M Co	Ely Dist	9 50	Aug 8 Sept 12 Oct 4	O D Squire	Stevenson Bldg
Amazon Con M Co	Washoe	3 15	Aug 8 Sept 9 Sept 30	J A Ratchert	330 Pine st
Chollar Potosi M Co	Washoe	10 5	June 26 July 28 Aug 16	W E Dean	419 California st
Con Imperial M Co	Washoe	1 25	July 25 Aug 29 Sept 19	W E Dean	419 California st
El Dorado South Con M Co	Nev	10 2 00	Aug 2 Sept 6 Sept 26	W Willis	309 Monigomery st
Empire M Co	Washoe	6 25	June 19 July 25 Aug 15	R E Noyes	419 California st
Florida S M Co	Washoe	5 25	June 19 July 27 Aug 21	L Herrmann	220 Sansome st
Geddes & Bertrand M & M Co	Nev	1 50	July 24 Aug 30 Sept 23	J A Vance	Stevenson's Bldg
Gila S M Co	Nev	1 25	July 10 Aug 19 Sept 14	W A Knapp	309 Montgomery st
Glasgow G & S M Co	Washoe	3 15	Aug 8 Sept 9 Sept 30	J A Reichert	330 Pine st
Golden Chariot M Co	Idaho	17 50	July 11 Aug 18 Sept 8	I Kaplan	Merchants' Ex
Hale & Norcross S M Co	Washoe	51 1 00	Aug 8 Sept 12 Oct 3	J F Lightner	Nevada Block
Ida Elmore M Co	Idaho	20 1 00	June 26 July 31 Aug 21	W Willis	309 Montgomery st
Lady Washington M Co	Washoe	8 50	July 26 Aug 29 Sept 16	D L Thomas	419 California st
Meadow Valley M Co	Ely Dist	12 75	July 21 Aug 29 Sept 25	T W Colburn	418 California st
Mint G & S M Co	Ely Dist	13 25	July 26 Sept 1 Sept 23	J A Farwsather	306 Pine st
North Con Virginia M Co	Nev	4 25	July 27 Aug 30 Sept 18	J Maguire	419 California st
North Dayton M Co	Nev	2 10	June 21 July 31 Aug 18	R S Culverwell	330 Pine st
Overman S M Co	Washoe	35 3 50	June 26 July 31 Aug 21	G D Edwards	414 California st
Phil Sheridan G & S M Co	Nev	5 50	Aug 9 Sept 11 Oct 2	W E Townsend	Nevada Block
Picton M Co	Washoe	11 10	July 13 Aug 15 Sept 2	S Phillips	408 California st
Rock Island G & S M Co	Washoe	11 50	June 26 July 31 Aug 22	J W Clark	418 California st
Sierra Nevada M Co	Washoe	3 1 00	July 18 Aug 23 Sept 12	W E Dean	419 California st
Succor M & M Co	Washoe	15 50	July 11 Aug 14 Sept 1	W E Watson	302 Montgomery st
Utah S M Co	Washoe	13 2 00	July 11 Aug 16 Sept 4	G G Pratt	309 Montgomery st
Yellow Jacket M Co	Washoe	23 1 00	July 18 Aug 22 Sept 22	G W Hopkins	Gold Hill

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Albany Q M Co	Cal	2	3	July 7	Aug 11	Aug 28	W H Widman	414 California st
Antilles M Co	Cal		20	July 7	Aug 6	Sept 8	H M Morgan	207 Sansome st
Aurecla G & S M Co	Nev		1	10 June 17	Aug 5	Aug 25	T S Fitch	240 Montgomery st
Belcher G & S M Co	Nev	2	1 00	July 10	Aug 16	Sept 5	E T Allen	535 California st
Coos Bay Coal M Co	Oregon	4	40	June 20	Aug 7	Aug 15	T P Beach	424 Montgomery st
Coquille Black Sand M Co	Oregon	3	20	June 24	Aug 8	Sept 21	F P Reynolds	111½ Leidesdorff st
Defiance M Co	Coso Dist		50	July 17	Aug 26	Sept 16	W G Hughes	314 Montgomery st
El Dorado Water & D G M Co	Cal	14	1 00	July 22	Aug 22	Sept 7	H Elias	524 Sacramento st
Gen Thomas M & M Co	Nev	2	50	July 29	Aug 9	Sept 21	W Willis	309 Montgomery st
Great Eastern Con Quick M Co	Cal	4	20	July 21	Aug 21	Sept 9	W H Widman	414 California st
Hayward Con M Co	Nev	1	5	July 24	Aug 17	Sept 18	J Gilroy	27 Drumm st
Hurricane M Co	Cal		25	July 7	Aug 8	Aug 26	W O M Berry	240 Montgomery st
Kearsarge Con Quick M Co	Cal		15	July 1	Aug 28	Sept 16	Jas McHaffee	Stevenson Block
Lagunita L & M Co	Cal	6	1 00	July 6	Aug 7	Sept 2	L Leavitt	309 Montgomery st
Montezuma M Co	Cal		25	July 7	Aug 8	Aug 26	W O M Berry	240 Montgomery st
New York Hill M Co	Grass Valley		1	70 July 29	Sept 4	Sept 23	F J Hermann	418 Kearny st
Northerly Five Cent Hill G M Co			75	Aug 9	Sept 11	Sept 28	Warren Bogart	Merchants' Ex
Occidental R, R & M Co	Cal	2	25	July 22	Aug 24	Sept 11	A C Hammond	401 California st
Omega Hale M M Co	Cal	11	5	July 23	July 31	Aug 21	David Wilder	32 Montgomery st
Rattlesnake Quick M Co	Sonoma	Co	4	5 Aug 4	Sept 5	Sept 25	A Baird	304 California st
Renton Coal M Co	Washington Ter		2	1 00	June 5	July 20	Aug 24	T H Henderson 24 Sacramento st
San Jose M Co	Nev		12	5 00	June 13	Aug 16	Sept 11	A Carrigan 107 Front st
Santa Rosa G & S M Co	Washoe		20	25	July 16	Aug 22	Sept 14	J M Gillan 113 Davis st
Table Mt Alpha M Co	Cal		11	10	July 13	Aug 15	Sept 5	L Lewis 309 Montgomery st
Taylor M & M Co	Garden Valley Dist			40	Aug 10	Sept 13	Oct 4	S S Murfey 607 Montgomery st
Umpire Tunnel & M Co	Utah		5	5	June 23	July 24	Aug 14	W W Davis 605 Montgomery st
Vulcan Coal M Co	Santa Cruz Co		1	15	Aug 2	Sept 7	Sept 28	J Greif 636 Washington st
Wall Street Q M Co	Cal		2	30	July 11	Aug 14	Sept 4	D P Bipp 401 California st
Washington Blue Gravel Co	Cal		1	60	00 June 1	July 15	Aug 15	H Steinegger Britton & Rey
Woodside M & M Co	Cal		5	25	June 16	July 17	Aug 17	S M Cutler 226 California st
Young America M Co	Nev		4	10	July 18	Aug 21	Sept 9	R H Brown 426 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Alta S M Co	Nev	W H Watson	302 Montgomery st	Annual	Aug 17
Caledonia S M Co	Washoe	R Wegener	414 California st	Annual	Aug 16
Cerbat Con M Co		T E Jewell	507 Montgomery st	Annual	Aug 14
Empire M Co		Called by Trustees	524 Monig'y st	Special	Aug 15
Nonpareil G M Co	Cal	A DuPrat	302 Montgomery st	Special	Sept 5
Oceanic Quicksilver M Co	Cal	O G Funk	438 California st	Annual	Aug 17
Ragtown Lake M Co	Nev	D Cook	Nevada Block	Annual	Aug 22
Rising Star G M Co	Nev	J W Coppage	330 Pine st	Annual	Aug 12
South Comstock G & S M Co	Nev	J M Buffington	311 California st	Annual	Aug 21
Tintic M Co	Utah	H Clay Miller	310 Sansome st	Annual	Aug 14

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alpe S M Co	Ely District	O D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	June 19
California M Co	Washoe	C P Gordon	Nevada Block	2 00	July 11
Consolidated Amador	Cal	F B Latham	426 California st	25	July 8
Con Gold Hill Quartz M Co	Washoe	S Wegener	414 California st	25	April 17
Cons Virginia M Co	Washoe	A W Havens	Nevada Block	2 00	July 11
Comanche M & M Co	Nev	W W Traylor	Nevada Block	25	June 19
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	2 50	April 11
Empire M Co	Sierra Co Cal	Chas Collishonn		5 00	Mar 15
Empire M & M Co	Washoe	W A Dean	414 California st	25	April 17
Imperial S M Co	Washoe	W E Dean	414 California st	25	April 17
Northern Belle M & M Co		W Willis	309 Montgomery st	1 00	July 15
St Patrick M Co	Cal	D F Verdenal	409 California st	30	Mar 10
West Comstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Feb 24

10 Prospect	7	500 Gila	65@62½c
350 Rock Island	2@2¼	400 Gold Run	7@7¼
50 S Nevada	15¼@15¾	500 Hussey	1@1.05
230 Savage	20¾@20¾	10 Hale & Nor	11
4200 Trenton	2@2¾	45 Julia	9¼
100 Trojan	80c	50 Justice	24¾
400 Twin Peaks	1¾@1¾	300 Lady Bryan	1¼
50 Union	14¾	1057 Leopard	11¾@11¾
225 Woodville	1¾@1¾	90 Mexican	34@34¾
220 Yellow Jacket	31¼@31	100 Mansfield	2½
AFTERNOON SESSION.		400 Monumental	9@8¾
14 Belcher	20¼@19	10 Meadow Val	50c
700 Coso Con	25@30c	200 New Coso	2¼
780 Con Reforma	45c	200 Northern Belle	2¾@2¾
105 Crown Point	12¾@12¾	20 Ophir	52
125 Caledonia	9¼	50 Panther	1¾
340 Con Virginia	58¼@56½	20 Ray & Ely	9
445 Con Imperial	5¼@5.10	108 Savage	20¾
15 California	61½@62	100 S Barcelona	4½
5400 Europa	2½	400 Trojan	85c
10 Eureka Con	12	100 Wells-Fargo	20c
50 Gen Thomas	2¼@2¼	20 Yellow Jacket	31¾
250 Globe	16c		

California Board—Latest Sales.

WEDN'SDAY, A. M., AUG. 9.

5 Andes	2¾	300 Twin Peaks	1¾
1000 Amazon	42½@40c	750 Trenton	2¼
1'0 Alpine	2¼	250 Union Flag	1¼
2000 Baltic	15@20c	50 Union	14¾
30 Bullion	43	950 Wells-Fargo	37½@37c
435 Con Imperial	5¼@5.15	100 Woodville	1¾
20 Con Virginia	57	10 West Belcher	2
100 Coso Con	30@29c	AFTERNOON SESSION.	
600 Columbia	62½c	300 Amazon	40
100 Caledonia	9	30 Adams Hill	15
100 Cosmop	30c	30 Alps	1
80 California	62¾@62	100 Baltic	1⅞
200 Crown Point	12@12¾	10 Coso Con	30c
25 Exchequer	16¾	10 Con Imperial	5¼
150 East Crown Pt	1	400 Ely	2
600 Globe	16@20c	500 Golden Chariot	25c
106 Gen Thomas	2¾	3500 Globe	18@18c
200 Gila	72½@75c	10 Hale & Norcross	11¾
50 Hussey	1.10	910 Hussey	1.05@1
300 Jenny Glynn	2¾	725 Jenny Glynn	2½@2¾
100 Julia	9¼	60 Julia	8¾
20 Justice	24½@24¾	150 Knicker	67½c
250 Kossuth	1½@1¾	370 Kossuth	1¾@1⅝
77 Knicker	67½@55c	50 Leopard	10¾
2 0 Leviathan	90@87½c	930 Lady Bryan	1.20@1¼
250 LadyBryan	1¾@1.20	100 Mansfield	2½c
10 Mexican	34½	100 Monumental	9¾@9¾
500 Mint	27c	1000 Niagara	21½@20c
540 Monumental	15@9c	200 N Coso	2¾@2¾
300 Niagara	20c	1500 Oregon	81½c
50 Northern Belle	2¾	50 Picton	2½@2c
200 New York	87½c	200 Phil Sheridan	1¼
200 Oregon	81½c	120 Prospect	7@6¾
60 Ophir	52½	1150 Rising Star	33@50c
100 O G H	75c	65 Silver Hill	8
100 Phil Sheridan	1¼	1000 S St Louis	62½c
40 Prospect	6@6¾	50 Succor	21½c
50 Picton	1¼	2700 Superior	12@8c
700 Superior

New Incorporations.

Tha following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

AGENDA M. Co.—Aug. 5th. Location: Butte county, Cal. Capital stock, $10,000,000. Directors—Silas Selleck, Daniel E. Hays, H. B. Congdon, Jas. Speers and Wm. Cooper.

LEXINGTON CON. M. Co.—Aug. 5th. Location: Gold Hill, Nev. Capital stock, $10,000,000. Directors—John Hagin, John F. Meagher, George W. Hayes, C. B. Edwards and H. W. Black.

KENTUCKY RINOR M. Co.—Aug. 5th. Locatinn, Nevada county, Cal. Capital stock, $3,000,000. Trustees—B. A. Becker, Martin Jones, James E. Byrne, G. S. Johnson and Joseph Snyder.

CENTENNIAL M. Co.—Aug. 8th. Location: Placer county, Cal. Capital stock, $1,000,000. Directors—John Keiser, John M. Greenleaf, William Edwards and E. G. Hinkley.

RESUMPTION G. & S. M. Co.—Aug. 9th. Location: Nevada. Trustees—John H. Thomas, O. C. McCracken, R. W. Jones, Mark Shephard and W. S. Foster. Capital stock, $10,000,000.

PYRAMID LAKE M. Co.—July 26th. Locatiou: Nevada. Capital stock, $10,000,000. Directors: Seth Cook, Daniel Cook, W. F. Myers, Wm. M. Lent and F. Osbiston.

MELBOURNE M. Co. — Location: Nevada. Capital stock, $10,000,000. Directors—Oscar R. Jones, E. R. Warsaw, S. N. Putnam, R. G. Bush and E. F. Stone.

PINE LOG C. M. Co.—July 24th. Location: Tuolumne county. Capital stock, $3,500,000. Directors—T. Don Carlos, Columbia, Cal; Ashor S. Taylor, John A. Robinson, William Walsh, S. E. Holcombe, San Francisco.

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR.

RICH CLAIM — Amador *Ledger*, Aug. 5: G. W. Kling has owned a mining claim at Amador City, adjoining the Keystone, for many years. The rightful ownership has been tha subject of dispnte for a long tima, involving Kling in considerable expense. He has now, however, obtained a clear title to the property, and contemplates an earnest prosecution of work forthwith. He was offered $32,000 a few days ago for one-half interest in the mine, which he refused. The claim has nht been developed to any extent. A body of ors, we believe has been struck, but the value of the property arises from its proximity to the Keystone, and tha fact that a rich ore body has been worked in tbs Keystone to the boundary line of Kling's mins.

THE PHŒNIX MINE.—Men are now at work putting in 20 additional stamps to the Phœnix mill, which will bring it to 80 stamps, giving it a crushing capacity of 160 tons of rock per day, which as far as we know, is equal to any mill in the State. The mine is able to keep this enormous crushing power constantly at work. The outlook for the town of Plymouth is particularly bright. The development of the Phœnix is every now and then damanding the employment of more men about the mine, and so stimulating business of every kind.

THE BONANZA MINE.—It is with pleasure that we are able to state that this mins—the hope of Drytown—is developing finely. The result of the recent sinking operations has exceeded the sanguine expectations of the owners. The shaft is now down about 120 feet, and the ledge has widened to between eight and ten feet. The rock is estimated to averege at least $10 per ton. We are told that in the light of a candle the free gold may he seen shining along the sides of the ledge. The 10 stamp mill is kept constantly running, crushing about 20 tone per day.

EXTENSIVE OPERATIONS AT VOLCANO.—Amador *Dispatch*, Aug. 5: We nnderstand that the Water company of Volcano are now making arrangements for the extensive working ont of the bottom of the Volcano flat. It will reqnire a large amount of capital to effect this proposed work, but if it is carried out there is but little doubt but what it will bring a return of old '49 days to the crator town, and prove very remunerative to the projectors.

BUTTE.

A LUMP.—Croville *Mercury*, Aug. 4: Ons day last week while the men were at work in Hendrick's claim they washed out a lump of gold valued at $100. Many beautiful pieces of gold are taken out of this claim. Befors the bedrock is cleaned up the coarse gold is scattered about on every sids, a rich and most beautiful sight.

GOLD.—C. P. Powers cleaned up on the West claim one day last week $1,950 after 20 days' run of ebont 10 hours each day. It is an easy mattor to guess jnst what thia claim will pay, its returns are so constant. A day more or less in the running time will show tbs same result at the clean-up.

HEAVY YIELD.—On Saturday last, Col. Abbey, of the Spring Valley compsny, witb a small detachment of men armed to the teeth, arrived in town from Cherokee, bringing two gold bricks, valued at $60,000, the result of a clean up after a run of 25 days. Tbis is about the same amount that was brought in less than a month ago from the same mines. It is doubtful if there is another mine in the State where ths returns are more constant than at Cherokee.

RIVER MINING.—A company bas been formed for the purpose of mining the bed of Feather river, where former operations showed the deposits to be very rich, the ground of the company embracing the old and famous Cape claim of 19 years ago. The present company propose to rock the deposits in the bed of the river, not by building a furnace, as river mining was formerly carried on, but by commencing a shaft on the bank of the river at a point opposite the last and richest workings of the former claims and above high water mark, and sink the same below the bedrock underlying the original gravel bed of the river; to run on upward incline drift from the bottom of the shaft throngh the bedrock into the gravel bed, and then along on the surface of the bedrock where the most valuable deposits are alwaya found. The company claim the bed of the river for ons and one-half miles above the Oroville bridge. Tbs capital stock is $5,000,000, divided into 100,000 abares.

CALAVERAS.

PROGRESS AT THE LAMPHEAR.—Calaveras *Chronicle*, Aug. 5: The new pump at the Lampbear mino was put into the shaft and set in motion last Monday. Everything works splendidly, and taken altogether there is not a more snbstantial, better constructed piece of machinery in tbe county. The pnmp, which is a six-inch Cornish, with a four-foot atroke, is of sufficient capacity to admit of sinking to any deptb desired. Tbe mine was freed of water Tbursday, and it is expected to complete some little necessary repairing to the shaft by Monday, when sinking will be commenced. Messrs. Reed, Maloney and O'Neil have contracted for sinking the shaft 100 feet despar, wbicb will meke it 200 feet in all. Tbe mine is now well supplied with all the appliances necessary for working to advantage, having separate hoisting and pumping machinery, and we confidently look for developments of a favorable character in the near future. Tbe machinery lately erected was put up under the snpervision of Mr. John Rider, and the satisfactory manner in which it works adds to his reputation as a first-class mechanic.

HAULING ROCK.—Tha work of hauling rock from tha Quaker City quartz mine to the Lamphear mill has been commenced. A contract has been let for delivering 500 tons.

UPPER COUNTRY MINING JOTS.—Champion, at West Point, sinking. Shaft down 208 feet. Ledge, two feet thick. Tha richest ore ever taken from the ledge is now being mined. Reports from the Bliss Rica continua favorable. Splendid ore is being taken out and the prospects that the pay chute is extensive are favorable. The new mill at the Josephine will be ready to start next Monday. A large quantity of first-grade ore is on the dumps. Fields & Co. have resumed work. At Mosquito, Garland's mill is still running on rock from the Stockton mine. A new pump has been put into the San Bruno and the water taken out of the shaft. Active operations are to be pushed forward. Good ore continues to be taken from the Lewis & Fairchild mine, in tha vicinity of Alabama hill. The prospects of the mine are first-rate. The pump in the Grasshopper broke Thursday, necessitating suspension of work until another casting could be procured.

INYO.

ECLIPSE MILL AND MINE.—Inyo *Independent*, Aug. 5: Since our last mention thereof, there has been added to the Eclipse property extensive water works, which are intended to protect the mill from fire as well as to supply the surrounding buildings and provide for some irrigation. It is forced into a tank extending entirely across the extreme top of the mill, 60 feet in length. This is fitted with plugs and a supply of 2-inch hose, by means of which any part of the mill can be deluged. The mill fixtures have been improved by the addition of machinery for the saving of free gold. An extra boiler has been put in for steaming the amalgamating pans, a thing more essentially necessary in cold weather. The works will resume operations about the middle of the month, and from the improved appearance of tha ore now being extracted from the mine, the most satisfactory results are anticipated.

THE KEARSARGE.—Quite an exciting strike was made in the Kearsarge mine this week. This was the opening of a body of ore assaying no less than $2,000 per ton. Our only information as to its extent is that it is "a large body." The mill has not yet started up on a regular run, but will in a very short time.

THE HOLT MINES.—The prospects in one of the mines Mr. J. H. Holt is operating upon on the east face of Kearsarge mountain, near the summit, are very fine. This week they opened an eighteen inch ledge, assaying from $500 to $600 per ton. Kearsarge mountain will bloom yet.

LEE DISTRICT.—*Coso Mining News*, Aug. 5: From Mr. Pater Taylor, superintendent of the Emigrant mining company, we learn that work is steadily progressing and the prospects looking brighter every day. The ore now being taken from the center shaft, near the cabin, is richer than any yet taken from the mine, while on the north shaft the ore will average $500 per ton. Thirty-seven tons now ont on the dump of this shaft is pure, black, brittle silver and not a dozen shovelfuls of waste. As soon as the shaft is down 75 or 100 feet, a drift will be run connecting both shafts, when great developments are expected. We also learn that plenty of water has been struck to run a 20-stamp mill. It will be no trouble to bring the water to the mine, and steps will immediately be taken to lay pipes carrying between five and six inches of water, when we anticipate large shipments of pure bullion.

EAST MODOC CONSOLIDATED.—We are informed that Mr. Walsb, superintendent of the East Modoc consolidated mining company, will arrive in a few days and start work on this company's mines. Mr. Walsb is a scientific and practical miner.

NEW SUPERINTENDENT.—Archie McDonald will arrive from San Francisco in a few days and go to Lee district to superintend the South Emigrant consolidated company's mines.

MENDOCINO.

GOLD NEAR UKIAH.—Mendocino *Dispatch*, Aug. 5: It's no new thing to bear about gold near Ukiah—at Calpells some few miles above our town—as gold was taken out of the ground there frequently, several years ago, at ons time in some paying quantities. But a new move has been made, and we understand things are now in such a shape that water will be brought to the gold section and everything done to work the diggings to some purpose. Quite a little excitement bas started up, and the lately sleeping and quiet town of Calpella begins to exhibit signs of a great awakening and noise and bustle. A new hotel building is in progress of erection, property is finding purchasers, and visitors are looking at and talking of the prospects. We wish the new move good speed and success, for while such result would immediately benefit Calpella and vicinity, it would largely help Ukiah and its surronndings. Parties acquainted with this gold section express the belief that it is extensive, and only requires water, a scarce article there part of the year, to make it pay out well. We hear that an expert bas been examining and reporting favorably; that new parties, in connection with Mrs. DeWolf, are taking an interest in the new movement; that a lerge amount of lumber has been spoken for; that a ditch or flume of some miles in length is to be made to furnish water; and that a large amonnt of work is to be started and pushed forward. We do not vouch for all this, but it's a matter of certainty that there's gold there, from what we hear a good showing of it, and the move to open it up and bring it into use seems to be a live one. Outsiders need not be in a hurry to rush in yet though, but bad better wait for a little more information.

MONO.

BENTON.—Cor. Inyo *Independent*, Aug. 5: Mr. Hoyt bas been appointed superintendent of the Indian Queen company, and arrived in town yesterday. This company suspended milling operations about two months ago, but will resume work next week, under very favorable circumstances. The operations will probably give employment to all the idle men now around our town. The Comanche company is doing well; the value of its bullion shipments amounts to $1,200 daily, with a certainty of increasing that average during this month.

PLACER.

MINING ITEMS.—Dutch Flat *Forum*, Aug. 3: As stated in our last issue, the water season is fast drawing to a close. Only a few claims continue washing, and the miners are already commencing to rig for the next season. The Polar Star claim runs during the daytime, and the same head of water is used nights by the Minera ditch company and Staple Bros. The Franklin, Lacamp and Boston are washing a few hours each day. The Indiana Hill and Cedar claims, at Gold Run, continued washing till Monday morning, at which time they both turned off to clean up. The Yankee tunnel is still being worked with vigor. The tunnelers had worked about 10 shifts, fired nine face shots and advanced 28 feet; making a total for the month of 46 shifts, 37 face shots and an advance of 160 feet. The total distance run to date, from the mouth to present face, is 1,666 feet; the distance yet to be run in order to reach the Baker shaft is 866 feet. The Baker, or third shaft, which bas been worked thus far by one shift of men, is now being sunk more rapidly, as three shifts were set to work on the 1st.

TAYLOR MOUNTAIN COAL.—Sonoma *Democrat*, Aug. 5: The work of prospecting the coal discovery in Taylor mountain, near Santa Rosa, has been vigorously pushed during the past month. We are glad to say that it is now almost certain that the coal exists there in paying quantities. The incline is into the hill to a depth of 85 feet, and the width of the vein at that depth is eight feet. Samples taken by us yesterday from the shaft are superior to any before obtained. It is a lignite of very superior quality, with now and then a strata through it of true mineral coal, which makes an excellent coke. If, as not at all unlikely, the lignite turns at greater depth to a true coal vein, the discovery will be the most valnable yet made in this line on the Pacific coast. Some of the best quality was retorted in the coal-gas works of this city with unexpectedly favorable results. We await with lively interest further development.

TULARE.

PLACER MINES.—Visalia *Delta*, Aug. 3: Considerable excitement prevails in Visalia over the reported discovery of rich placer diggings on Mill creek, about 40 miles from town. As is nenally the case, various wild runiors are afloat concerning the richness of the discovery. Some 20 or 30 of our citizens have gone with the crowd, but none as yet have returned to confirm the reports. So we must await for more definite information before entering into detail. The N. E. tunnel and smelting company promises the miners of Mineral King to have a smelting furnace in operation sometime during the present month. This is the one thing needful in order to prove the value of these mines. It must be demonstrated that the ore can readily be reduced by some practical process, and that process must be determined before the mines will assume any real and permanent importance.

TUOLUMNE.

HYDRAULIC MINING. — Cor. Tuolumne *Independent*, Aug. 5: The Remington mining claim, at Yankee hill, is in full operation, working night and day. This is the most extended hydraulic mining operation ever carried on in this district before. The company are washing gravel which could not be made to pay, worked upon that system in which the placers here have been worked heretofore. Therefore, if this proves a success, we may be correct in saying that there are acres of unbroken hills scattered over our county, containing large deposits of gravel, that will pay equally as well, if not better, than the ground the Remington company is now working, if worked in the same manner. When a man is heard to express a belief that there are tons of gold stored up in the hills and mountains of Tuolumne, that man is set down as being insane and a fit subject for the lunatic asylum. But we think this character of men about as insane as Gen. Sherman, when he quit his peaceful vocation at New Orleans and started for the war, saying, "Let us have 1,000,000 of men in the field—they will be needed to crush out the rebellion."

Arizona.

MORE BULLION.—Arizona *Miner*, July 28: Col. Bigelow and Mr. Mulvenon brought in from the Turkey Creek furnace, on Wednesday, 116 pounds, avoirdupois, of refined silver bullion, unassayed, but evidently considerably finer than .900, taken from a portion of the ore from the Peck tunnel. We saw this bullion in two *planchas* at Andara & Rowe's store.

A NICE PROSPECT.—Dan. Hatz, yesterday, showed us a prospect which he horned out of a pound and five ounces of rock taken from the south drift of Willis & Co.'s 65-ft shaft on the Victorine, on Oroom's creek, that excelled any thing we ever saw, in quantity of gold in proportion to the amount of rock, unless it was some picked specimens that showed a large amount of gold on the surface. This was rock broken right ont of the ledge by Dan. himself, and not selected.

PARTIES lately returned from Big Bug, Lynx and Groom's creeks, report the miners all in high spirits, though water is low. They say the Messrs. Elliott have struck a bonanza in the Accidental mins, on Lyon creek. Some parties, whose names we failed to learn, have lately discovered a ledge on the Verde road, a short distance beyond the slaughter house, and are taking pay ore out of a shaft they are sinking by the roadside. The ore is free gold and very rich. The ledge has been driven over for years by those driving in and out of Prescott on this road. Mr. Dills is in from the Peck mine, and reports the prospects fully up to anything hitherto shown in that wondor of richness. Mr. George Opdyke also writes to members of the company here, that it is rather improving than otherwise, in the quality and quantity of rich ore that is coming out.

Idaho.

ALTURAS ITEMS.—Cor. Idaho *Statesman*: The different quartz companies are working with their usual energy and perseverance, fully determined to show to the world the immense wealth of these Atlanta mines. Since my last letter, James Baxter & Co. made a very rich strike in the Leonora. I examined some of the ore, and without fear of contradiction say it is the richest gold rock discovered, with my knowledge of the many rich strikes in the Alturas mines. The Buffalo mill and furnace are on the road from Kelton and will reach the bar in about two weeks. In a few days the company will have a force of men repairing the old road, there is nothing doing to the new wagon road, as yet it is very doubtful if anything further will be done this year. We regret this very much as it is of the greatest importance to me. The old pioneer and locator of the Atlanta mine, Mr. John Simmons, cleaned up from the spring run in his placer claim about 500 ounces of gold dust.

NOON YIELD.—Mr. George Richardson came in from Atlanta Wednesday night. He has been at work on the Last Chance lode since the 7th of January up to the same time in May under a lease. He has worked equal to five men during this time; sometimes four and sometimes six men. They have taken out 22½ tons of rock, which has been crushed by Col. Baxter in the old Mattingly mill. The Colonel has given this mill a thorough overhauling and it is now doing good work. The 22½ tons yielded $2,800. Besides this, they took out rich specimens and pounded them up in a mortar and got $2,000 more, making in all $4,800. The lead runs from two inches to a foot in width. It pays about as much, four inches in width, as it does a foot wide. Judge Heath and the Newton boys, owners of the lead, are now working it. They are down 100 feet. Mr. Richardson says it is the best poor men's lead in the camp, for the rock is easily reduced and they always make more than expenses. Col. Baxter works this rock within eight per cent. of its assay value, and all the rock he works gives great satisfaction.

Montana.

GLEN CONCENTRATING WORKS.—Butte *Miner*, July 27: The Glen contrating works started up yesterday as an experiment, and concentrated nine tons of low grade copper ore taken from the Hattie Harvey mine, into three tons. This is good news to the many who are interested in the copper mines of this camp, as their dumps, containing large quantities of ore running under 20 per cent. copper will now become valuable, while heretofore it has been considered only as a waste.

SUSPENDED OPERATIONS.—Within the past few days two of the best mines in Butte have, for want of a market to dispose of their ores, closed operations. The Hattie Harvey copper mine—one of the richest and most thoroughly developed leads of its character in this camp—after spending a large amount of capital and labor in sinking and timbering a shaft, in running levels and connecting them by a winze, and in taking out nearly 1,000 tons of ore; besides erecting the necessary buildings at the mouth of the shaft and in putting up a whim, have now discontinued work until the ore already upon the dump can be sold. The moment a market can be found, this mine, in its present condition, could raise to the surface from 10 to 12 tons of ore daily. The other mine, the La Plata, is a silver-bearing lead. This lead, after being pretty thoroughly developed by sinking of shafts, running levels, etc., in the accomplishment of which it has been demonstrated that the ore showing is greatly above the average, while in spots there has been found, taken out and sold, some quartz that sampled nearly $500 to the ton, has, owing to the reason above given, and to the consequent small inducement offering to continue operations, ceased work, with a large supply of high grade ore on the dump. This company being perfectly independent and free from debt can afford to wait until mills are erected or increased facilities for shipping have been secured, but the general effects resulting to the camp will be bad.

Nevada.

BELMONT DISTRICT.

EL DORADO SOUTH.—Eureka *Sentinel*, Aug. 4: A gentleman just arrived from Belmont reports an immense strike in the El Dorado South. The whole district was in a blaze of excitement over the discovery. Our informant says the mill of the company went into operation a week ago. If this information is correct, lively times in Belmont may be anticipated before long.

CORNUCOPIA DISTRICT.

PROSPECTS.—Cor. *Silver State*, Aug. 5: Our town is improving, and things look now as though we might have a good cramp. Money will be easier after the 10th or 12th—next pay day—The Leopard company have struck it big, and their mine will prove one of the largest on the coast. They have enough good ore now out and in sight to run the mill a year. Contracts have been let so they can work on wood instead of sagebrush all next winter; and if bullion gets up to par you will see more money in this camp than there has been for a long time. The other mines are prospecting well. I saw Geo. W. Tucker, an old prospector, in this section. He is working the Fissure, and tells me it is looking splendidly. Most all the boys are getting their Ebenezer up, and have gone to work with a will, as they think ont dark days are over. I hope so—for all know we have had dull times long enough.

ELY DISTRICT.

LOCAL REVIEW.—Pioche *Record*, July 30: Owing to the closing down of the Alps mill and the Raymond & Ely mill not having started, the bullion shipments for the past week only amounted to $1,584. The stoppage of the Alps mill was caused by the Raymond & Ely pump ceasing to run. It stopped for various repairs, and it will probably be a week longer before the pump will be again started to work. In the Raymond & Ely mine prospect work on the various levels is still continued without variation, and will so continue for the present without developments are made above the water level. The Meadow Valley hoisting works are progressing as rapidly as possible, the appearance of the work in progress and the number of men at work, presenting the appearance of a beehive to the spectator. Chloriding in the mine still continues without apparent change. The main shafts of the American Flag and Pioche mines are being sunk pretty rapidly, but as yet have developed nothing important. The Alps mine is extracting ore, but it is not shipping any bullion owing to the mill being closed down. The Huhn & Hunt and Washington & Creole mines still continue working with their same force of men and are doing fair in the extracting of ore. In regard to the smelting furnace to be built by the citizens, no further progress has been made than the subscribing of $5,000. A project is now under way to build a furnace and concentrator at Bullionville, for the purpose of working the tailings of the Raymond & Ely company at that place. Good business men have the matter in hand and will push it through to completion and success. The present outlook of mining affairs present a dull front.

EUREKA DISTRICT.

THE RICHMOND YIELD.—Eureka *Sentinel*, Aug. 2: It affords us much pleasure to be able to state that the Richmond is one of the most productive mines in Eastern Nevada. Glancing over the Assessor's books yesterday we ascertained that the gross yield for the quarter ending June 30th, was $215,582, returning a net profit of $56,222.73. This was the result of less than two months' smelting, as the furnaces were not all set in motion until after the beginning of May. With the present immense bodies of high grade ore in the mine we may reasonably expect still better results in the futurs.

HAMBURG MINE.—A few days ago the air became so bad at the ore body in the Hamburg mine that it became necessary to run a drift connecting the chamber with the south shaft for the purpose of ventilation. The connection will be made in a few days, when the work of taking out ore will be resumed. There are already about 200 tons of high grade ore on the dump. With the exception of the three prominent mines on Ruby hill, the Hamburg promises better than any mine in the district.

ADAMS HILL.—The work of sinking the main shaft in the Wide West is progressing steadily, and a prospecting drift is being run north at the 300-ft level. The shaft is down 370 feet, and the drift above mentioned is in vein matter the entire distence with occasional bunches of ors, which indicates close proximity to a chimney.

SPANISH BELT DISTRICT.

QUICKSILVER.—Belmont *Courier*, July 29: The quicksilver discoveries of which we spoke last week as having been made in Spanish Belt district seems to be of more importance than was at first supposed, though nothing has been done yet in the way of actual development. Seven locations have been made of 1,500 feet each. On the Discovery claim (the Alahama) and the adjoining claim (the Sally Ann) the lode is from three to five feet in width, with an ore streak from six to ten inches in width. The highest essay of the ore, which is a true cinnabar, yet obtained is 15 per cent. and a fraction, and the average about eight per cent. All the essays so far have been made of float ore and croppings. Float and small streaks of ore have been found at various points for more than a mile from the Discovery claim. Those who are familiar with quicksilver mines and their characteristics assure us that all the indications are favorable.

WASHOE DISTRICT.

HALE & NORCROSS.—Gold Hill *News*, August 3: The old pumps have been taken out and the new ones put in to within 300 feet of the surfaces. This finishes the shaft work up to that point, so that it will not now take long to complete it to the surface. The new boilers are inclosed, and the steam connection being rapidly made with the pumping engins.

NORTH CON. VIRGINIA.—The erection of the new pumping machinery is progressing at a very favorable rate. Nearly all of the machinery is now on the ground and is being placed in position ready for use. The drain tunnel is also making good progress and is rapidly approaching the shaft.

JUSTICE.—Daily yield, 75 tons of ore. The ore breasts and stopes continue to yield fine ore. The east cross-cut on the 800 ft level is showing much more favorably, and there seems but little doubt but that the ore body will be developed much more extensively than on the levels above.

SAVAGE.—Taking out the old pump columns and inserting the new is going steadily ahead. Considerable trouble is being experienced in straightening and repairing the shaft before the new pumps can be properly placed. The new pumping engine has all the steam connections completed, ready to turn on steam whenever the pumps are prepared for work.

CENTENNIAL.—Work was resumed on this mine this morning, after some months suspension, on account of the general depression in mining matters.

LEVIATHAN.—The new hoisting engine is working splendidly. The new blower for driving air into the lower levels of the mine is completed, and is also working finely.

BELCHER.—Daily yield, 300 tons of ore. The ore breasts continue to yield well. The prospecting drifts in the southern portion of the mine are steadily advancing, with much more favorable indications than for some time past. The erection of the new pumping machinery is also going rapidly ahead.

CHOLLAR-POTOSI.—Daily yield, 100 tons of ore. The

assay value of the ore is about $32 per ton. Sinking in the main incline is steadily progressing at the rate of three feet per day.

PHIL. SHERIDAN.—Shaft down 274 feet. The flow of water is still quite strong. The ground at the bottom works well.

CONSOLIDATED VIRGINIA.—The extraction of ore for the past month has been light, owing to the extension of the main shaft from the 1500 down to the 1550-ft level, the repairs that are being made in other portions of the mine, and the want of greater milling facilities. The results, however, are amply sufficient to insure the payment of the regular monthly dividend of $2 per share. The prospecting drifts south on the 1400-ft level started up during this intermission and are again developing rich ore, showing conclusively that the ore body extending in that direction is far better than it has heretofore been supposed to be. On the 1500 ft level, going south, almost exactly the same character of work is being done, with precisely the same results, showing that the mine has an almost incalculable amount of rich ore yet to extract in that direction, without touching the lower levels, if the management so desires. The ore stopes on the 1500 and 1550-ft levels are still yielding rich ore, and show but little change in any direction. The cross drift from the main north drift on the 1700-ft level, running to connect with the bottom of the south winze below the 1550-ft level for air purposes, is making steady though slow progress on account of the great heat. Preparations are being made to tap the water in the bottom of the winze with diamond drills, and thus avoid accident or delay. The rebuilding of the old pan mill is going rapidly forward, the placing of the machinery being now well advanced. The completion of this mill will insure a sufficient crushing capacity to enable both the California and Consolidated Virginia to continue their present dividends, and even increase them, if they so desire, for an unlimited length of time yet to come.

CALIFORNIA.—Daily yield, 700 tons of ore. The ore stopes extending north, upward and to the eastward on the 1500-ft level are all showing richly. The ore breasts on the 1600-ft level are also opening up just as richly. The mills are kept steadily running, and the bullion yield for July will hug closely $2,000,000, not only permitting the payment of the usual dividend of $2 per share, but affording a large surplus to carry over to the August account. The mine never has shown richer than it does to-day. It is true that a few million dollars have been extracted, but it is also true that the ore developments made since the extraction of ore was commenced has more than filled the place of that taken out, so that we have not the least hesitation in asserting that the mine is worth as much or more than it was known to be one year ago. It is simply looking superb, with enough huge blocks of ore squared up, ready for extraction, to keep the mills running for a length of time almost beyond calculation. The pumping engine at the C. & C. shaft is again hoisting a perfect river of water, being kept running at the rate of 10 strokes per minute. It is steadily gaining on the flow, but has a mighty work to perform in doing it. The engines for driving the new battery mill are in place, the steam connections with the boilers are being made, the shafts lined up, the stamps placed in the mortars, and the general finishing touches are being administered preparatory to starting the whole into operation as soon as the Consolidated Virginia pan mill is completed.

OPHIR.—Daily yield, 300 tons of ore. Four mills are kept constantly crushing the ore, which is yielding better pay than it has done since the great fire in October last. The ore stopes are looking splendidly throughout the mine. The ore stopes on the 1600-ft level, going east, have improved very much during the past four days, the prospecting drifts going eastward at that point having cut through a strong horse of porphyry into a new deposit of very rich ore. The ore taken from this new discovery has raised the assay value of the car samples from $104 to $192 per ton during the past week. But what gives it the most valuable and permanent look is the fact that the same rich body of ore has been struck in an east winze, at a depth of 50 feet below the 1600-ft level, proving that it is extensive, and that the quality is even better at that depth than above. The prospecting drifts going north on the 1600-ft level are rapidly advancing toward the Mexican line, and are showing excellent indications of ore. On the 1700-ft level the north drift is being driven rapidly forward, following the east wall of the ledge toward the Mexican line, at which point it is the intention to again drive an east cross-cut through the ore vein. In the east cross-cut, 75 feet south of the shaft on the 1700-ft level, an upraise has been started to connect with the bottom of the east winze now being sunk in the east ore body below the 1600-ft level. Sinking the main incline is making excellent headway.

GOULD & CURRY.—The old pumping machinery is being taken out, and the foundations rapidly enlarged for the reception of the new and powerful machinery now in course of construction. The repairs to the shaft are going steadily forward. Sinking the joint winze on the Savage line is going rapidly forward, the bottom still in favorable vein matter and perfectly dry. The bottom of the winze is now over 100 feet below the level of the water in the Savage shaft. The winze is sinking in an entirely unprospected portion of the ledge, lying between the Savage and Gould & Curry workings. A drift has been started south on the 1700 ft level of the Gould & Curry to connect with the bottom of this winze. Colonel James G. Fair, the superintendent of this mine for the past two or three years, being greatly pressed with attentions required by his other mines and the arduous duties attached, has resigned the superintendency, and Colonel Frank Ashiston, late superintendent of the Savage mine, has been appointed to fill the vacancy.

ALTA.—The splendid new and powerful pumping machinery was started into full operation yesterday, and worked with the utmost perfection, draining the water from the shaft in less than two hours' time. This machinery has no superior on the Comstock in finish, strength and apparent adaptability for the purpose for which it is intended. The shaft is now down 430 feet, and the sinking has been resumed in the best of spirits. It is confidently expected that the shaft will cut the ore vein by the time it has reached a depth of 700 or 750 feet.

BULLION.—The week has been spent in trying to complete the connection of the bottom of the winze below the 1400-ft level and the upraise of the 1700 ft level, so as to get a circulation of air and ventilate the mine. Several fearful heavy blasts of giant and black powder have been exploded in too intervening ground without having yet accomplished the desired result. The workmen are so close together that they can distinctly hear each other walk and talk.

JULIA.—The main south drift on the 1600 ft level has shown a steady improvement during the past four days. The full size of the drift is in quartz of splendid character, which now assays $20 per ton, and shows every indication of opening into paying ore at almost any time. The east cross-cut recently started on the 1600-ft level, to cut the ore vein developed at the 1700-ft pump station, is also showing a decided improvement.

IMPERIAL CON.—The north drift on the 2000-ft level, running to connect with the Alpha, is making good progress. The north drift from the winze below the 2000-ft level has been stopped for the past day or two on account of an insufficient supply of air.

DAYTON.—Sinking the main shaft is going ahead, notwithstanding the flow of water at the bottom of the shaft still gives considerable trouble and prevents as good progress as would otherwise be made.

ROCK ISLAND.—The north and south prospecting drifts on the 850-ft level are again steadily advancing. Both are in ledge material.

WARD.—The rate of sinking the shaft has been increased to six feet per day. The south drift in the Julia, on the 1600-ft level, is fast approaching the Ward line, the face in ore steadily improving in quality.

HERALD.—The ore vein at the bottom of the incline is showing splendidly, the ore is widening and the assays are excellent. Many are of the opinion that the ledge is opening out into a veritable bonanza. The ore in the face of the north drift is also showing finely.

OVERMAN.—Sinking the main shaft is making the usual fair progress. The flow of water is still strong.

MEXICAN.—The face of the west cross-cut on the 1465-ft level, following the course of diamond drills used at that point, is now in fine ore. A cross-cut west has just been started, on the line of the Ophir and Mexican, on the 1600-ft level.

SUPERIOR.—Had to suspend operations on account of boiler repairs, and in 36 hours the water raised 100 feet in the shaft. Work going ahead all right again and water reduced to 18 feet.

EAST JUSTICE.—Work going ahead as usual, ground getting softer, which allows of considerable progress being made.

PROSPECT.—Total depth of shaft this morning, 441 feet. Sinking suspended for a few days until the station is opened at the 400-ft level. Considerable water is encountered, driving the pumps to their utmost capacity.

CROWN POINT.—The south drift on the 1700-ft level is still advancing toward the Belcher air shaft.

EUROPA.—The north drift on the 500-ft level is steadily advancing, the face in very hard rock. This morning the rock was softening somewhat, with apparent indications of an approach to the ore vein.

NIAGARA.—Sinking the main incline has been delayed somewhat during the past two days by the timbering of the shaft.

UNION CONSOLIDATED.—The north drift, following the west wall of the ledge on the 1300-ft level is looking very promising.

LADY BRYAN.—The surface work is being steadily pushed ahead without intermission. The recent cloud bursts washed away a considerable portion of a water ditch, which is now being rebuilt

TWIN PEAKS.—The surface grading is completed, and a road is now being made to bring in the requisite timbers, etc. Sinking the large new working shaft will be resumed shortly.

BEST & BELCHER.—Cleaning out and repairing the drifts and cross-cuts on the 1700-ft level preparatory to future operations is being steadily accomplished.

NORTH CARSON.—Good development work is being done in the mine, with considerable good ore in sight, and excellent prospects ahead.

CALEDONIA.—Sinking the shaft is going steadily ahead. The flow of water at the bottom is still fearfully strong, and keeps the pumps actively at work.

LADY WASHINGTON.—Sinking the shaft goes steadily forward in the same excellent vein material mentioned in last week's report.

SUTRO TUNNEL.—Total length of tunnel this morning 13,783 feet. Face of header in tough porphyry with streaks of quartz and clay.

MITCHELL.—Sinking the winze at the same good rate of progress, with very favorable vein matter and low grade ore in the bottom.

COSMOPOLITAN.—Good work being done in main north drift, which still shows plenty of good ore in the face.

Important to Settlers.

The following important bills have lately passed Congress and are laws:

Concerning Settlers and Public Lands.

An act to amend "An act for the relief of certain settlers on the public lands," approved December 28th, 1874, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That all the rights and privileges granted by an act for the relief of certain settlers on the public lands, approved December 28th, 1874, are hereby extended for one year after the expiration of the time named in said act. And all the rights and privileges extended by this act to homesteed and preemption settlers, shall apply to, and include, the settlers under an act entitled "an act to encourage the growth of timber on western prairies," approved March 3d, 1873, and the acts amendatory thereof.

Approved June 19th, 1876.

To Encourage the Growth of Timber.

An act to amend an act entitled "An act entitled 'An act to encourage the growth of timber on Western prairies,'" approved March 13th, 1874.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section three of the act entitled "An act to amend the act entitled 'An act to encourage the growth of timber on western prairies,'" is hereby amended by adding thereto the following further proviso: Provided further, That whenever a party holding a claim under the provisions of this act, or whenever making final proof under the same, shall prove by two good and credible witnesses that the trees planted and growing on said claim were destroyed by grasshoppers during any one or more years while holding said claim, said year or years in which said trees were so destroyed shall not work any forfeiture of any of the rights or privileges conferred by this act; and the time allowed by this act in which to plant the trees and make final proof shall be extended the same number of years as the trees planted on the said claim were destroyed in the manner specified in this section.

SEC. 2. That the planting of seeds, nuts, or cuttings shall be considered a compliance with the provisions of the timber-culture act. Provided, That such seeds, nuts, or cuttings of the kind and for the purpose contemplated in the original act shall be properly and well planted, the ground properly prepared and cultivated; and in case such seeds, nuts, or cuttings should not germinate and grow, or should be destroyed by the depredations of grasshoppers, or from other inevitable accident, that the ground shall be replanted or the vacancies filled within one year from first planting: Provided further, That parties claiming the benefit of the provisions of this act shall prove, by two good and credible witnesses, that the ground was properly prepared and planted in such seeds, nuts, or cuttings, and were so destroyed by inevitable accident in such year.

SEC. 3 That it shall not be necessary to plant trees, seeds, nuts, or cuttings in one body, provided the several bodies not exceeding four in number, planted by measurement, aggregate the amount required and in the time required by the original and amended act.

Approved May 20th, 1876.

The Engineer.

A New Panama Route.

It looks as if a long art had been rediscovered in the way of getting across the isthmus of Panama by canal. According to the Panama *Star and Herald*, a citizen of Colombia, named Gogorza, has been making a tour of investigation up the river Tuira and its branches, the result of which has been to revive a project 200 years old, touching the feasibility of a canal route across the isthmus. Mr. Gogorza is so sanguine of success in establishing the new route, and has so convinced others of the importance of doing something about it, that there have been a number of conferences between Colombian magnates, the outcome of which is a message to congress from the president of Colombia urging that attention be given to the subject. Authority is asked for Gogorza's undertaking a careful and thorough survey, in order that the question of practicability may be definitely answered. This survey Gogorza offers to organize and prosecute at his own expense, and under arrangements which will relieve the matter of all uncertitude. The proposition is to go over the proposed route with a corps of engineers who, within the current year, shall accurately survey the region indicated, and then, upon their favorable report, a stock company can be gotten up in Europe of sufficient capital and influence to complete the canal in less than 10 years.

Subsequent explorations have confirmed the opinion that this route contains more promising possibilities than any other that has been proposed. What with the river itself and a series of newly discovered marshes on the direct line, it is believed that a canal could be constructed without compelling the construction of any locks, and thus the two rivers which pierce the isthmus on either side may be so connected by a cut through the marshes now lying between them as to give an uninterrupted water route from ocean to ocean.

Of late years, particularly, there have been a number of costly attempts to solve the Panama problem. It may be that the solution lies in the direction indicated two centuries ago and now urged again upon public attention. At all events we shall know all about it very soon, and meanwhile may hope that at length the project of connecting the Atlantic and Pacific oceans on this continent is soon to become as much an accomplished fact as is the junction between the Indian and Atlantic oceans by means of the Suez canal.

The Progress of the Jetties.

According to an article in the New Orleans *Bulletin*, the average depth of the channel between the jetties is considerably over 20 feet, the greatest depth being 25½, and the least 19. Altogether there are 28 soundings taken. Of these only three were as small as 19 feet, three of 19½, four of 20½, six of 21, four of 22, three of 23, three of 24, and the rest running 24½, 25, 25¼, and 25½ feet. Something remains still to be done. There is some shallow water inside the river end of the jetties, and this must be deepened ere the channel which Captain Eads' plock and science have given us can be until zed to its full extent. The suggestion has been made that the government dredges at Southwest Pass should be used for this purpose, seeing that the jetty channel is in all respects a better and more practicable one than any that ever has been or ever can be produced by the means at the disposal of the engineer department. But, some weeks ago, when the suggestion was first made, objections followed to the effect that the success of the jetties had not been demonstrated, and that by removing the dredges from Southwest Pass the government would be sacrificing a secure channel in favor of a mere experiment. Since then Captain Eade has worked on quietly and confidently, and in the interval many vessels have grounded in Southwest Pass, while many vessels of equal draught have passed safely and expeditiously between the jetties. Nothing now remains save to remove a narrow and comparatively insignificant bar lying above the head of the works. When that shall have been accomplished, the long-desired consummation will be attained, and New Orleans will rejoice in a permanent deep water channel to the sea. The jetties are steadily and rapidly deepening the water within their influence, and no reasonable doubt can be entertained as to their complete and triumphant success.

A POINT IN FAVOR OF DEPRESSION.—In his address before the mining engineers, at Philadelphia, on the 1st of June, Mr. Bell said that times of depression in trade, such as the world generally is suffering from, are beneficial to science, inasmuch that they enable manufacturers to pay more attention to processes, and effect economies in production, which they have neither the time nor the inclination to attend to in periods of great demand.

BRIDGES.—A writer in the *Railway Age* claims that the long illustrated article in the "Encyclopedia Britannica" on the subject of bridges is worthless. He says: The practical engineer need only look it over, to see that it is worthless for his purposes, but the unprofessional man, who has a right to expect precise and accurate treatises in a work having the high reputation of the "Encyclopedia Britannica," might easily be misled.

Tunneling Detroit River.

The Detroit correspondent of the *Railway World*, writing of this subject, says: Gen. Sooy Smith has been here in consultation, at different times, with a committee of council relative to the tunneling of the Detroit river. While Gen. Smith is confident that the project is feasible, he says that in self-defense he must decline to lay all his plans and specifications before the public and explain them in detail. He has one or two occasions been defrauded of his just rights and had his own engineering skill taken advantage of by others by a too free public exposure of them. But he would lay everything before any commission of competent engineers that the city might name, and he would be willing to abide by their decision as to the feasibility of his plans. He would submit his estimates to a commission of experts in the same way. He did not ask any voice in the naming of these commissioners, but had so great confidence in his estimates and in the practical character of his scheme that he was perfectly willing to rest the whole subject with any unprejudiced and competent body of men.

He said he had been engaged upon public works as a civil engineer for 25 years; had built railroad and other bridges over navigable streams. He knew the cost of such works and he would say with reference to his tunnel that it should be double tracked, and that he would guarantee that it would cost but very little, if any more, than a first-class double-track bridge. He supposed that so far as the city was concerned, it desired to foster both the railroad and the vessel interests, and to avoid all antagonism between them, if possible. It seems to be conceded that the railroads want and ought to have a better crossing here. To this the vessel interest do not object, providing the crossing be made so as not to interfere with them. Therefore a tunnel seems to be preferable to a bridge, as harmonizing both interests. A tunnel would be preferred by all if it could be built as cheaply as a bridge. He would undertake to build one, as before stated, at a cost which should not greatly exceed the cost of a bridge. He would agree to furnish the tunnel and approaches complete at his own expense, and to the satisfaction of any competent committee of experts, provided the work would be taken off his hands when completed. He could command the capital; in fact, it is already urged upon him, and he would not ask a cent of the city until the work is done.

He would commence in the middle of the river and build in both directions, and estimated that it would thus take about two years to complete the tunnel and its approaches. He called attention to the fact that this is an exceedingly favorable time to carry on a work of this kind. The money at his command is lying idle. The expenditure of so considerable a sum here would be of value to the city, both in a business point of view and in the employment of a great number of workmen. All things considered, there could be no more favorable time to undertake an enterprise of this kind. The various railway magnates interviewed by the correspondent of the *Railway World* favorably endorse the project.

MEMORIAL TO AN ENGINEER.—A bronze statue of the late James Carmichael, the celebrated engineer, from the chisel of Mr. John Hutchison, R. S. A., was on June 17th unveiled in Dundee, in presence of a great concourse of spectators. The ceremony was held on the centenary of the birth of Mr. Carmichael. Sometime ago the idea of erecting a statue to perpetuate Mr. Carmichael's memory was mooted, and were so warmly taken up by the leading citizens that the necessary funds were speedily procured. Mr. Carmichael was the inventor of the fan-blast and of many improvements in mechanics. The statue end pedestal rise to the hight of 17 feet. Mr. Carmichael is represented in sitting posture, examining a plan, with miniatures of his inventions on the plinth. The statue is erected on the grounds of the Albert institute.

A NEW DRAWBRIDGE.—A recently patented drawbridge, designed to afford perfect facilities for crossing navigable streams without impeding navigation, is the invention of Lieut. Com. H. H. Gorringe, U. S. N., of Washington. The bridge is composed of a number of floats, each pivoted or hinged at one end, the other and being moored to anchor piles by means of a chain passing over a windlass on the swinging end of the draw or leaf. By revolving the windlass the draw or leaf may be swung clear, so as to afford vessels a single passage as wide as the length of the draw; a reverse motion of the windlass closing the draw and opening the roadway. Since this operation may be performed with either or all of the floats, vessels may pass through the bridge at any point selected, or the whole width of the river may be thrown open to navigation. The inventor, among other things, claims "cheapness and facility of construction, greater security than ordinary bridges, freedom from obstruction to navigation, and from risk of damage by freshets, moving ice and other floating bodies."

THE ST. GOTHARD TUNNEL.—At the close of April, the St. Gothard tunnel has been pierced on the Goeschenen side to the extent of 10,263 feet. The corresponding progress effected at the same date on the Airolo side was 9,830 feet. The aggregate distance pierced April 30th, 1876, was thus three miles, 4,253 feet.

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wave; and from the crater of Kilauea a collection of curious lava formations most wonderful in variety of colour and shape.

Beside the sugar cane, 15 feet long, we find the samples of sugar from crude to double refined, and a large glass case is filled with hats, mats, fans, flowers and delicate vases, made from arrowroot plant. All these articles are so odd and beautiful that they attract much attention, as do also the ancient idols and war clubs, the exquisite corals and tropical stuffed birds in a mossy recess, each bird looking alive on its own branch.

The botanist of our party lingers wistfully over the queer silver-sword plant that grows 12,000 feet above sea level, and, if I understand rightly, it is found nowhere else.

The ancient poi calabash, the venerable, painted water gourds, and similar native relics, offer quaint contrast to the handsome cabinet work now turned out by the islanders. The samples of native fabrics are very interesting, especially the Tahitian cloak, made from bark of the bread-fruit tree, and trimmed with shells; also the grass petticoat fringed in different colors of tree bark.

Queen Emma

Makes her special exhibit of right royal feathers, polished ware, bark cloth and various articles of historic value to the nation or the royal family.

Then the coils of native rope, the jars of clear oil from castor bean and candle nut tree, the pictures of wonderful scenery—"The information furnished to all who wish to acquaint themselves with the manners, customs, resources, government and civilization of the

Hawaiian Nation,"

All these things I mention merely to give a hint of the articles our Pacific neighbor has brought to spread before the world, and to quicken the interest of those who care for her welfare. No words can give a true idea of this bright and beautiful island nook where visiting faces all beam with that delight which comes from a "good surprise;" and as changing thousands still go trooping through, peering this way and that, amused, instructed and stimulated, there will be no need at the end of six months to ask the timid question,

"Will it Pay?"

Now, where shall we go when we leave the Sandwich islands? Tending westward we naturally bring up at China and Japan, and that is just what happened here in the main building as we go on and find ourselves in the midst of shining tea-trays and cabinets, large vases covered with impossible dragons, and all the fans, fabrics and fine needlework that have so long been familiar in San Francisco.

I asked some visitors what they considered most interesting of all they had found, and they said: "O, we have found nothing else so wonderful as the departments of China and Japan. Did you see the lovely, oriental ware, and the silk goods and that cunning Chinaman all dressed in his own clothes?"

"Yes, I passed through and saw the ladies, whole crowds of admiring ladies, sweetly smiling on that big, fat Chinaman; and I just wished California had sent along a few thousand of those 'conning Chinamen all dressed in their own clothes' so that this Centennial celestial need not be spoiled by too much admiration." (Perhaps we Californians are a trifle bitter on this subject. Eastern people seem to think we are.)

We had expected to find natives from everywhere "dressed in their own clothes," but with the exception of a few Turks and Japanese in their bazaar buildings, and the fat Chinaman in the main building, the great crowds day after day are "cut and trimmed" after pretty nearly the same pattern. They tell us it was not so at first, but that foreigners who began to go about in odd-looking rig were so annoyed by

Rude Boys and Respectful Reporters,

They finally laid aside their peculiar costume and disguised themselves in the ready-made clothing of Market street.

And now as we go on, a queer old rhyme keeps spinning through my brain—

> "Dr. Foster's a very good man—
> Whips his daughters now and then.
> When he whips them, makes them dance,
> Out of Scotland into France,
> Out of France and into Spain,
> Dr. Foster whips again."

When these lines were written they had reference to some deep political plot and to some great "power of the period" that held the reins and made persons and events dance to please him. But many an old verse has been mistaken for prophecy and what could come truer than the free-and-easy dancing "Out of Scotland into France, and out France into Spain?" That is just what we are doing here in a daze of almost speechless admiration and urged onward by the whip or spur of an eager curiosity.

When tired almost to death we still go a little further—"Out of Scotland into France"—and when the glory and glitter of Paris, the gilded-edged profusion of everything elegant and costly wearies the eye and brain beyond endurance, we still whip on and step through the grand Spanish archway that leads to a display, magnificent and even "gorgeous," perhaps, but not so large and dazzling as that of France.

Spain has also a separate building, large and well filled with treasures of art and science; precious old keepsakes left over from the age of immortal Don Quixote; fine collections of photographs of Spanish beauties, and of the royal family, who are not beauties; samples of some very big mahogany trees to show us how that lumber looks in the rough; and pictures old and new to show us the look of ancient and modern Spain and her most famous Spaniards. If you should go into this Spanish house tomorrow you might not even notice these things I have spoken of, because there are so many others equally attractive. Now that I come to think of it, the whole center of the building is filled with tables covered with maps, showing mountain elevations, water courses and all the minute geography of the country, and other tables hold models of forts and bristling armaments, well guarded by fierce soldier-statues armed from head to foot. Many of the old treasures would have been more interesting if the descriptions had been written out in English.

But I have been most astonished at the exhibits made from

Far Away Corners of the Earth,

That have never yet made much claim upon the world's admiration.

My California cocoon suffered over and over again a total collapse, as I found provinces of Australia, and almost unknown countries of Africa, and far away forgotten islands represented here by well filled departments; and not only well filled, but fairly brimming with beauty and interest. From almost countless objects demanding attention and giving the delight that always comes from a novelty that is agreeable, we look upward to read on silken banners the names of departments: "Tasmania," "Trinidad," "Gold Coast and Orange Tree State," "South Africa," "Queensland," "Mauritius," "Mozambique," etc. I was so delighted with the productions, pictures and politeness I found in Tasmanie, that I shall begin my next letter right there.

Useful Information.

Making Wax Fruits.

Many of our lady readers will doubtless wish to try their hands at wax fruit making this summer and the following on the subject from the *Journal of Chemistry* may be of assistance:

Closely allied to wax flower making is that of wax fruit, some specimens of which are marvelous for the faithful imitation of nature. Here molding or casting is of more importance than in flower making, seeing that accuracy of form is the chief desideratum. Most kinds of imitative fruit are shaped in double molds, one for each half, and, if the fruit is irregular in its curvatures, a tripartite mold may be needed Say that an orange is to be imitated in wax, a smooth, damp surface of sand is prepared, into which exactly one-half of a good orange is carefully pressed. A cordon or border of tin or stiff paper is built up around it about half an inch distance from the orange on all sides; plaster of paris in a cream-like consistency is then poured into the cell thus made so as to fully cover the orange; when quite firm enough to handle, this plaster half-mold is taken up and the orange extracted; the orange is turned over in the sand and another half-mold is made in a similar way. Whether fruit is cast solid or hollow, depends mainly on the size; if large the mass would be heavy and much wax wasted by solid casting; in this case a core of some rough material is fixed in the middle of the mold, which gives a cavity to the middle of the fruit.

Soft kinds of fruit, such as plums, cherries and ripe pears, and some hard and unyielding fruits, require special management to extricate them from the half-mold without injury to the fruit on the one hand or to to the mold on the other. Pomegranates; medlars, pine-apples, etc., require molds in more than two parts Occasionally elastic molds of glue are found advantageous. Generally speaking, the color of the wax employed is that of the lightest parts of the fruit, the deeper tints being afterward laid on with brush and pencil. The chief pigments employed are such as burnt and raw umber and sienna, chrome yellow, red lead, prussian blue, carmine, lake, etc., greens being produced by various mixtures of blue and yellow.

Certain small varieties of fruit, such as grapes and currants, are made of glass bulbs, carefully blown to the proper shape; these are fixed by wax to wire inserted into holes, and then dipped into melted wax of the proper color, a very thin coating of which gives the proper kind of semi-transparency to the glass and at the same time a smoothness of surface not inaptly resembling that of the natural fruit. The fastenings of the various fruits to imitative stems, leaves, leaflets, etc., is an affair of wires, silken thread, strips of green paper, white flock, arrow-root-paste, gum-mastic, varnish, with other simple materials and tools used in artificial flower-making.

Analysis of Ancient Bronze.—A fragment of an ancient bronze sickle, found with other articles in bronze in Anhalt, four feet down in the ground, has been tested by G. Kranse. It was found to consist of 90 parts copper and 10 tin, without the smallest trace of arsenic, antimony, lead, zinc, iron, or nickel. According to Quenstadt, zinc indicates a Roman origin for bronze, lead a Greek origin, and nickel a Keltic. As the object tested by Kranse belongs to the so-called bronze age, it appears as if tin was known in very early antiquity.

Hints for Work.

Cockroaches may be driven away by putting Scotch or other high-dried snuff around their haunts.

Dean or engraved silver goods should never be cleaned with plate powder, but be washed out with a soft brush and some strong alkali, and well rinsed afterwards. When the dead or fostered parts are quite dry, the polished parts are carefully cleaned with powder.

Boil linseed oil, 60 parts, with litharge, two parts, and white vitriol, one part, each finely powdered, until all the water is evaporated. Then set by. Or, rub up borate of manganese, four parts, with some of the oil, then add linseed oil, 3,000 parts and heat to boiling.

A rod of brickwork=272 superficial feet, one a half bricks thick, or 4,350 bricks average work. One yard of paving=36 bricks flat or 52 on edge. There are 384 bricks to a cubic yard, and 1,000 bricks, closely stacked occupy about 55 cubic feet.

An English correspondent of the *Saddlers' Gazette*, writing from Philadelphia, says: "In some shops English varnish it solely used for the finishing coat, yet the best painted carriages in the whole exhibition are those whereon American varnish has been used exclusively."

Heavy Leather.—A firm in Boston have lately received some remarkably fine large and heavy sides of sole leather. Two of them weighed severally 112 pounds and 105 pounds, and measured nearly 11 feet in length, and the thickness of them ranged from five-eights to one inch. They were made from the skins of Calcutta buffaloes.

The best means for producing a black surface on brass, pinobheck or silver, is said to be platinum chloride, which is allowed to liquefy by exposure to the air. It is rubbed in with the finger, or best, with the ball of the thumb. After blacking, the object is washed and polished with oil and leather. Platinum chloride is dear, but a little of it will do a great deal of work.

Crane chains, says the *American Manufacturer*, should once in a while be taken off and thrown into a furnace until red hot, then brought out and be kept in a compact pile and permitted to cool slowly. Better still, let them remain in a furnace after coming to a heat and then to cool off with the furnace. Where a furnace cannot be had for the purpose, they can be heated in a large wood fire and then be permitted to cool as slowly as the fire is dying. Being thus annealed they are safe.

Varnish Brushes.—All varnish brushes ought to be made of long white hairs of the best quality, and, for the general purposes of varnishing, have a good regular spring, with about one-fourth or fifth part worn off flat, sharp, and thin at the point, so as to lay on the varnish smoothly and regularly. As the beauty of varnishing depends in a great measure on the brush, as well as the manner of laying it on, great care is also necessary that no *oil brush* be put into vernish; therefore, all brushes worn down in oil color, and intended to be put into varnish, ought previously to be well washed in turpentine, squeezed and dried with a clean linen rag, or well washed with soap and hot water, rinsed in clean warm water, and made perfectly dry. The best method of keeping oil varnish brushes, when not in use, is to bore a hole through the handle, and put a wire skewer through it, and so suspend the brush, in a narrow tin pot containing varnish of the same sort as it was last in, taking care that the varnish in the pot covers the hairs of the brush up to the binding, and no higher. Brushes so kept are always straight, clean, pliable, and in good order; whereas, varnish brushes kept in turpentine become hard and harsh, and however well stroked or rubbed out, there will still remain turpentine enough to work out by degrees, and spoil the varnishing, by causing it to run streaky or cloudy.

Good Health.

Cultivating the Appetite.—There are few housekeepers who are not at one time or another perplexed beyond measure to provide acceptible food for guests. One does not eat butter, another declines potatoes, still another refuses mutton, a fourth cares nothing for fish, a fifth eschews pastry, and the hostess can but suffer mortification and annoyance in seeing one dish after another that has been prepared with care refused without good cause. A very polite principal of a young ladies' school was in the habit of frequently saying at meal time: "It is aristocratic to eat lamb; all my young ladies eat lamb." As a matter of fact, it was the most healthful and the most expensive meat he could procure at certain seasons of the year, and he considered it an important part of their education that his pupils should learn to like all varieties of wholesome food. These were accordingly provided, and the best of dietetic habits formed. His example is certainly a good one for heads of families to follow in training children. Various circumstances often restrict diet to half a dozen articles of food, and if these some are rejected from mere caprice, serious inconviences often follow, while only pleasure and advantage result from a genuine liking, though it be the offspring of cultivation, for all kinds of nutritious and wholesome food.

How to Cure Cuts and Stings.

We find in the *Prairie Farmer* some hints concerning treatment of small wounds. In every home there ought to be a place known to all the members of the household, but out of reach of the children, set apart for things which are likely to be wanted in case of accident. These should include a pair of good scissors, three or four large needles, ready threaded, some broad tape, a little lint, a roll of clean old linen, flannel and calico, part of each of which should be torn into slips, some sticking plaster, goldbeater's skin, turpentine, lunar caustic (nitrate of silver), tincture of arnica, and tincture of calendula. The possession of these articles will enable any one who can act with self possession and nerve to deal promptly and wisely with most of the every-day accidents to which flesh is liable.

Cuts

Cuts require to be treated suitably according to their position and character. A cut finger is best tied up in a rag with the blood; for blood is very healing. If a cut has any foreign substance, such as glass, gravel or dirt in it, this should be removed by being bathed in lukewarm water before the rag is put on. If a cut is severe, the blood should be examined. If it is dark, and oozes slowly from the wound, it comes from a vein, and is not serious, if it is bright scarlet, and spurts out of the cut like water from a fountain, it comes from an artery, and a doctor ought at once to be sent for. Until medical aid can be procured, the wound should be tightly bound, and the artery should be tightly pressed above the wound and nearer the heart. If the skin gaps from the cut, the edges should at once be brought to their proper position with calendula plaster. If in a little time it begins to throb, the plaster should be removed, and the rag moistened with calendulated water; it is most useful for wounds where the flesh is deeply cut or torn. If a little lint is soaked in it and put upon the wound, it will in nine cases out of ten prove most beneficial. It is made by mixing thirty drops of the pure tincture of calendula, which may be bought of any chemist, with a half tumblerful of water. A cut on the head requires great care. The hair should be cut all round the place, and lint dipped in calendulated water be laid upon it. As long as the first dressing of a cut remains mains firm and gives no pain, it need not be touched.

Slings from Insects.

After being stung by a wasp or bee, the first thing to be done is to remove the sting. This may be done with a pair of small tweezers, or the sides of the wound pressed with a small key, so it may be squeezed out. Then apply to it immediately spirits of camphor, sal volatile, or turpentine, or failing these, rub it with a little common salt, or a little moist tobacco or snuff. If a wasp or a bee stings the throat, a little turpentine should be immediately swallowed. If the place swells very much and looks inflamed, it should be bathed with arnica, or have a hot white-bread poultice laid upon it. The arnica may be made by mixing twenty drops of the pure tincture with half a tumblerful of water.

Eating Fruit.

The earlier in the day fruits are eaten the better; they should be ripe, fresh and perfect, and eaten in their natural state, with the important advantage of its being almost impossible to take too many; their healthful qualities depend on their ripe acidity, but if sweetened with sugar, the acidity is not only neutralized, but the stomach is tempted to receive more than it is possible to digest, and if cream is taken with them, the labor of digestion is increased; hence the fearful attacks of cholera morbus which sometimes follow the free use of fruits and berries with sugar and cream.

No liquid of any description should be drank within an hour after eating fruits, nor should anything else be eaten within two or three hours after—thus time being allowed for them to pass out of the stomach, the system derives from them all their enlivening, cooling and opening influences. The great rule is, eat fruits and berries while fresh, ripe and perfect in their natural state, without eating or drinking anything for at least two hours afterwards. With these restrictions, fruits and berries may be eaten in moderation during any hour of the day, and without getting tired of them, or ceasing to be benefited by them during the whole season. It is a great waste of lusciousness that fruits and berries, in their natural state, are not made the sole dessert at our meals for three-fourths of the year; human enjoyment and health, and even life, would be promoted by it.—*Hall's Journal.*

Bathing.—Cold baths, if taken at all, should be taken in the morning, when the body is invigorated by a night's rest; and then it is well to use water that is of the same temperature as the air, and not freshly drawn from well or cistern. Baths taken at night should be about the same temperature as the body, and warmer, if they give the slightest chilly feeling.

Onions for Children.—A mother writes: Once a week invariably I gave the children a dinner which was hailed with delight; this was a dish of boiled onions. The little things knew not that they were taking the best of medicine for expelling what most children suffer from, worms. I believe mine were kept free by this remedy alone.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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THE ORIGINAL ARTICLES in this paper are mostly set in solid type, giving in our columns one-third more reading than is contained in ordinary leaded matter.

Our latest forms go to press on Thursday evening.

San Francisco:

Saturday Morning, Aug. 12, 1876.

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THE WHEELER SURVEYING EXPEDITION.—The Wheeler expedition for the exploration and engineering survey of territory west of the 100th meridian, will leave Washington in a few days for another season's work. Lieutenant Wheeler will establish his rendezvous camp near Carson City, and four parties, one of them under his personal charge, are to make thorough surveys east and west of that point, and northward in the Sierras from Beckwith's pass as far as possible this year toward the Oregon boundary line. The intention is to connect with the western line of Wheeler's former work and the southern line of the survey. This portion of country has never been scientifically explored, and consequently no good map of it has ever been made. Two other parties of Wheeler's expedition are assigned to work in New Mexico and western Colorado.

CARPET MAKING.—The carpet manufactories of Philadelphia, we are informed from a census of that branch of industry taken by a leading establishment, employe 651 power looms and 3,499 hand looms. These looms have a capacity for producing annually 25,000,000 yards of ingrain and Venetian carpets.

NEW PLACER DIGGINGS.—A dispatch from Fresno says: Considerable excitement is caused by the discovery of some rich placer diggings on Mill creek, in the foothills of the Sierra Nevada, some thirty miles from here.

A BUILDING on the grounds of the Giant powder company, back of this city, was burned this week. No special damage was done beyond the loss of the building, which was valued at $500.

THE Hurricane Co., at Oreana, have started their furnace and are turning out about three tons of base bullion daily. Twenty tons of the bullion was shipped East to Newark, New Jersey, last week.

THE steel plant of the Bessemer steel works, St. Louis, has been started.

A Plea for Inventors.

[For the MINING AND SCIENTIFIC PRESS, by JOHN L. BOONE.]

Of all the mental efforts requiring imaginative construction none is more difficult than that which is required to develop a new mechanical movement, or originate a new plan, mode or mechanical principle. The faculty of inventing depends more upon natural endowments, or rather instinctive intelligence, than upon education and experience. Experience only figures in this connection so far as it serves to familiarize the inventor with the wants or deficiencies in any line of industry; and education assists in giving completeness to the conception; but the conception itself is a matter entirely independent of either, and is just as apt to be suggested by an illiterate and inexperienced person as by one who has spent years in studying and investigating the matter; in fact more so, because education and experience are both the result of study and long familiarity with existing devices, so that they, to a certain extent, incapacitate their possessors from looking beyond the boundary of their experience and teaching. Upon the principal that "fools rush in where angels fear to tread," the illiterate inventor will investigate methods and plans which many an experienced artisan or workman would not entertain for a moment, simply because they do not possess that imaginative construction necessary to give the new creation mental existence, and because their teaching and experience do not include the new ideas. Thus many of our most important and most novel inventions have been originated and developed by persons entirely devoid of technical knowledge and experience in the field of mechanics to which their inventions belong. Accident, circumstance and necessity all contribute to the discovery of new principles. Sometimes, however, we find the skilled and educated mechanic possessed of the inventive faculty, and when this is the case he proves a "world mover." Such was Ericsson, who did more to develop the engine and strengthen the navies of the world than all other inventors combined. Such was Morse, who, with a skill and learning which was admirable in its completeness, adapted and perfected the telegraphic system; with such precision and judgment that to-day it retains the principle features that he gave it. Such were Hoe and Colt, and other inventors whose memories the civilized world hold in reverence.

All patents are not productive—neither are all farms; all men are not rich; all mines are not bonanzas; but if we were to strike a balance sheet we would find that the proportion of the profitable and unprofitable patents correspond in a like ratio with the other profitable and unprofitable enterprises which men undertake.

When we consider the vast number of patented articles in the market, many of which are covered by a number of patents, we will realize that the work of the inventor is very often profitable. There is scarcely an article of human convenience or necessity in the market to-day, that has not at sometime or other been the subject of a patent, either in whole or in part. The sale of every such article yields the inventor a profit. If we purchase a box of paper collars a portion of the price goes to the inventor; if we buy a sewing machine the chances are that we pay a royalty to as many as a dozen or 15 inventors at once. Indeed the field is so vast and the number of profitable patents so great that I would by far prefer to undertake a recapitulation of those patents which are not profitable than those that are.

The universal sentiment is that genius is its own reward, and in order to give effectiveness to the sentiment the person who possesses genius in any branch of industry, is allowed to set his own price upon the result of his labors. It is therefore but a just recognition of the services of the inventor that he be allowed to provide for his own wants from the benefits which he confers upon the public. The artist who produces a picture of unusual merit can find purchasers for it at a fabulous price. The stage actor who can draw crowded houses can demand and receive for a single performance what would be a year's salary for an ordinary workman; and the lawyer that possesses the faculty of swaying the minds of a jury by his eloquence can demand and receive whatever sum of money he desires for his services, yet the labors of the inventor yield more substantial results, and benefit mankind more than all these combined. He is the sapper and miner who prepares the way and overcomes all of our mechanical difficulties; in fact he furnishes us with the honey, while we are drones in the hive that benefit from his labors. Give credit then where credit is due. The inventor is the world's benefactor, and as such we take off our hat to him.

THE English company's mill at Troy, in Eureka county, Nevada, has been sold to the Martin White company at Ward, for the very low price of $11,000. The original cost of the mill must have been more than $50,000.

THE Eberhardt and Aurora mining company, of White Pine, declared a dividend of five shillings per share, which was paid in London on the 10th inst.

Comstock Papers.

NO. 3.

An Error Corrected—First Samples of Ore that reached California.

We find, on conversing with certain of the early Washoe miners, that we erred in the last number of these papers, in saying that Comstock owned the most of the rich ground purchased by Judge Walsh, and that the property so bought was described as the Comstock claim in the deed of transfer made on that occasion. The facts connected with his first visit to Washoe, his return and subsequent purchases, as we have them from Judge Walsh himself, were these: Towards the latter part of June, 1859, B. A. Harrison, then keeping cattle on the Truckee meadows, brought some pieces of the rich Comstock ore over the mountains to Grass Valley, where the Judge was engaged in quartz mining. This ore had been given to Harrison while on his way to California by a man named Stone, with directions to take it over to Grass Valley and have it tested, its weight leading him to believe that it contained a good deal of metal of some kind or another. Stone, who resided at Stone & Gates' crossing, a well known locality on Truckee river, had been to the mines and there obtained this ore, and having a notion like many others, that it might be valuable, availed himself of the first opportunity that offered for having its character determined.

The Assay and its Results.

Judge Walsh, to whom Harrison had given these samples on his arrival at Grass Valley, took them to Melville Atwood, who was then carrying on the business of assayer at that place, and instructed him to make an assay of them, being himself satisfied that the ore was rich in the precious metals. Mr. Atwood made two assays from the same piece of ore and found it to contain $3,000 in silver and $876 in gold—a total of $3 876 to the ton. These assays, undoubtedly the first ever had of the Cometock ore, were made on the 27th day of June, 1859. The two buttons obtained and the pieces of ore from which the assay samples were taken, handsomely mounted and inclosed under glass, are to be seen in the office of Almarin B. Paul, of this city, with the certificates of Atwood and Harrison, attesting their genuineness appended thereto. There was residing in Grass Valley at this time Richard Killala, an accomplished Irish metallurgist, also several German assayers, all of whom were well acquainted with this class of ores, and readily divined the importance of the discovery, having had more or less experience in silver mining countries.

The Ophir Ground—How it was Held and the Prices obtained for it.

Encouraged by the opinions of these men and taking council of his own judgment, Walsh at once set out for Washoe, the name by which the region of country where this deposit had been found then first began to be known. Arriving at the spot early in July, the Judge remained there a week or more during which time he became so well convinced that this ore-find was likely to prove valuable that he determined to buy out some of the parties laying claim to it. In pursuance of this purpose he came home, supplied himself with money and at once returned, reaching the mines toward the latter part of July. By this time a number of locations had been made along the supposed line of the main lode, to which latter there had as yet been given no name. The principal of these claims consisted of the Ophir, embracing 1,500 feet, with the Central 150 feet; the California 300 feet, and the Central No. 2, 100 feet, adjoining it in the order mentioned on the south.

Finney's claim to the rich spot on the Ophir ground having been gotten rid of in the manner already narrated, that location was now owned by the following parties: (100 feet, afterwards known as the Mexican ground, having previously been disposed of.) Henry P. Comstock, Joseph Winters, Peter O'Reilly, Patrick Mc Laughlin and Penrod, each one-sixth; Theodore Winters, one twenty-fourth; Honseworth, one twenty-fourth and Osborn one-twelth. Judge Walsh bought Penrod's one-sixth, paying him $6,200 therefor; also Comstocke one-sixth paying him about the same amount, besides $5,000 for one-third of the California ground, and some small and unimportant locations he had made further south. In the early part of August, Morrison and Hurst bought out Mc Laughlin for $2,500. Later in the fall John O. Earle and Judge Walsh purchased O'Reilly's interest paying $36,000 therefor, the Winters having retained their interest for a considerable length of time. In all the purchases and sales made by Judge Walsh, as well as in the other operations carried on by him in Washoe, Joseph Woodworth was his equal partner.

The Mexican Claim.

As stated above, 100 feet of the original Ophir ground had been disposed of before the sales here mentioned were effected. This section, commencing 200 feet from the south end of the claim and embracing the richest portion of it, had been given by the joint owners thereof to Penrod, Osborn, and Comstock, as a consideration for two cheap arrastras that they had put up for the use and benefit of the company. Penrod, who owned one-half of this section, sold the same in October to the Meldonado brothers, for $3,000, the other half having been sold by Osborn and Comstock to Hughes and others for about the same sum. The Meldonado's being of Spanish origin led to this piece of ground being called first the Spanish and afterwards the Mexican claim. In the early part of 1861 the Meldonado's sold this ground to the houses of Alsop & Co., and Duncan, Sherman & Co., for $200,000. These parties failing to manage the property with much energy or good judgment, tired of the ownership and afterwards disposed of it to the Ophir company for $30,000. It now forms a part of the present Ophir mine.

First Arrival of Ore in San Francisco—Heavy Costs and Big Returns.

Early in the month of September, Judge Walsh came to San Francisco bringing with him 3,150 pounds of selected ore taken from the first opening made on the Ophir ground. This ore was worked by Mosheimer & Kustel, and netted him $4,871. The cost of transportation, there having been as yet no wagon roads built over the mountains, was, as a matter of course, very great. Later in this month, Walsh and his associates in the mine commenced the regular shipment of ore to the city, having by the first of November, when the snow rendered the mountains difficult of passage by wagons, sent down 38 tons, which, worked by the same parties, gave a gross yield of $114,000, exactly $3,000 per ton. The cost of freight and reduction on this lot was at the rate of $512 per ton.

The Washoe Excitement Begins.

This bullion, which was placed on exhibition in the banking house of Alsop & Co., first began to arouse the moneyed classes to the importance of this new discovery, and infect the popular mind with the idea of silver mining. A good many miners with some speculators, traders and adventurers in general, had already made their way over the Sierra Nevada, there having been gathered in the Washoe region a thousand or more of this class before the winter set in. The newspapers also, for several month's before had teemed with favorable accounts of the mines over there. But these had been generally regarded as exaggerated or over colored statements, such as usually emanate from excited and interested parties, and had therefore produced no very marked influence upon either capitalists, speculators or the working masses. The sight of this ore and the resultant bullion had the effect, however, to awaken up everybody, and before the winter was half over, thousands were making preparations to emigrate to the new land of promise.

Different Views Held by Different Parties.

Meantime, not a few who had secured interests in the new mines, being timid or acting under the advice of those preemned to be safe counsellors, hastened to dispose of the same, realizing often very inadequate prices. Among others accorded a high reputation for scientific knowledge and claiming a practical acquaintance with silver mining, but who still entertained a very poor opinion of this Washoe discovery, was the French engineer of mines, M. Lauer, sent out by his government to examine and report upon the gold mines of California. So little faith had he in this discovery that he advised his friends to part with their interests as soon as they could realize the smallest profits, his course in this respect having been practically endorsed by some of our resident experts who had enjoyed a long experience at silver mining in South America and in different parts of Mexico.

Among those who had visited and examined the deposits in the new district, few shared in the opinion held by these more learned men; and it is but just to say the early Washoe miners, notwithstanding they were so ready to sell out, professed the greatest confidence in the richness and permanency of the mines themselves; this seeming inconsistency being explained by the fact that they were all very poor, and wished to make a small stake at the first opportunity; every one of them believing, moreover, that he would be able, as soon as he had sold these first claims, to go and find others equally valuable. Messrs. Woodworth and Walsh relate, that while camping with Cometock, near the claim purchased of him, he pointed to the spot where Virginia City now stands, and declared his conviction that it would soon become the site of a great city, and that the mine he was about to sell them would yet turn out to be one of the biggest in the world. It is true, such expressions as these might be attributed to that spirit of gasconade in which Cometock was so apt to indulge, and through the exercise of which he afterwards succeeded in having his name applied to the whole of this Washoe lode; yet the prediction seemed, under the circumstances, so improbable that one regarding it as somewhat prophetic, feels inclined to credit these utterances as having been made with a degree of sincerity at least.

THE Secretary of the Treasury will probably sell about $2,200,000 gold early next week. The proceeds of the new five per cent. bonds which he will sell Saturday for account of the Geneva award, he will award as for gold, in sums not less than $500,000.

AN official call has been issued for proposals for five per cent. bonds of the funded loan of 1881, to amount to $2,160,000, to enable the Secretary of the Treasury to pay the judgments of the commissioners of Alabama claims.

Facts about Peat.

No. 2.

Written for the PRESS by SAMUEL PURNELL.

Neglect to Use.

Although peat is considered a good fuel, with few disadvantages, yet it has not come into general use because it could not be furnished as cheap as coal—except in a few localities, mostly on the continent of Europe. It has to go through a preparatory process, whilst coal is dug already prepared. The charcoal, however, which the substance furnishes, as a calorific agent, has been attested to be equal to coke, and superior to wood charcoal, by practical skill and theoretical calculations. Many attempts have been made in Ireland, Scotland, Holland and Germany to render peat suitable and profitable for manufacturing as well as domestic uses. The expense, however, has mostly defeated such attempts; and it was likewise found difficult to eradicate preconceived prejudices against this fuel; it is hard to learn anything new. Its use is yearly increasing in Germany, Hanover, Westphalia, Denmark, Russia, many parts of Austria, Italy, many parts of France, India and a few portions of the United States. In many of these places peat is a general article of consumption, superceding all other classes of fuels. Its merits have been subject to the closest scrutiny in Germany and France. In 1863 it was estimated that 359,310 tons of peat were consumed in France during the preceding year. The advance in the price of coal in Europe during the last few years has caused the use of peat to increase largely. Holland consumes about 40,000,000 tons annually. In Ireland peat has not yet been able to compete generally with English coal; nor has it in the United States with native coal. It is everywhere a question of expense only. But it is reasonable to assert that there are many localities in this country where the peat bogs would now be able to compete with inferior coals and those brought from great distances. The main point and difficulty is to produce a good marketable peat cheap enough, that is, at about half the price of good bituminous coal. It is believed this has not yet been done, except in rare cases.

Preparation.

In preparing peat for commercial uses, dozens of processes and hundreds of machines have been invented. Everything that human ingenuity could devise seems to have been tried What would be pronounced a success at one bog would be condemned at another; because, probably, of the different varieties of peat, and the varying circumstances under which the workings were carried on. The main idea was to *condense* it. Now, some peat can be readily condensed, and some not. Much peat is of a light and springy nature, and tends to fly back to its original condition when released from a press; and it is notorious that no success has been attained in attempting to compress this kind of peat. Machines have been constructed usually on the pug-mill principle, that of the brick machine. It seems necessary that all kinds of peat should be ground or cut up to some extent in order to free it from a part of its water, and, by breaking up its fiber, allow it to become hard and firm on drying, or permit of a more thorough condensation by machinery. It is believed that all successful machines have been operated on this principle. Most of these machines have failed from their liability to breakage or from insufficient quantity of product in a given time, or from inferior fuel made, or from the expense of the operation.

For Domestic Purposes

Peat that is elastic and firm may be simply cut out of the bog and dried in the sun without mechanical compression. When brittle and soft it should be ground with water. It is an agreeable household fuel. For manufacturing purposes, especially for metallurgical, peat must be thoroughly prepared, be dry, and all possible density be given to it. It is a problem how to dry peat into a hard solid substance simply by the air. Many efforts have been made to dry it artificially, but the result has always been a failure; not because of the expense only, but because it has been ascertained that peat is somewhat injured by artificial drying, and it afterwards re-absorbs the expelled moisture from the air, and this re-absorption causes the blocks of fuel to crack and lose their consistency. Exposure to the sun and air will generally dry this fuel sufficiently in any country, especially would it do so in the hot and dry climate of California.

Its cost as fuel is due almost entirely to the manual labor expended upon it. Though it may seem thoroughly dry, peat should not be piled solidly, for it is liable to a fermentive process from the moisture still remaining in it, and sometimes undergoes spontaneous combustion. Some old peat is semi-gelatinous, which, when dried, serves to cement the whole together. If this species of peat is compressed part of the gelatinous constituent escapes with the water involving a serious loss.

A Manufacturing City.

The illustration on this page is a view of one of the largest manufacturing cities of the United States—Pittsburg. It is the western terminus of the Pennsylvania railroad, and the point of junction with the Fort Wayne and Chicago, the Cleveland and Pittsburg, and the Pittsburg, Cincinnati and St. Louis railroads, and was, in

PITTSBURGH—VIEW FROM COAL HILL.

1870, the sixteenth city in the United States, and uniting with it Allegheny City, which in fact forms part of the same community, was the eleventh in the number of inhabitants, the two containing an aggregate of 139,526 souls It is built at the junction of the Allegheny and Monongahela rivers, which here unite and form the Ohio, and is particularly distinguished for its iron and glass manufactories, in these two industries outranking any other American center of industry. The capital invested in iron manufactories in 1870, was $26,962,686, and in the manufacture of glass, $4,000,000. It is also the center of an immense coal trade, aggregating over 5,000,000 tons a year. The vast manufactories centered here belch forth ceaseless clouds of smoke, and give it the popular title of the "Smoky City." At night, from the hills surrounding it, the view of these ceaseless fires, bursting luridly through the dense pall which overhangs the entire region, gives it a grand and peculiar appearance, unlike any other place in America.

The country surrounding the city is picturesque, characterized by rugged heights and deep valleys. These natural beauties have been enhanced by public and private improvements, and if they are marred by the smoke which rises from numerous manufacturing industries, their attractiveness is by no means obliterated or destroyed.

FROM all accounts Ward district, the young and prosperous mining camp, is attracting considerable attention from mining operators, both in California and the East. New mills are in process of erection and several furnaces are already completed. The camp is lively and the mining outlook of the district indicates permanent prosperity.

Opening of the Mechanics' Institute Fair.

The eleventh industrial exhibition under the auspices of the Mechanics' institute, was formally opened on Tuesday of this week. The opening exercises took place at Wade's opera house and were of a very interesting character, comprising music by 500 pupils of the high school, a fine orchestra and the Aimee opera troupe, with an address, oration and poem. The whole concluded with a tableau representing artisans at work at their trades.

The exhibition was opened on the same evening. As yet it is by no means in a complete state, although by Monday everything is expected to be in good order. The machinery department is not as well filled as it should be considering the character of the fair, although the whole exhibition will, when complete, give a good general idea of the state of our home manufactures. The pavilion presents an attractive appearance, being handsomely decorated. The music is good and the art gallery and horticultural garden form features which afford a great deal of enjoyment. We intend giving in the PRESS as full a description as practicable of all that is novel in the fair, paying special attention, however, to what will be of interest to mechanics and miners.

We append the opening address delivered by A. S. Hallidie, President of the Mechanics' institute, and also the poem written for the occasion by Mr. Soule. The oration by Mr. Henry Edwards, on "Iron and its Relation to Civilization," we are compelled to defer for want of space, but will publish it in full next week.

Opening Address of President Hallidie.

LADIES AND GENTLEMEN: The managers of the Eleventh Industrial Exhibition bid you welcome, that you may bear witness to the skill of the people and the handicraft of the sons of industry and toil, desiring that in the exhibition hall you may be not so much impressed with the gaiety of the scene, or by the pleasure it may give the eye, as that what you see there may create an estimate of values in your mind and having created, may build up an appreciation of these values that may influence you, and through you generations to come.

On the 7th of September, 1857, the first industrial exhibition was inaugurated in San Francisco, in a little building about the size of our present Art Gallery, erected on Montgomery street where the Lick house now stands and which, at that time, was considered rather far out of town.

Progress of the Exhibition and Institute.

Many of you have watched the progress of these exhibitions and the Mechanics' Institute with tender care, and from time to time have loaned money freely and without interest, to tide over financial requirements. Let me say to you, free-hearted and noble-minded citizens of San Francisco, that this generosity is neither forgotten or unappreciated.

Up to the present time ten industrial exhibitions have been held. Not possessing lands on which to erect buildings adapted to the needs of the exhibition, the managers have, from first to last, expended about $200,000 for temporary structures erected on leased ground.

When we reflect on the large sum thus outlayed, it seems singular that a permanent location has not been secured, and strange that these enterprises should have justified such large expenditures. This can be only understood when we remember that the people of San Francisco have always liberally supported these industrial exhibitions, and that the managers have given time and thought to the careful administration of affairs in connection therewith, voluntarily and without recompense.

But the time is near when it will be necessary to obtain a site on which a building suitable for these exhibitions can be erected for permanent use. In two years the lease of ground occupied by the Pavilion expires, at its present terms, an extension of one year being allowed by the payment of a bonus of $7,500.

It is believed, and hoped, that the present exhibition will relieve the managers of debt and enable them to refund to the public spirited citizens and corporations the balance due them on the loans they so generously made two years ago, for which no interest is asked and on which one-half, so far, has been reimbursed, leaving an indebtedness remaining of $29,064.63.

Value of These Exhibitions.

It is difficult to estimate the value of these Industrial Exhibitions to a city like San Francisco, but it is not difficult to see many practical benefits that have resulted to the world of science, industry and art.

Dating from the exhibition of 1851, the projenitor of this style of industrial exhibition, an exemplification is the wonderful improvements made in the style of doing engineering and mechanical work, and the cultivated thought bestowed thereon.

We have always had prominent examples of excellence in design and finish in many public works entrusted to special men, but the general tone of work in all the branches of art and industry has advanced enormously since the year of the first great international exhibition, and this is due to the direct and free interchange of observation and ideas between different nations and their representative men. For example, the massiveness and simplicity of machines of English make, and lack of beauty and design, the elegance and complicacy and extreme lightness of machines of French make, have both become modified and the best of both are now found combined in each. So also in large public works, the best points of all such works, wherever constructed, have been brought before the engineering world through these industrial exhibitions, and the world has had the benefit of them.

A Stimulus to Investigation.

They have stimulated investigation, arrested thought, generated energy, broken down false pride, and through inquiries suggested by fact-developed, have liberalized the professions and have endowed the arts and industries with a value heretofore unknown.

When one wanders though the avenues of these industrial exhibition buildings, among the silent and expressive evidences of thought; through genius put in form and substance, involuntarily he wonders if man has a limit set to his work, and whether the mission of man in this age is not that of machine builder, giver of life to dead metal and energy to inanition. And it would seem when we witness the subtle motion and nervous activity of the mechanical parts of many a machine, that the Maker of all Things, through man, had imparted to them the faculty of doing what man by means of his hands can do, and requiring but the aid of his senses to give them life and being.

The ever restless spirit in man requires a channel through which his restlessness finds a counter-irritant, in the soothing influence of mental and physical occupation. The present age is favorable to invention, to commerce and economical industry, and thus preserves the man and builds up his faculties; on the other hand, if his energies were expended in war and bloodshed, or in pleasure and sensuality, invention, commerce and the economic industries would disappear and man would lapse into semi-barbarism or degenerate in effeminacy or effeteness.

Every citizen who sincerely and honestly wishes good to his country, must recognize the

(Continued on Page 116.)

Banking.

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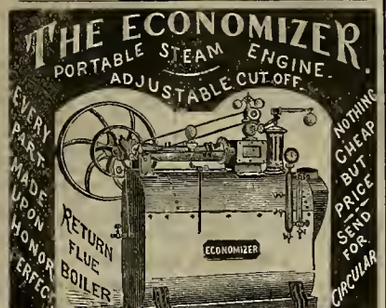

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150 lbs of salt at 1½c	22.50
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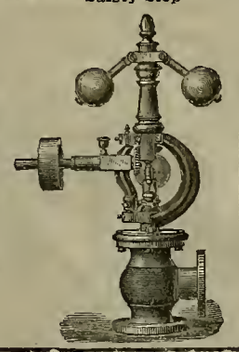

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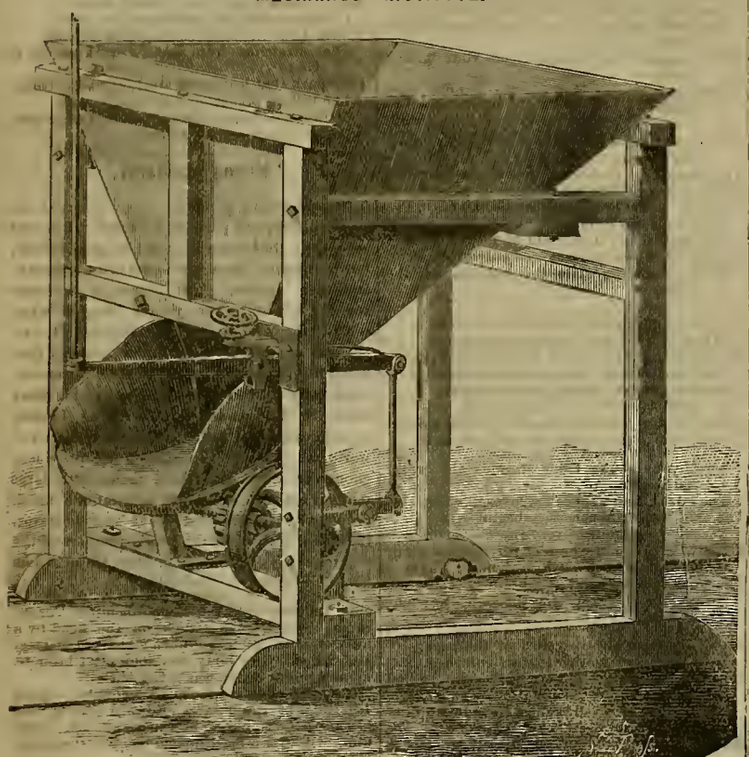

It may be considered as now fully demonstrated, by careful and long-continued experimentation, that the plan upon which a perfect ore feeder must be constructed is that of the *carrier*, and not that of the shaking table. Uniform and accurate feeding is not possible upon the latter plan. The ore must be evenly carried, upon a steadily advancing plane, or table, to the line of discharge, and there simply *dropped*. Spasmodic or jerky contrivances will not answer the purpose.

REFERENCES.

A letter received from the Julian Mill, Newcastle, says, of the Table Feeder: "It is the most perfect Feeder we have ever seen; don't see how any mill can do without them."——A letter from Mr. C. C. Belding, of Amador County, speaks in the highest terms of them.——Two of the machines were shipped to the Bunker Hill Mill, Amador County.——Mr. Stevenson, of Boston Mill, Gold Hill, Nevada, says they are the best Feeder he has ever seen.——Mr. Lachman, of the Soulsby Mill, Tuolumne County, says they work splendid; could not do better.——Two of the machines were shipped to the California Company, Nevada City.——C. J. Garland, of Mosquito Gulch, Calaveras County, says: "I find them an excellent machine."——S. D. B. Stewart, Supt. Lincoln Gold Mining Company, says they are a perfect success.——C. C. Hewitt, Supt. Keystone Mining Company, says: "I can safely recommend them to all millmen."

We warrant the machines to give perfect satisfaction, and to be a better and more durable Feeder than any other in the market, and will sell them as cheap as any other machine of its class.

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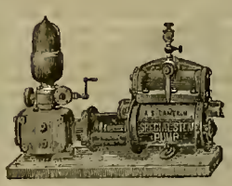

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SAN FRANCISCO.

(Continued from Page 113.)

potential influence of industry and honesty intelligently directed. To these ends are these industrial exhibitions dedicated, and their utility includes all this and more, and when taken in connection with the influence that Mechanic Institutes impart, the results cannot be otherthan good.

It may be proper here to state that however inseparably the Mechanics' Institute and these industrial exhibitions are connected, the managers have endeavored faithfully by the distinct and seperate organization of the two bodies to hold the Mechanics' Institute free from any possibility of loss, but the sole recipient of any profit.

Twenty-one years ago last April the Mechanics' Institute was organized, and now having attained its majority it comes before you in man's estate, happy in the esteem of the good citizens of San Francisco, invites you to visit its rooms and building, and examine its library, and will be glad to have you become a member in its family of over two thousand. It possesses a valuable library of 28,000 volumes of standard works of reference and instruction, and although representing the industries and the mechanic arts, its membership is free alike to all.

Mechanics' Institutes.

Mechanics' Institutes, like industrial exhibitions, are devoted to the interests of the people and are of the people, and their managers should desire the greatest good to the greater number in all matters of public policy and private interests.

The greatest good for the average man is that he should be educated to intelligently labor with the hands that God has given him, and to respect the rights of others to do likewise; and while the brain and mind is not neglected the body should be cultivated.

Education.

And this, involving the matter of public education—the right and obligation of every citizen to receive its education from the government—brings home to the mind the inquiry that will flash across it, how far the State can justly carry its system of education in the ascending scale of special instruction. And how long will the people consent to be taxed when the school census is greater and money supply less, if the higher branches are to be forever included in the curriculum of public education?

California may well be proud of her grammar and high schools, and universities. She has done well to lay the foundations of these institutions deep and secure so that they may last for all time to come. But having once fully endowed and fairly established them, it should be left, without affecting their fundamental principles of organization, to private good will and to those who receive the special benefits of the higher education, to provide for that which the State now supplies free.

I believe that every child is entitled to a good American elementary education in the national tongue, and the State should require that every child be so educated for the good of the State and the republic. Simplicity the course of instruction, teach habits of industry, sobriety and morality, and make labor to be respected. Take care that the school tax becomes not onerous. Educate as a necessity, not as a luxury, and distribute the benefits of free tuition with a firm and impartial hand.

After 100 years of experimenting, it is time that our experience be carefully summed up, and the summing up be made in a spirit of pure patriotism and broad benevolence, and if the line can be marked where no farther the State shall go on educating, then let those in the ascending scale of diminishing numbers support the high schools, the university and such institutions across that line and which may have been already established by the State.

While the country rejoices that this glorious republic has safely passed very many dangers of social and political character, and has attained its one hundredth year, we, in California, have additional cause for gratitude in the prosperity that has attended us throughout the 26 years of our tenancy, and for the goodness of God in planting American liberty on this Pacific coast, on such prolific soil, and preserving it here; but here, where the setting sun fringes with gold the shores of our beloved country, we have, as yet, scarcely a history, we have it all in our recollection; the past is familiar to us, the present we realize, but who dares predict the future?

The Growth of San Francisco.

The bare, unpoetic facts of the growth of this city outruns poetic license and shadows the tales of fairyland.

In less than the average age of man, 3,000 miles west of the westermost commercial city of America, has sprung into existence an American city, so famed for its commercial importance, its wealth, its depending resources, natural and industrial, that no traveler or tourist can sit down, in the quiet of retiring life, and tell the tales of his traveling unless he has visited it.

Do you mourn the departed days of quietude and happy indifference of the pueblo of Yerba Buena, when the dark-eyed Spanish maiden or the contented cock-fighting Padre held court and sway, with no interruption of their quiet, except the excitement of a hull or bear tournament, and no dream of the future, except the individual future, and no suspicion of the great destiny of that pueblo?

Or do you rejoice in the transformation of thirty years and in the greatness of San Francisco, with its bustle, its business, its hulls and bears, its thousand stacks, with the countless industries rolling out in the expanding, ascending black smoke; the innumerable ships of steam and sail riding at peace in the noble bay, from all parts of the world, waiting to receive or discharge cargo; its church spires and the religious feeling that crested them; its libraries, its theaters, its hospitals, its civilization, and its Americanism that stands on this western outpost of our common country guarding its liberties like a sentinel at the gate of republican freedom.

Thoughts Suggested by the Fair.

This industrial exhibition suggests many thoughts in connection with the industrial progress of this coast. To the most casual observer there are two interests to which all others are subservient, and these interests are of such a character and extent as to attract the attention of the commercial communities of the world.

The mines have been very productive and some have yielded such wonderful wealth, the amount of which almost staggers belief.

The earth has yielded bountifully, so bountifully that it is estimated after providing sufficient breadstuff for our people, there will be left to export for other countries, over 700,000 tons, or enough to load 700 ships of 1,000 tons burden each.

Although the agricultural and mining interests predominate so greatly, other and lesser industries are taking root and thriving, and while we cannot lay claim, as yet, to the diversified industry possessed by older States, we are yearly becoming better prepared to meet our own requirements; to be independent of outside sources of supply, and to supply our neighbors.

Our trade with Australia, Mexico, Hawaiian Islands, Japan, China, British Columbia and other foreign nations is increasing, and one of the most satisfactory evidences of our commercial growth is that of the 362,327 tons of shipping arrived in this port during the first quarter of the present year, 189,660 tons, over one-half, were from domestic Pacific ports, showing a remarkable home commerce developed between the States and Territory of the Pacific side within the last 15 or 20 years.

It requires but little investigation to realize that this radical and satisfactory change in our commercial relations is due mainly to our increased facilities for manufacturing and producing, hence, if the results have been so satisfactory under the limited opportunities of the past, is it not a guarantee of prosperity and progress in the future, if these interests are legitimately nurtured and protected?

Manufacturing Industry in California.

Every new manufacturing industry permanently established here, is worth more to the State than the discovery of three of the richest gold or silver mines, for the developing and expanding of the former adds wealth to itself, but of the latter makes it poorer. Every citizen having the good of the State at heart, should encourage by means at his command the establishing of new branches of industry, and in order to provide for their maintenance, he should see to it that in the education of youth and in the social influences that surround boys and girls, industry and honest labor should occupy a post of honor.

The manufacturer, especially the small manufacturer, labors in San Francisco under very many difficulties, and his path is not always strewn with roses; his isolation creates difficulties of supply of raw material, and usually the legitimate requirements of his business, when once established, are beyond his financial ability to meet. The high rates of interest prohibiting the borrowing of money, the peculiarity of the import laws or customs, instead of protecting, often work a great hardship on him. The anomalous condition of the national and State currency is not calculated to improve the condition of the manufacturer, and the relation between silver and gold at this time is embarrassing to manufacturer and unfair to his workmen.

A Metallic Currency.

Common sense demands that there should be but one standard of value. All values are, however, relative, but the more stable that value is, the better; and it seems reasonable to accept gold, as being less liable to fluctuate, as that standard.

No effort of government, backed by the loyal sentiments of the people, succeeded in making the dollar greenback equal in value to the gold dollar. Nor is it possible to make a debased silver dollar equal in value to a gold dollar unless that is debased in the equivalent ratio.

A great commercial and manufacturing country like this should have but one currency, an honest one, with no superior and national; a currency we should be as willing to receive for custom dues as to pay out for honest debts.

With the return of metallic currency as the general circulating medium of trade, we raise the standard of the metallic industries, and recognizing the high claims of gold as representing civilization in commerce, we accord to iron its position as the great civilizer of the economic industries.

The poetry of the by-gone may be sung, the hopes of the future cherished, in vain, if honesty and industry does not sustain the present.

This nation has been especially favored during the past century. Its commerce, its industries and its natural resources have developed in an unparalleled degree. It has, in that period of time, planted liberty and civilization over more country that it ever existed in before; it has produced men and women peers of any man or woman of the time; its genius, its invention, its literature, its learning, is in sympathy with and often in advance of sister nations. It has done more to balance the minds of men and destroy the fetters of women, than all time has done before, and while we do not forget the evil among us, let us rejoice that so large a share of good has come from the seeds planted by our forefathers, and determine in this, our nation's centenary of years, to emulate their examples of simplicity, of honesty, of industry and true patriotism.

The Artisan.

The following is the poem written for the occasion and read by Mr. Frank Soule at the opening of the Mechanics' fair:

Amid this life, so full of pleasant things,
How few the number who have ever thought,
Whose apt and cunning hand it is that brings
So many beauties from rough nature wrought;
So many comforts whence true pleasure spring;
Who each invention to perfection brought,
Transforming nature's wild and rugged dress
To forms of beauty, wealth and loveliness.

Behold! around, above you, sprung and spread
These walls, yon arch, each beam and architrave,
This dome that hangs suspended overhead
The symmetry the cunning builder gave—
Spun from the brain, to such perfection led;
And roof, and wall, and arch, and hollow nave,
Give answer; so be proud of your grand trade—
"This temple the MECHANICS' hands have made."

Who reared the shrine where Christians meet for prayer,
And formed its pinnacles that tempt the sky?
Who hung St. Peter's dome as if on air
It rested, a vast arch athwart the sky?
Who built the Pyramids, and temples where
The wondrous ruins of old Memphis lie;
Or Thebes, whose palaces and columns pile
With crumbling slabs the borders of the Nile?

His varied guilds are ancient as the time
When new life and inherent beauty told
What taste required when Eden in its prime
Surrounded man with glories manifold.
Inventive genius, pristine and sublime,
As broad as nature, as creation old,
From the first garments made in Eden blooms
Down through the ages to the busy looms.

Where Lyons weaves from shrouds the worm hath spun
The silken tissues beauty loves to wear;
The skill that with necessity begun—
Necessity continues everywhere—
Finds fit expression where'er threads are spun,
Or gliding shuttles move in dances, there—
The work of busy hand and brain is seen—
'Tis the Mechanic speaks through the machine.

He speaks from out the relics of the past:
Each shaft and temple that in ruin lies
He planned and fashioned; time and legions vast,
Came and destroyed; beneath the broad, blue skies
He thought and toiled, and from the earth at last
Tower, shaft and pinnacle began to rise,
Stretched upward, calling through the middle air
The world of faith to thought and praise and prayer.

Behold yon ship! who laid her plunking keel,
And placed and clad her timbers firm and strong?
On knee and beam, and plank the workman's seal
Of skill and labor placed; and traced along
Her model, lines of beauty; guiding wheel,
And mast, and spar, and ropes, a countless throng;
Wove, made and bent her sails that hence shall be
The pinions wafting her across the sea.

Upon the ocean thus as on the land
This artisan leaves fixed his hands' impress;
He built the ships of the Armada grand,
And molds our modern ironclads no less.
Our swift propellers his clear genius planned
The waters as the land his power confess;
He builds and sends his avitors to sail,
Buoyed on the air, to buffet with the gale.

Throughout the world, and through the lapse of time
He has been moving, and improving all
From first ideas up to the sublime;
His brain and hand have answered to the call
Of Progress; wheresoe'er might genius climb
And grand invention at its bidding fall,
Minerva-like from its creative brain,
He hath not toiled, nor thought, nor wrought in vain.

Look all around, let busy fancy wing
Throughout earth's circle; call in memory's aid,
And ask what comfort life to us would bring
But for the pleasant things his art assayed?
Your taper finger, lady, wears the ring
His own, grown rough with honest toil, hath made;
'Twas the mechanic formed for you the chair;
His fingers made the "number twos" you wear.

When fields are yellow with the golden grain
Whose heads bend down like pilgrims bowed in prayer,
And crops are ripe for harvest, hill and plain
Tossed into mimic billows by the air—
Comes not the sickle, nor the scythe again—
The patent reaper's mighty power is there;
And Ceres smiles upon the skill of man,
The plodding, keen, inventive Artisan.

I tire; too numerous the guerdons he
Hath given the world, for me to cite or sing;
Of benefactors first in rank should be
His place and fame; 'tis not the rich who bring,
Their costly purchased luxuries that we
Should highest prize; give me the simplest thing
My dear friend's hand hath made; let him who will
Choose some bought *bijou* of a stranger's skill.

Let lawyers plead; let pious parsons pray;
And doctors physic those who trust their skill;
Let merchants buy and sell; and bankers lay
Their wits together how their vaults to fill,
And do them all due honor; but the bay
And laurel worthiest should crown him still
Who fills our lives with comfort planned and wrought
By skillful hands, and long and patient thought.

And so farewell my unexhausted theme;
I scarce beyond its vestibule have trod;
Within I see the Architect's grand scheme
That stretches from earth's workers up to God.
The spark that leaves the steel; the solar beam,
The rolling planet, and the lowly clod
Bide the same laws; who follows best their plan
In labor is the greatest Artisan.

Mining Accidents.

Several mining accidents have occurred recently in different parts of the coast. It would seem as if they occur in batches, periodically, for sometimes none are heard of in a month, and then a dozen will occur in a short space of a week. Few people imagine when reading the brief dispatches mentioning the accidents in mines, how much distress they bring upon the families of the poor unfortunates. By those referred to, by us this week alone, 19 children are left fatherless. Usually in such cases they are left to the cold charity of world, as few of the miners are provident enough to leave much, and those with large families are seldom able to accumulate much property. To their credit be it said, however, that in all such cases the brother miners of the victim always give freely to assist those whom his misfortune has left destitute.

On the 3d of August, William A. Scott, chief timberman in the Leopard mine, Cornucopia, Nevada, was struck on the head by a heavy bucket, knocked down a shaft of 260 feet and killed. The body was soon after brought up and the next day was given burial.

In the Oneida mine, Amador county, August 4th, one of the miners, Edward Gonig, was killed by the tumbling of a mass of rock upon him, just after a blast he had let off. He leaves a wife and six children.

Near Grass Valley, Nevada county, on the 4th instant, a fatal accident occurred in the incline shaft of the Omaha mine. As two workmen were ascending the shaft to the surface, a loose car came thundering down the incline and struck Thomas Clemo, breaking his neck and mashing his skull as well as every bone in his body. The other miner, Alfred Argall, was struck by the car in its descent on the hip and thrown flat in the gangway, which probably saved his life. The car descended 150 feet before striking them. Clemo leaves a wife and three children. The cause of the car getting loose will be the subject matter for an investigation.

On the 9th instant, William Hurd, a miner, was killed in the Ophir mine, on the Comstock, by falling between the case and the side of the shaft. He leaves a wife and ten children.

Last Monday a miner named John Smith, was killed near Folsom, in the mining claim of C. Lawson, by a cave of earth falling upon him.

It is reported from Sweetwater, Texas, that some 3,000 Indians encamped at the North Fork of the Red river, near Fort Elliott, are preparing for the war path, and the citizens of that vicinity fear a general massacre, as the troops have been sent to reinforce Crook. Orders have been given that Indians returning to Fort Reno for rations shall be disarmed.

THE House Judiciary Committee has agreed to report a joint resolution directing the Secretary of the Interior to withhold the patent from the New Idria mining company for the Panoche Grande property until Congress can make further investigation and determine whether the company or McGarraban is owner.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.)

FOR WEEK ENDING AUGUST 1ST, 1876.

SHEEP SHEARS.—Robert H. Anstin, Plainsburg, Cal.

SEED PLANTERS.—William T. Easterday, Watsonville, Cal.

HYDRAULIC ELEVATORS.—Joseph Perkins, S. F.

BOX NAILING MACHINE.—Geo W. Swan, S. F.

THERMOSCOPIC LUBRICATOR.—E. D. Tyne, S. F.

FEEDING AND DISCHARGING HOPPERS.—Henry J. Huttner, New Almaden, Cal.

INSIDE DIVIDERS FOR HARVESTERS.—James Moore, Pescadero, Cal.

AMALGAMATING PROCESS.—Chas. F. Secor, S. F.

COMPOSITION BEVERAGE.—Wm. A. Winder and Melville M. Shearer, San Diego, Cal.

RE-ISSUES.

HYDRAULIC JACKS.—Philip Hinkle, S. F.

TRADE MARK.

PAPER BAGS.—Blake, Robbins & Co., S. F.

The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

General News Items.

THE small-pox epidemic seems to be on the decrease in this city.

THEY are having more hot weather in New York and Philadelphia.

THE *Sumatra* will take from ns 400 Chinese panpers and 26 lepers.

THE English education bill has passed the House of Commons.

OVER 40 fisherman perished in a gale on the coast of Great Britain, last week.

THERE is great financial disorder in India owing to the recent fall in the valne of silver.

THE anm of $1,614,531 was shipped in treasnre overland by Wells, Fargo & Co., last month.

PROPERTY owners and residents of North Beach are making a determined effort to have the Selby smelting works removed from that locality.

CHARLETON & Co., of Staunton iron works, Hartlepool, England, have snspended. Liabilities, $900,000; assets snbject to realization said to be much greater.

AN eating honse is to be opened in the vicinity of the stock boards by some enterprising ladies who want the stock sharps to drink coffee instead of liquor.

MAJOR-GENERAL IRWIN MCDOWELL, the recently appointed commander of the department of the Pacific, was accorded a public reception on his arrival on Tnesday evening last.

A COLLISION occnrred on Monday night on the Somerset & Dorset railway, near Redstock, between a London train and an empty excursion train. Twelve persons were killed and 30 injured.

GOVERNOR CHENEY has asked the New Hampshire delegation in Congress, for legislation pnnishing willful interference with ocean cables. This action is owing to the numerons breaks in the direct cable.

METALS.

[WHOLESALE.

THURSDAY, M., Aug. 10, 1876.

American Pig Iron, ₩ ton	32 00	@	— —
Scotch Pig Iron, ₩ ton	31 50	@	32 00
White Pig, ₩ ton	40 00	@	50 00
Oregon Pig, ₩ ton	31 50	@	32 50
Refined Bar	— —	@	— 4¼
Boiler, No. 1 to 4	— —	@	— 5
Plate, No. 5 to 8	— —	@	— 5¼
Sheet, No. 10 to 14	— —	@	— 5¾
Sheet, No. 16 to 20	— 5¾	@	— —
Sheet, No. 22 to 24	— 6	@	— —
Sheet, No. 26 to 28	— 6½	@	— —
Horse Shoes, per keg	7 00	@	8 50
Nail Rod	— 10	@	— —
Norway Iron	— 8½	@	— 9½
Rolled Iron	— 4	@	— 8
Osbar Irons for Blacksmiths, Miners, etc.	— —	@	— 4¾
COPPER.—			
Copper Tin'd	— 37	@	— 40
Sheathing, ₩ lb	— 24	@	— 40
Sheathing, Yellow	— 21	@	— 22½
Sheathing, Old Yellow	— 10	@	— 11
Composition Nails	— 21	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ₩ lb	— 20	@	— 25
Anderson & Woods' ordinary sizes	— —	@	— 15
Drill	— —	@	— 16½
Flat Bar	— 16	@	— 50
Plow Steel	— 8½	@	— 9
TIN PLATES.—			
10x14 I C Charcoal	11 00	@	— —
10x14 I X Charcoal	13 00	@	— —
Roofing Plate I O Charcoal	10 00	@	10 50
Banca Tin	— 24	@	— —
Anatralian	— 25	@	— —
Zinc.—By the Cask	— —	@	— 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₩ lb	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 12½
do do 8x4 ft, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	3 60	@	3 76
QUICKSILVER, per ₩	— 43	@	45 —

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, Aug. 9, 8 P. M.

LEGAL TENDERS in S. F., 11 A. M., 89¾ to 90¼. Silver, 5⅛@6.

GOLD in N. Y. 111¾.

GOLD BARS, 880 to 890. SILVER BARS, 16@30 per cent. discount.

EXCHANGE on N.Y., 50-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, 12 per cent. discount.

LONDON — Consols, 93 to 93⅝; Bonds, 102¾

QUICKSILVER in S. F., by the flask, per ₩, 45c.

LEATHER.

[WHOLESALE.]

WEDNESDAY M., Aug. 9, 1876.

Sole Leather, heavy ₩ lb	25	@	29
do do light ₩ lb	20	@	25
Jodot, 8 Kil., per doz	48 00	@	50 00
Jodot, 11 to 15 Kil., per doz	68 00	@	78 00
Jodot 14 to 19 Kil., per doz	82 00	@	94 00
Jodot, second choice, 11 to 16 Kil. ₩ doz	57 00	@	74 00
Cornellian, 12 to 16 Ko	57 00	@	67 00
Cornellian Famales, 12 to 13	63 00	@	67 00
Cornellian Females, 14 to 16 Kil	71 00	@	76 50
Simon Ulimo Famales, 12 to 13, Kil	58 00	@	62 00
Simon Ulimo Famales, 14 to 15, Kil	66 00	@	70 00
Simon Ulimo Famales, 16 to 17, Kil	74 00	@	74 00
Simon, 18 Kil., ₩ doz	61 00	@	63 00
Simon, 20 Kil., ₩ doz	65 00	@	67 00
Simon, 24 Kil. ₩ doz	72 00	@	74 00
Robert Calf, 7 and 9 Kil	35 00	@	40 00
French Kips, ₩ lb	1 00	@	1 25
California Kip, ₩ doz	40 00	@	60 00
French Sheep, all colors, ₩ doz	8 00	@	15 00
Eastern Calf for Backs, ₩ lb	1 00	@	1 25
Sheep Roans for Topping, all colors, ₩ doz	9 00	@	13 00
Sheep Roans for Linings, ₩ doz	5 50	@	10 50
California Russet Sheep Lining	1 75	@	4 50
Best Jodot Calf Boot Legs, ₩ pair	5 00	@	5 25
Good French Calf Boot Legs, ₩ pair	4 00	@	4 75
French Calf Boot Legs, ₩ pair	4 00	@	—
Harness Leather, ₩ lb	24	@	32½
California Kips, ₩ doz	48 00	@	72 —
Skirting Leather, ₩ lb	33	@	37½
Welt Leather, ₩ doz	30 00	@	50 00
Calf Leather, ₩ foot	17	@	¾
Wax Side Leather, ₩ foot	17	@	—

LUMBER.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE —Retail Price.	
Rough, ₩ M	$18 00	Rough, ₩ M	22 50
Rough refuse, ₩ M	14 00	Fencing, ₩ M	22 50
Rough clear, ₩ M	30 00	Flooring and Step, ₩ M	32 50
Rough clear refuse, M	20 00	Flooring, narrow, ₩ M	35 00
Rustic, ₩ M	32 50	Flooring, 2d quality, M	25
Rustic, refuse, ₩ M	22 50	Laths, ₩ M	3 50
Surfaced, ₩ M	30 00	Furring, ₩ lineal ft	¾
Surfaced refuse, ₩ M	20 00	REDWOOD—Retail.	
Flooring, ₩ M	28 00	Rough, ₩ M	22 50
Flooring, refuse, ₩ M	18 00	Rough refuse, ₩ M	18 00
Beaded flooring, ₩ M	30 00	Rough Pickets, ₩ M	18 00
Beaded floor, refuse, M	20 00	Rough Pickets, p'd, M	20
Half-inch Siding, M	20 00	Fancy Pickets, ₩ M	30
Half-inch siding, ref, M	16 00	Siding, ₩ M	25 00
Half-inch, Surfaced, M	25 00	Surfaced and Long Boarded	37 50
Half-inch Surf. ref., M	20 00	Flooring	35 00
Half-inch Battens, M	20 50	Do do refuse, ₩ M	25 00
Pickets, rough, ₩ M	1 00	Half-inch surfaced, M	32 50
Pickets, rough, p'nd	13 00	Rustic, No. 1, ₩ M	40 00
Pickets, fancy, p'nd	26 00	Battens, lineal foot	¾
Shingles, ₩ M	3 00	Shingles, ₩ M	3 c

RHEUMATISM AND GOUT are Invariably benefited by sulphur bathing. The difficulty of procuring trustworthy sulphur baths without the dangerous exposures incident to public bathing houses, has been fully met by GLENN'S INVALUABLE SULPHUR SOAP. It is sold everywhere.

Mining and Scientific Press,

Started in 1860, is one of the oldest weekly journals now published in San Francisco. It has been conducted by its present proprietors for ten years, during which period it has been repeatedly enlarged and constantly improved. The active and steadfast efforts of its publishers have gained for its conduct an amount of practical experience greater than any other publishers have accumulated on this coast, of a weekly journal.

The sum paid by us for the best editorial talent obtainable for our special class journal; for engravings, for interesting news and correspondence, and for printing a large-sized, handsome sheet, is unequalled by that of any other American weekly west of the Mississippi.

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HENRY NELSON, Merced Falls, is requested to address this office.

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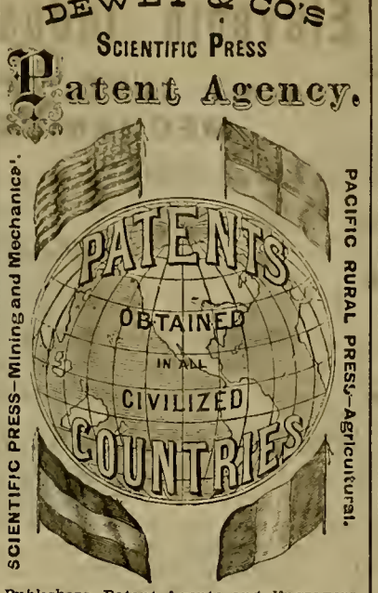

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THANKS, ETC.—*Messrs. Dewey & Co.—Gents:* I write to acknowledge the receipt of letters patent on my fruit drier, which came to hand to-day. Accept my thanks for the very satisfactory and successful manner in which this case has been handled.

Respectfully yours, HILAND G. HULBURN.

Placerville, July 20th, 1876.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Office South Comstock Gold and Silver Mining Company.

NOTICE.—The annual meeting of the stockholders of the South Comstock Gold and Silver Mining Company, for the election of trustees and the transaction of such other business as may be presented, will be held on Monday, the 21st day of August, 1876, at two o'clock P. M., of that day, at the office of the company. Transfer books will be closed on Wednesday, August 16th, 1876, at three o'clock P. M.

J. M. BUFFINGTON, Secretary.

Office, Rooms 3 and 4, No. 311 California street, over Ætna Insurance Office, entrance 309 California street, San Francisco, Cal.

Kearsarge Consolidated Quicksilver Mining Company.

Principal place of business, San Francisco, Cal. Location of works, Lake Mining District, Lake County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the first day of July, 1876, an assessment of fifteen cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, No. 10 Stevenson Block, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 28th day of August, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 16th day of September, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

JAMES MCHAFFEE, Secretary.

Office, Room 10, Stevenson Block, San Francisco, Cal.

Northerly Five Cent Hill Gravel Mining Company.

Location of principal place of business, San Francisco, Cal.

Notice is hereby given that at a meeting of the Directors, held on the ninth day of August, 1876, an assessment of 75 cents per share was levied upon the capital stock of the corporation, payable immediately, to the Secretary, at the office of the company, room 3, Merchants' Exchange, California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Monday, the 11th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 28th day of September, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

WARREN BRYANT, Secretary,

Room 33, Merchants' Exchange, San Francisco, Cal.

Taylor Mill and Mining Company—Principal place of business, city and county of San Francisco. Location of works, Garden Valley Mining District.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 10th day of August, 1876, an assessment of forty (40) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at his office, No. 607 Montgomery street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 13th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the fourth day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

SAM'L S MURFEY, Secretary.

Office, No. 607 Montgomery street, San Francisco, Cal.

Office of the Tintic Milling and Mining Company, San Francisco, Cal., July 14th, 1876.

The annual meeting of the stockholders of the Tintic Milling and Mining Company will be held at the office of the company, No. 310 Sansome street, San Francisco, on Monday, August 14th, 1876, at two o'clock P. M., for the election of directors for the ensuing year, and the transaction of such other business as may be brought before the stockholders. By direction of the Board of Directors.

H. CLAY MILLER, Secretary.

San Francisco, July 14th, 1876.

11th Industrial Exhibition,

Under the Auspices of the

MECHANICS' INSTITUTE.

The managers have the honor to announce that the forthcoming Exhibition will be opened to the public on

Tuesday, August 8th,

At 11 A. M., with the usual ceremonies. By the desire and co-operation of the leading citizens of San Francisco, the Exhibition will be held on a much grander scale than heretofore.

The Exhibition Building, Occupying an Area of over 214,000 Feet

Of floor room, will be completely filled with the varied products of the skill and industry of the people and of the soil. Over 700,000 persons were admitted during the last Fair. The managers intend to engage the services of the best instrumental talent of the country, so as to enable them to give unequaled

Musical Concerts Afternoon and Evening.

In every department applications for space far exceed expectations, and surpass those of former Fairs. Intending exhibitors must not delay filing their applications, otherwise they will be excluded.

The Exhibition will continue at least one month.

There will be no charge for exhibiting space.

Application for space or for information should be addressed to the Secretary of the Board of Managers, Eleventh Exhibition, 27 Post St., San Francisco, or to J. H. Gilmore, Supt., at same address.

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CALIFORNIA THEATER, Bush Street, above Kearny. Open every evening with the best Dramatic Company in the United States. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance. Doors open at half past seven. ROSE EYTINGE.

BOUND VOLUMES of the MINING AND SCIENTIFIC PRESS from Jan. 1st, 1864, are for sale at this office at $5 per volume, two volumes a year. Unbound at $3 per volume.

Iron and Machine Works.

WM. HAWKINS. T. G. CANTRELL

HAWKINS & CANTRELL,

MACHINE WORKS,

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Near Howard, - - - SAN FRANCISCO.

MANUFACTURERS OF

Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horse Power.

N. B.—Jobbing and Repairing done with Dispatch.

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MANUFACTURERS OF

STEAM ENGINES,

Quartz, Flour and Saw Mills,

Hayes' Improved Steam Pump, Brodis's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard, San Francisco.

THE RISDON

Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,

SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

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SHEET IRON PIPE.

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Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

☞ All kinds of Machinery made and repaired.

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Light and Heavy Castings of Every Description Manufactured.

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The Only Illuminating Tile Manufactured for Lighting Cellars, Basements and Dark Rooms which provides proper ventilation for such places.

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Under the Auspices of the

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OF FLOOR ROOM, WILL BE COMPLETELY FILLED WITH THE VARIED PRODUCTS OF THE SKILL AND INDUSTRY OF THE PEOPLE AND OF THE SOIL. OVER 700,000 PERSONS WERE ADMITTED DURING THE LAST FAIR. THE MANAGERS INTEND TO ENGAGE THE SERVICES OF THE BEST INSTRUMENTAL TALENT OF THE COUNTRY, SO AS TO ENABLE THEM TO GIVE UNEQUALED

MUSICAL CONCERTS AFTERNOON AND EVENING.

In every Department applicatione for epace far exceed expsctations, and surpass those of former Fairs. Intending Exhibitors must not delay filing their applications, otherwise they will be excluded.

The Exhibition will Continue at least One Month.

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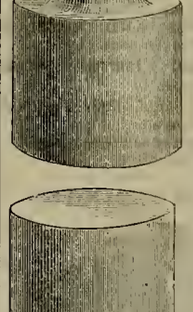
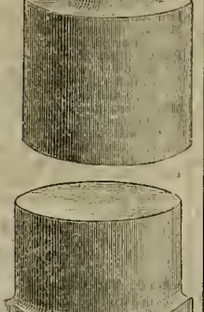
IMPORTANT NOTICE.

Reduction in Price from 16 Cents to 12 Cents Per Pound.





Owing to our largely increased business, the present low price of Iron from which our Steel is manufactured and the improved facilities for casting and forging, we take great pleasure in announcing that from and after this date we will supply our IMPROVED CAST AND FORGED STEEL SHOES AND DIES FOR QUARTZ MILLS at 12 cents per pound, delivered at San Francisco or Sacramento, instead of 16 cents, as heretofore.

We also furnish Steel Plates for Blake and other Ore Crushers, Steel Gut Gearing, etc., for Mills and Hoisting Works, Steel Pan Shoes, Battery Cams and Tappets, etc.

Address all orders, with dimensions or drawings, to

CAST STEEL SHOE & DIE CO.,
59 Nevada Block, S. F.

PACIFIC

Rolling Mill Company,

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Established for the Manufacture of

RAILROAD AND OTHER IRON

—AND—

Every Variety of Shafting,

Embracing ALL SIZES of

Steamboat Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames,

—ALSO—

HAMMERED IRON

Of every description on hand.

☞ Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2032, San Francisco, Cal., will receive prompt attention

☞ The highest price paid for Scrap Iron.

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Machinery and Castings of all kinds.

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MANUFACTURERS OF ALL KINDS OF

Wharf and Bridge Bolts, Railroad Trestle Work, Car Frames and Bolts, Machine Bolts, Set Screws and Tap Bolts, Lag or Coach Screws.

ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGON AND SQUARE NUTS, WASHERS, BOLT ENDS, TURN-BUCKLES, ETC., ETC.

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Dunbar's Patent Self-Adjusting Steam Piston PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets,

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Brass Foundry & Pump Factory.

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☞ Special attention paid to Brewers', Distillers', Beer and Hot Liquor Pumps, and Wine Pumps. Particular attention paid to AIR PUMPS, also to

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Artesian Well Pumps Made to Order.

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All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells, and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch

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BIRCH, ARGALL & CO.,

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INDESTRUCTIBLE, NON-CONDUCTOR OF HEAT

Savee 15 to 30 per cent. in Fuel.

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FIRE AND WEATHER PROOF;

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The Mining and Scientific Press,

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SOLE AGENTS FOR

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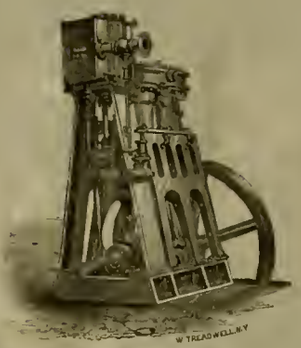
Bucket-Plunger Steam Pump.

COSMOPOLITAN EMERY WHEELS AND STANDS.



Putnam Machine Company's

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Centrifugal Steam Pumps.

FARMER'S ELECTRIC MACHINE FOR BLASTING AND HILL'S EXPLODERS.

HASKINS' BLOWING ENGINES

For Mines.

Large Assortment of

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HASKINS' PORTABLE HOISTING ENGINES, constructed especially for economical use in mining districts, with Compressed Air or Steam, adapted to all classes of underground work and made throughout on the interchangeable plan, so that all parts can be duplicated when desired. Catalogues and Estimates given on application.

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AWARDED TO

San Francisco Steam Pumps.

AFTER ONE OF THE

MOST THOROUGH TRIALS

Ever Had in the United States,

BETWEEN COMPETITORS

—OF—

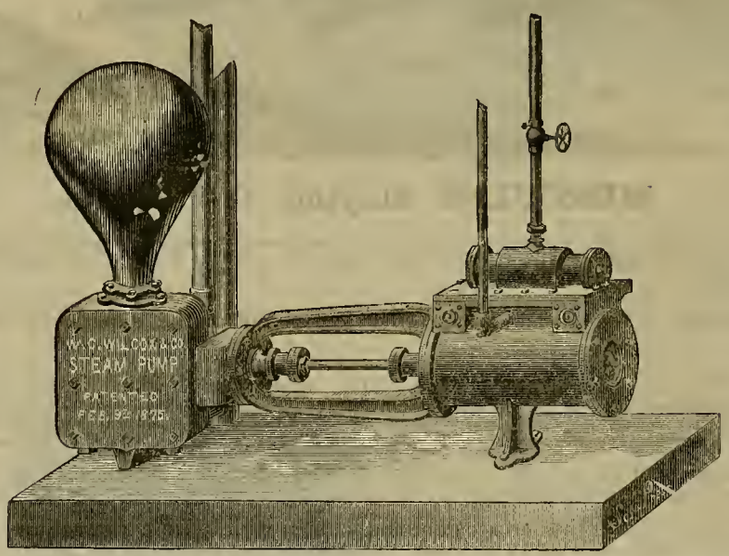
Best Established Reputation,

In which, at great expense, the different Steam Pumps were tried under every test known to experts, the Examining Committee of the Tenth Industrial Fair of the Mechanics' Institute have awarded to us their

GOLD MEDAL

—FOR—

Best Steam Pumps on Exhibition.



We are prepared to furnish PUMPS UNDER CONTRACT, guaranteeing their ability to perform any specific work for which steam pumps are adaptable, such as

RAISING WATER FROM MINES

FOR WATER WORKS,

FEEDING BOILERS, RAISING WATER FROM WELLS; STEAMER AND SHIP PUMPS, ETC.

We would also call the attention of those interested, to our Direct Acting Deep-Well Pumps for raising water from

Any Desired Depth.

Also to our Especial Construction of Pumps FOR HANDLING QUICKSILVER or heavy liquids.

We claim that our Pumps are the **best** ever made in **simplicity** of construction, economical use of power, **durability** and perfect adaptability for general uses, and we ask all persons interested to investigate **our title to this claim.** Salesrooms at our Machine Shop, 114 and 116 BEALE STREET, SAN FRANCISCO.

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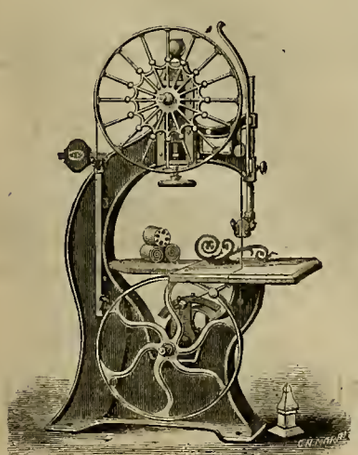

SOLE AGENT FOR THE PACIFIC COAST FOR

J. A. Fay & Co's Wood-working Machinery,

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Tanite Co's Emery Wheels and Machinery,

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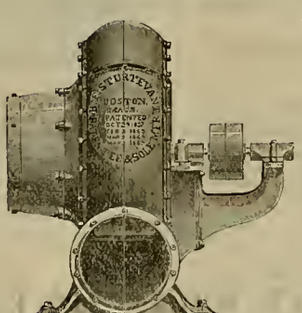

Sturtevant Exhaust Fan for Removing Shavings and Sawdust from Machines.

Sturtevant's Blowers and Exhaust Fans,

J.A. Roebling's Sons Wire Rope,

Pure Oak Tanned Leather Belting,

Perin's French Band Saw Blades,

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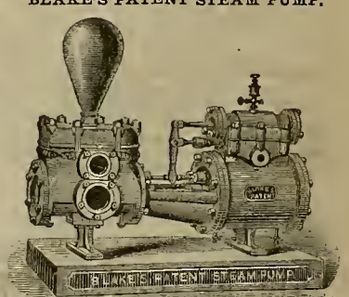
Nathan & Dreyfus' Glass Oilers, and Mill and Mining Supplies of all Kinds.

BLAKE'S PATENT STEAM PUMP.



Over 8,500 in Succeesful Use in the United Statee.

HERCULES POWDER.

HERCULES Slaying the Giants.

Hercules, the son of Jupiter and Alcmena, was descended directly from the Gods. He performed more wonderful deeds of strength than any of the heroes of old. On one occasion, he was sent by Eurystheus to execute very great task, when he found himself opposed by several Giants, among whom were the powerful Giant Geryon, Eurytion, a Monster with three heads and six arms, and the two-headed dog, Orthus. All these he slew with his club. He then came to a high mountain, which, with one blow of his club, he broke from summit to base, and thereby made an entrance into the Mediterranean Sea, through the Rock of Gibraltar, the Straits of which are known to this day as the Pillars of Hercules.]

We wish to call the attention of Miners and others to a few points of the superiority of **Hercules Powder** over all other strong Explosives:

1. Its strength is greater than that of any other in use. The materials of which it consists are compounded upon strictly scientific principles, and are not a simple neutral absorbent employed that will hold a quantity of Nitro-glycerine. It is the opinion of the best chemists to whom the matter has been submitted that no mixture has been employed that so thoroughly promotes the whole tremendous force of the explosives employed, and at the same time neutralizes the offensive gases caused by th explosion. With this powder one-half the time is saved that is lost by nsiog any other strong Powder, before you can resume work after a blast.

2. UNIFORMITY.—The materials of the mixture are chemically prepared, and therefore, great uniformity can always be depended upon and the best results obtained. This is a great advantage over any that varies in its strength as those must which are mixed with any natural earth.

3. SAFETY—So perfect is this mixture that no accident can happen with it from premature or accidental explosion, if persons will half follow tho rules laid dowo for its use. No Powder has ever heen invented where so few accidents have happened with it in proportion to the quantities which have been nsed.

4. CARTRIDGES.—It is well known that nitro-glycerine has a tendency to decompose by volitilization. These are the "fumes" that are smelled on going into a close warm drift, or room where nitro-glycerine powders are stored. To prevent the oscape of these "lumes" an almost hermetically sealed cartridge is employed, and so effeotnally is it, that some cartridges filled with Hercules were exposed to a blazing California sun for six months in summer, with no perceptible loss of strength. This is a great advantage over the open porous paper generally nsed for cartridges.

5. ECONOMY.—We believe that any miner who will take the trouble to investigate the matter will satisfy himself that full 15 per oent. is saved by using the HERCULES over any other strong Powder manufactured.

Query. Is this worth saving? We should think so. Try it. {Hercules X X No. 1, for extreme hard rock. {Hercules X X No. 2, for medium hard rock.

The GREAT SUCCESS of the HERCULES POWDER naturally aroused a strong opposition to its use, and litigation in defense of its rights become necessary. We would therefore call the attention of the public to the FINAL DECISION in the U. S. Circuit Court of the whole matter in favor of the California Powder Works, *which explains itself:*

DECISION OF THE COURT.

At a stated Term of the Circuit Court of the United States of America of the Ninth Judicial Circuit, within and for the District of California, held at the Court Room thereof, in the City and County of San Francisco, on Wednesday, the sixth day of October, A. D., 1875.

Present:—Honorable Stephen J. Field, Associate Justice of the U. S. Supreme Court; Honorable Lorenzo Sawyer, Circuit Judge.

THE GIANT POWDER COMPANY vs. THE CALIFORNIA POWDER WORKS, ET AL., *In Equity, No.* 1,233—The Court having, on the 22d day of September, A. D., 1875, being a day in the July Term, A. D., 1875, of said Court, sustained the demurrer of the defendants to the complainant's amended Bill of Complaint herein, will leave to complainant to amend its said hill on or before the next succeeding rule day, and the said time granted complainant within which to amend its said hill having expired, and the default of said complainant to amend its said hill having heen duly entered, and the Court having on the sixth day of October of the said term and year, on motion of O. R. Greathouse, Esq., solicitor for defendants, M. A. Wheaton, Esq., Solicitor for complainant, heing present, in open Court, and declining to amend his said hill of complaint, he having elected to abide by his said hill of complaint as filed in this cause, ordered that a decree he entered herein dismissing said hill.

Thereupon, upon consideration thereof, it is ordered, adjudged and decreed, that the complainant's said hill he, and the same hereby is dismissed, and that the said complainant pay the said defendants their costs in this behalf expended.

October 18th, 1875.

(Signed) LORENZO SAWYER,
U. S. Circuit, Judge Ninth Circuit.

ENDORSED:—Filed and entered, October 18th, 1875.

L. S. B. SAWYER, Clerk.
By J. F. O'BERNE, Dep. Clerk.

Sold by THE CALIFORNIA POWDER WORKS, 314 California Street, San Francisco, Cal.

Also, all grades of Black Powder, Fuse, Shot, Caps, Etc.

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, AUGUST 19, 1876.

VOLUME XXXIII Number 8.

Why Not?

[For the MINING AND SCIENTIFIC PRESS, by JNO. L. BOONE.]

Can any one give a sensible reason why a person who devises a new and patentable idea should not secure a patent upon it? I have ransacked the entire field of opposition without discovering a single reason that cannot be demolished by one whisk of the horse tail of common sense. Granting that all patents are not profitable, we must acknowledge that the expense of obtaining them, especially in the United States, is quite moderate, and that the chance of realizing from a patent is always worth the amount it costs to secure it; and I might state, as a rule, that the exclusive monopoly of any invention for seventeen years, (the term for which patents are granted) is worth the price of a patent whatever may be its character, unless it is based upon a foolish or incorrect theory, or is practically inoperative. I do not intend by this statement to be understood that every such patent will yield a fortune, or even an independence for its owner, but that as an investment of so much money it cannot be regarded as a bad financial transaction. Apathy, or rather a failure to properly put the patented article upon the market, and exaggerated ideas of its value, which leads to exorbitant demands from any one who might desire to purchase, are the principal causes of inventors failing to realize from their patents. Many patentees prefer to let their patents lie unintroduced rather than dispose of them at sensible prices, when often these figures would yield a fair profit. Many a good patent is buried and forgotten until it runs out and then some one, more sensible in such matters, as like as not picks up the idea, manufactures the article, puts it upon the market, and grows wealthy upon the profits.

Again, how often it is that we run across persons who regret that they did not secure patents upon their inventions or discoveries when they first made them. Many an originator of an idea has failed to secure himself by a patent when he might have done so, and has seen his ideas appropriated, and the invented device finally become a standard article of commerce and trade. As like as not the dilatory individual spends the balance of his life in useless regrets that he missed a chance for securing a competence and probably a fortune. It was a neglected opportunity not only to become rich but to enroll his name among the list of men of genius. A few such instances as these are necessary and valuable to point a moral to our tale. Their experience is a living example to other inventors, and is one of the strongest arguments to support our "Why Not?"

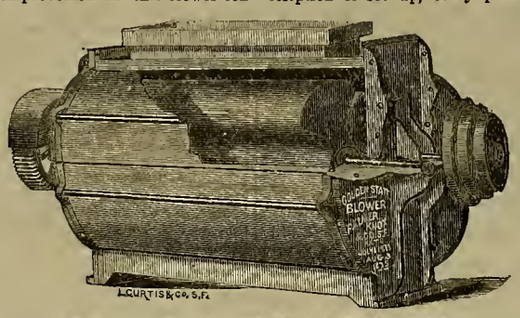
Again, leaving profit entirely out of the question, a patent is a national record of the genius of the people, and every man who can do so should be proud to have his name placed upon the record. Is it not a fact that we feel a glow of pride when we run across the name of some ancestor among the names of patentees in the patent record? We at once feel that we have inherited the national Yankee characteristic of an American, and we grow tenderer and more sympathetic with our next door neighbor who has been spending all his time and money for years in a vain endeavor to invent a perpetual motion machine. It is the only chance a great many of us may have to send our names down to posterity linked with a noble and public ambition to help ourselves and the world along. If the invention does not promise to be speedily remunerative when it is made, it should be patented nevertheless, as we do not know how soon the necessity may arise that will call for such a device. Most of the devices which the originators failed to patent and which afterwards went into general use have just such a history.

Many people are so constituted that they never pay out a dollar unless they see an immediate prospect of two dollars being returned for it. Such persons will most generally miss the main chance and have the pleasure of regretting their folly ever afterwards. I therefore ask again, *why not* patent your inventions? And I am sure every sensible person will reply "why not?"

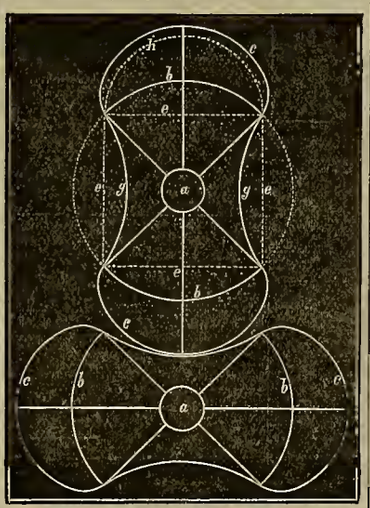
The Golden State Rotary Pressure and Suction Blower.

Among the new home inventions exhibited at the Mechanics' fair, this year, is an improved rotary pressure blower, patented through the MINING AND SCIENTIFIC PRESS Patent Agency, by Palmer & Knox, of the Golden State Iron Works, on First street, near Market. A full size blower is exhibited and also a small model one which is utilized to furnish a blast to the furnace of the Pacific Chain Works, in the machinery department. One engraving on this page gives a view of the general form of the blower and the other gives the outline of the blower wings, showing how they are made so as to form a perfect contact at all points.

The special improvement in this blower consists in constructing the arms of the two pistons or drivers upon certain peculiar curves, by which they are enabled to maintain a close fit between the circumference of the two drivers and thus utilize the machine upon blast furnaces, and on other places where a positive force is necessary to procure sufficient blast. In the construction of so called pressure blowers as heretofore made, the arcs of circles have been used to form the shapes of the drivers or pistons, and by varying the length of the chords,



THE GOLDEN STATE ROTARY BLOWER.



OUTLINE OF BLOWER'S WINGS.

while the same arcs are used for the sides, an attempt has been made to obtain a perfect fit between the two pistons at all points of their revolution. This has not been effected, however, and as a consequence, this class of blowers have been failures wherever there has been any back pressure developed. In order to overcome these difficulties Palmer & Knox construct the heads and sides of the pistons of their blower upon epicycloidal curves.

In the accompanying sketch, *a*, is the center; *b*, the pitch circle; c and *g* the epicycloid; *e e*, the chords of the pitch circle, which are equal and also form the chords of the epicycloid; *h* shows a *circle* with the same chords as the epicycloid.

In forming the heads of the pistons they make a wheel or circle the diameter of which is one-fourth the diameter of the pitch circle. Equal chords are drawn within the pitch circle, forming an exact square. The wheel or circle is placed with its tracing point upon the junction of any two of the chords and is then made to revolve once upon the outside of the pitch circle, when the tracing point will have described the epicycloid required and will stop at the point of junction of its chord and the next one. The opposite head is formed in the same manner. The sides of the pistons are traced by revolving the above mentioned wheel upon the inside of the pitch circle and upon each side between the termini of the heads, these forming a continuous circle.

It is found that when a blower of this description is set up, every point of the periphery of the two pistons exactly meet as they rotate and the fit is so perfect that the machine becomes a pressure blower capable of working against a resistence, without slip or waste. A great advantage is also found in the convenience with which the blower can be taken apart in case of need. The top quarter sections are taken off by the removal of four bolts, and the whole inside is open, so that the wings can be taken out and replaced in a few minutes.

These machines are made at the Golden State iron works in sizes from No. 1 to No. 5. The No. 5 is the size made for forges, etc., such as the one in the fair furnishing a blast to the chain works forge. No. 1 is the size exhibited near by. This latter at 125 revolutions gives 1,000 cubic feet of air. This amount can of course be increased in proportion to speed.

A peculiarity about the blower is that, as we are informed, it is the only one yet invented which has answered the purpose of a *suction* for drawing off the fumes of quicksilver furnaces. When used for this purpose the No. 1 is only run about 100 revolutions per minute. It is placed at the extreme end of the line of condensers and draws the fumes through them from the furnace, forcing at the same time the deleterious waste products of combustion off up the long chimneys away from the works. A great number of these blowers are in use in the quicksilver mines in this State for the purpose above specified. The Sulphur Banks mine has six of them and the Redington mine, nine four. They are also in use at the Ida Clayton, the Abbott and Buckeye mines, Colusa county, Etna, Cloverdale, Geyser, New Idria, Great Western, Annie Belcher, Livermore, Sunderland and many other mines.

BULLION SHIPMENTS.—We note shipments of bullion from different mines, as follows, during the past week: Northern Belle, $11,017; Ophir, $21,497.56; Comanche, $7,926.55; Leopard, $13 994; Coso Consolidated, $8,000; Arizona, $2,511.90; Justice, $18,000; Gold Run, $18,000; Tybo Consolidated, $20,786—so far on August account; General Thomas, $1,802; California, $186,892—making $675,373 so far on August account; Consolideted Virginia, $38,527 — making $139,786 on August account; Consolideted Imperial, $10,416. The July receipts of the principal producing mines were as follows; Belcher, $250,000; California, $2,062,400; Consolidated Virginia, $336,000; Justice, $60,000; Manhattan, $210,000; Ophir, $226,000; Tybo Consolidated, $76,000; Northern Belle, $70,336; Total, $3,291,166.

Facts about Peat.

[Written for the PRESS by SAMUEL PURNELL.—No. 3.]

Heating Power.

As might have been anticipated from the analyses, it has been proved that the relative heating power of dense peat, weight for weight, is about the same as air-dried wood, about half that of the best bituminous coals, and about two-thirds that of the Pacific coast liguitic coals. Light unconsensed surface peat proves to be not more than one-third as effective as good coal. Prepared according to late improved processes it gains considerably in effectiveness. Somewhat more combustible material is contained in consensed peat, weight for weight, than in the ordinary sods. The elimination of water by pressure improves the quality of peat in other respects, not the least of which is a a reduction of the relative amount of mineral matters contained in it—dissolved and carried off by the out-flowing water. A ton of air dried peat is worth as much as a ton of air dried wood, provided the quantity of ash in the former is not too great, say 10 per cent.

Peat is an admirable fuel for the Siemens gas producer. As with all fuels the heating power of peat depends on its composition; on the carbon, hydrogen, oxygen, and ash. The amount of oxygen required to consume a fuel is always a fair measure of the value of that fuel. Some lignites are so inferior, and some dense peat so good, that the latter may be fully as effective as the former. The heating power of good peat is sufficient to puddle iron. By careful experiment in Europe it was found that the calorific value of best air dried peat, containing 25 per cent. of hygroscopic water and no ash, was .47 absolute and 2,000 deg. C. hygrometric. According to Berthier, one pound of Irish peat will heat 50 pounds of water from 0 to 100 deg. C. In burning peat the grate bars should be deeper than with coal, and fresh air admitted behind the fire bridge. In an experiment at the city of Brooklyn waterworks, it was found that one pound of coal was equal to 2.24 pounds of peat in making steam. Taking the calorific value of pure carbon as 1,000, that of average bituminous coal will be about 950, while that of best peat (absolutely dry) will not be above 600, and that of ordinary air dried peat not above 450 to 500. When salt, as it is around the bay of San Francisco, peat is unfit for fuel; it will put out a fire. The flame of dry peat is long, hot, smokeless and reducing; although when containing an excess of moisture its flame may be oxidizing, which would nullify its value for some industrial purposes.

Adaptation to Metallurgy.

Peat when condensed and solid will make excellent charcoal, which from its high heating power is valuable to the smelter, and in the various other operations of metallurgy. In the iron blast furnace this charcoal produces a liquid and lively iron and a fusible slag. In Bohemia, Bavaria, France, Russia, and other countries where it has been used for years in iron blast furnaces, and for puddling and refining iron, it has always produced satisfactory results. It is quite as efficient, if not more so, than wood charcoal.

Peat yields from twenty-five to thirty-five per cent. of charcoal, according to the original quality. The methods for the carbonization of peat are nearly the same as for wood. Charring in heaps has been found most economical. In Bavaria the cost of charring is about $1.25 per ton of charcoal produced. Peat ashes contain phosphate of lime, and so a peat containing a large amount of ash may be injurious in an iron furnace by producing a cold short iron. Some peat ash contains as much as two and a half per cent. of phosphoric acid; a quantity perhaps precluding the use of such peat for iron.

GLOBE DISTRICT.—We have received several samples of ores from Globe district, Arizona, which may be examined at the editorial rooms of the PRESS, 414 Clay street, by those interested. We shall next week publish a full description of the district and its various mines.

CORRESPONDENCE.

Alpine County—Its Mines and Resources, Past, Present and Future.

[Written for the PRESS by VICTOR HARLAND.—No. 5.]

Silver Mountain District, Continued.

Before mentioning in detail the numerous lodes that exist in the immediate vicinity of the Scandinavian canyon, other than those already described, a general description of their appearance and position may be of more than passing interest, and enable the reader to more properly judge of their situation and proportionate relation with each other by the description as given. To a person unacquainted with this region, it most naturally appears strange that a

Formation

Not more than two or three miles in width should contain such a number of lodes with consistency so nearly parallel with each other. The existence of two or three parallel lodes, is of itself nothing unusual in mineral belts or formations of more than ordinary strength, but a visit to this locality will reveal to the beholder a series of lodes, 15 or 20 in number, all having a general parallel course with but little variation, unless forced aside by the abrupt contour of the mountain through which they force their way. These lodes are first encountered near the mouth of this canyon, (and nearly or quite within the limits of the town of Silver Mountain,) cross it diagonally at surprisingly regular intervals for a distance of two miles through its extreme length, and crossing the divide, we find a westerly continuation of the same series—in Alpine district—throughout the entire width of the belt, and until checked by the immense granite walls at the outer and westerly boundary.

These lodes vary in width from 18 inches to 20 feet, the ore from each, especially in the easterly series, closely approximating with the general character of all, ruby silver greatly predominating. The surrounding country is apparently a hornblende or syenitic porphyry, and the lodes, although so numerous as to give the mountains on either side the canyon the appearance of being bound together by massive ribs of quartz, and unexceptionably well defined and of great strength and continuity. Easily traceable, they rise upon one side the mountain, descending upon the other, and pass boldly across the intervening canyons with a regularity that admits of no other conclusion regarding their strength or character. Naturally, with such a

Number of Ore Veins

In close proximity to each other, there should be numerous feeders, spurs, etc., radiating from different points in the lodes and appearing as such upon the surface. Such is the case here, often appearing in sufficient number and size to have misled locators regarding their identity and character, and causing many extraneous locations to have been made before the claimants had sufficiently determined their true positions.

With the exception of the Exchequer, Lady Franklin and I. X. L. lodes, with their subordinate attachments, a greater portion of these several lodes have been, until within a late period, held by private individual possession, which accounts for any seeming lack of development they have received, other than the necessary annual expenditures upon each, and in this connection it is worthy of mention that the majority of claimants are old residents of the district who, never having lost faith in the ultimate value of their possessions, faithfully endeavor to perform the necessary labor to entitle them to the continued occupancy of their respective lodes. The Exchequer and Lady Franklin lodes appear near the north westerly extreme of the canyon, and at an altitude of 1,200 feet above the town of Silver Mountain. At a short distance below and upon two or more of these parallel lodes is situated the property of the

I. X. L. Company.

This company is of English organization, and aside from the Exchequer have expended more capital in development than any other company in the immediate vicinity.

The Acacia lode, which is credited with a subordinate existence—a part and portion of the Buckeye and probably uniting with that lode at a point below the present workings—is of smaller proportions, and although containing in places some fine looking ore, has not the ultimate value, as a mine, that is due the Exchequer or I. X. L. The latter named lode is susceptible of great value when a proper depth shall have been reached. A surface tunnel of about 500 feet was driven upon this lode in the earlier period, disclosing a body of ruby ore from which not less than $18,000 was extracted, and reduced by the common mill process then known, and which was of course partially ineffectual when applied to the reduction of this class of ores. Later, a tunnel approximating 1,000 feet in length, was driven from near the base of the mountain, following the course of the lode for a portion of the distance, and developing ore chutes of a nature and extent sufficient to inaugurate the sinking of a permanent shaft upon the property. Accordingly in 1872 or '73 a new shaft was commenced and the work progressed steadily until a depth of 200 feet was attained, the lode being intersected at this point, when, owing to financial difficulties and arrearages which had accrued, work was suspended for a time, and until the liabilities could be liquidated to the satisfaction of all.

During the past month work has again been resumed, and at present writing a good working force is employed in clearing the shaft of water, placing in position necessary machinery and preparing for the further development of the mine at this level and at greater depths below. The manager, Mr. Chalmers, being fully acquainted with the prospects of the mine, having given the former developments his personal supervision, is confident of success when sufficient depth is reached upon the lode. Its position in the shaft at the present depth and the uniform dip from the surface, together with its general appearance at these several points where encountered, proves its permanency as a lode, and it remains but a question of time when this, as well as many other valuable locations in this belt, will unfold to the public gaze their wealth, now locked up in the mysterious treasure vaults of mother earth.

This property together with that of the Exchequer company and other lodes under the supervision and control of Mr. Chalmers has lately been surveyed by U. S. Deputy L. L. Hawkins, preparatory for application for U. S. patent. With the comparative relationship which his lode bears with the Exchequer and Lady Franklin, the relative positions and dip of the ore chutes heretofore discovered, their gradually increasing proportions as depth is gained, give rise to the prediction of the presence of large bodies of milling ore, which may eventually be opened from the shaft.

The Vast Deposits

Discovered at various points on the Comstock have effectually banished the idea of a non-existence of the precious metals at great depths, the opinions of a few skeptical and self-constituted mining experts to the contrary notwithstanding. Add to this the fact that these mines with others near them and of like character, are situated at such great altitude above the immediately surrounding country, showing at various points above and beneath the surface their true nature as mineral bearing lodes, and producing at these slight depths attained unmistakable evidences of a gradual increase in size of the paying bodies, what may not reasonably be expected of them when such depths shall have been attained as are now being opened on the Comstock.

Iron and its Relations to Civilization.

The following is the oration delivered at the opening exercises of the 11th industrial exhibition of the Mechanics' institute by Henry Edwards, esq. Want of space prevented us publishing it last week:

Oration by Henry Edwards, Esq.

LADIES AND GENTLEMEN: There is a time in the life of every man when embarrassing circumstances seem almost to surround and overwhelm him, and if that time never reached me before, it would appear to have come upon me now. The kindly manner, however, in which the request of the Directors that I should make this address was conveyed to me, left me no resource but to accede to their wish, and do the best I could to fill the position which their too generous estimate of my abilities has forced upon me to-day. During some days of anxiety, when the subject on which I should speak to you chiefly occupied my thoughts, one of the warmest friends of this institution, a gentleman known and highly regarded by all, suggested to me that I should take as my theme, "Iron and its Relation to Civilization." The idea, for which I here publicly thank my friend, at once seized upon my mind, and I resolved to follow his advice, begging you to thank him more than myself for what you may hear to-day.

The field of thought covered by this suggestion is a mighty one, far too vast for the contemplation of an hour, and only on the present occasion to be regarded as the opening of the volume, leaving the wealth of its pages untouched and unexplored. It is one of the contradictions of our imperfect nature, that those objects which are always present with us, and which become, as it were, a part of our every day existence, receive too little consideration at our hands. We take them as our right, and utterly unconscious of that spirit of gratitude which should fire our souls at the knowledge of the countless blessings which are ours unsought, we pause not to consider whence they come, how important they may be to our daily wants, or how great the loss we would sustain by their withdrawal from our possession. And iron is one of these—iron, that common metal with which we are all so familiar, with the use of which, in some form or other, we hourly come in contact, of whose chemical constituents we now know much, whose formation and geologic conditions have been made clear by the light of modern science, but whose

Discovery by Man,

And his first application of the metal to the uses of his life are all but a sealed book to us, the smallest streaks of light alone breaking in upon us to relieve the darkness of our search. Far off in that remote period in which history is utterly lost, and even tradition becomes merged in the gloom of obscurity, we may imagine some dusky savage starting with delight and wonder as he views the sparkling crystals of the heavy lump of stone beneath his feet, of the composition of which he knew nothing, but which in after ages was destined to be the greatest "boon to mortals given," the grand handmaid of progressive civilization, and the all but indestructible basis of the noblest works which ever emanated from the genius of mankind. How the

First Crude Worker in Iron

Conceived the idea of reducing that coarse, heavy mass into a malleable form, rendering it plastic and obedient to the skill of his hands we know not. Here the curtain falls upon our ken, and imagination, unaided by positive knowledge, can alone assist us. Owing, however, to the difficulty which exists in reducing it from its ores, its extreme hardness and want of discrimination as to which variety of ore would be the most productive, it would appear that iron was by no means the first metal whose use was learned by our progenitors, doubtless yielding in this respect to lead, silver and copper. But still in this statement we are wandering into the realms of speculation. The condition of man in his earliest ages of existence was probably as different in all its general characters as our own may be from that of the inhabitants of Jupiter or Saturn, and the only certainty we can lean upon is, that the metal once found, its uses gradually became known, the first purposes to which it was applied being most probably the fabrication of weapons of the chase or of war. These far off times are shrouded in mystery, but as we stand awhile upon the mountain of thought, far removed from the petty vexations of life, and contemplate the stir which everywhere around us has proceeded with the most ceaseless activity, we see written as the eternal law of Providence

A Progressive Change

From a lower to a higher form of existence, and recognize in every department of our being examples of this progress working ever upward and onward to a grand purpose—a purpose ever unfulfilled, but expanding day by day and hour by hour nearer and ever nearer to that perfection which, though never absolutely reached, is yet, in the very nature of things, one day compelled to burst into the open sky of peace, of freedom and of love. And so, as the geologist by the aid of physical facts can trace the growth of worlds, and assign to each created thing his place and period in the past scale of creation from the azoic age, devoid as the name implies of the smallest trace of life, up to that marvelous epoch when the earth echoed with the tread of man—so can we understand how that mighty being

"By slow degrees, by more and more,"

Improved in growth and culture, and gave evidences, even in those barbaric days, of a civilization yet to be, a civilization yet unseen, but as perfect and as certain as is the form of the flower within the unopened beauty of the bud. And as he grew stronger and stronger, gaining hourly in intelligence, and in each century of his existence removing himself further and further from the brute condition of his primal form, fulfilling that eternal law of outgrowth which shines with untiring brilliancy upon all the handiwork of God, his wants necessarily became more and more numerous—the products of earth were searched and tested to satisfy their desires, and every object which could by any means aid those wants, was greedily seized and forced into the army of their supply. Among these, iron undoubtedly held a foremost place, and though we can assign no positive period as the date of

Its First Manufacture,

The researches of Sir John Lubbock and others marked its existence among the lacustrine dwellings of Switzerland, away back in those prehistoric times when man had no records, and has left no trace of his existence beyond the buried relics of his primitive homes. While descending the stream of more approximate history we find that Homer, who is supposed to have lived in the ninth century before Christ, is credited in Pope's translation of the *Iliad* and the *Odyssey*, with many allusions to this metal. In the latter poem Minerva, under the guise of "Mentor, monarch of the Paphian land," while explaining to Telemachus the reason of her visit to Ithaca, says:

"Freighted with iron from my native land
I steer my voyage to the Brutian strand,
To gain by commerce, from the labored mass,
A just proportion of refulgent brass."

These facts would tend to show a greater

Antiquity for the Use of Iron

Than has usually been assigned to it, and some explorations made of late years in great pyramid of Cheops, have brought to light some wedges of iron, firmly imbedded in the crevices of the enormous blocks of which these structures are composed, which could not have been manufactured, according to the best Egyptian scholars, subsequent to 3,000, B. C.; while in the buried cities of Asia and America, iron implements of various kinds and ornamental designs in the same metal have been frequently discovered. But it is from that grand storehouse of knowledge which, however degenerated to-day, has been the birthplace of many of our most treasured discoveries, from the "rich Orient, studded with her gems" that the first historical records of the uses of iron came to us, carrying us down the mighty river of time to the more familiar period of the Greek and Roman dynasties, and it is from about 300 years previous to the Christian Era that our really reliable information comes, the Romans, then the masters of the world, being probably the first to perceive the malleable properties of the metal, and to apply it to many uses before unknown. It is certain that the rich mines of the Island of Elba were worked by them upwards of 2,500 years ago, while we learn from the commentaries of Cæsar, that on his invasion of Britain, the spears and lances of the inhabitants of that island were either wholly made or tipped with iron, and during the occupation of Britain by Julius and his successors the rich mines of the Forest of Dean in Glostershire were constantly worked by the Romans, numberless cinder heaps in the grand old domain still remaining to mark the rude efforts of the conquerors to extract the coveted metal from its rebellious ore. Over many of these cinder heaps, now covered with rich soil, the product of disintegration and decomposition in the past centuries, I have wandered as a boy, and gathered lovely flowers which grew up in the crevices of those singular remains, the cinder heaps of Dean Forest being spots well known by every naturalist who has visited that region, in winter producing many rare and curious fungi, and in summer equally rare flowering plants, which in their turn were visited by insects elsewhere but seldom seen.

The Furnaces Used

By these people in smelting the ore are, in many cases, still in existence, being erected on the top of some eminence, so as to obtain the greatest force of the wind. Charcoal was used for the fires, and it is not difficult in some places to trace the remains of charcoal pits, nay even of the very trees cut down for the purpose of being converted into fuel. "The processes of extracting the iron were, however, naturally very rude and imperfect, and left so much iron in the cinders that several of the heaps in the Forest of Dean furnished the chief supply of ore to twenty furnaces for upwards of 200 years." From the time of the Romans the workmanship in iron gradually improved, and its use spread over Europe and Asia, large deposits being discovered in Sweden, Russia, Siberia, Persia, Italy, France and England.

Production of Iron.

The last named country now produces the bulk of this metal, one bed in the northeast of Yorkshire yielding for several years no less than the enormous amount of 400,000 tons per annum, while some mines in the county of Cumberland gave, in 1861, the almost incredible result of one million tons. Next to England in point of production stands the United States, and though very much of what is used is still imported from Europe, there is good reason to hope that in a few years, by increased facilities and by the exercise of enterprise and capital, the iron mines of

North America will Take the Lead.

Of all the world and in their turn supply much of the demand from the older countries across the Atlantic. The early settlers of this country, though soon becoming acquainted with the existence of metalliferous deposits, could not make them a special object of their search, as the beds of ore with which they were enabled to become acquainted were, for the most part, far removed in those days from their settlements, and were known chiefly to the Indians, who manifested a hostile feeling to the invaders of their soil. It was not until the year 1702 that a furnace for the purpose of smelting iron was erected in Plymouth county, Massachusetts, being followed, in a few years later by other such enterprises in Rhode Island and Maryland. The pig-iron thus produced was chiefly exported to Great Britain, where it was admitted free of duty, manufactured articles of iron and steel being returned in its stead. In 1771 the shipment of iron from this country to Great Britain amounted to 7,525 tons; the exportation ceasing with the war of independence, one hundred years ago. I am not here to-day to speak to you of your marvelous advances in every department of economy which tends to the

Permanence of Your Social Progress

Since that eventful period of American history in which an oppressed people rose to vindicate their rights and to trample beneath their liberated feet the shackles which had so long bound them; but I may respectfully, as an Englishman, ask you, natives of this vast and ever advancing country, to believe that, in common with myself, there are thousands in your mother land to-day who hail your "declaration of independence" as the dawn of a new era of freedom, not for yourselves alone, but for all who have felt the heel of the tyrant, and who crown your glorious work in this Centennial year with the thanksgiving and the blessing which ever spring from the depths of warm and sympathizing souls. And it is good to remark in this connection that that very declaration had in view in one of its clauses the grievances which the early settlers experienced in the harsh measures adopted by Great Britain to prohibit the erection of furnaces for the smelting of metals, the mother country having passed an act denouncing all such erections as "nuisances," fearing that the growth of such manufactories would tend to lessen her hold upon her transatlantic territory. But, happily, this overbearing tyranny is at an end forever, and by a tremendous bound, rather than by gradual growth, the Union has become the second in importance as an iron producing country, and this in the short space of a single century. I find it stated in *Gray's Physical Atlas* that, "after the close of the war, the chief supplies were again furnished by Great Britain from the lack in the United States of the capital necessary for the successful prosecution of the business. The natural advantages possessed by Great Britain, powerfully co-operated with her legislation, and as her

Rich Deposits of Iron and Coal

Were in close juxtaposition, and in localities not

(Continued on Page 126.)

MECHANICAL PROGRESS.

How to Hang a Grindstone.

There is probably no appliance of the machine shop ar manufactory to which so little attentian is paid as the grindstone, and it is very rare indeed that this useful tool is found to be in perfect order. A writer in the *Iron Age* gives the grindstone a tharaagh handling and we draw from him some useful hints on hanging.

There have been very decided improvements made over the old style of fixtures for hanging grindstones, which generally consisted of a square shaft, which was wedged into a square hole in the middle of the stone, at the imminent risk of bursting the stone when at rest, or of endangering the life of the grinder when in motion. Now, all abafts, from the smallest to the largest, are made of round iron (wrought), with a screw and nut, by means of which two cast iron plates are pressed against the sides of the stone, which is firmly held by pressure and friction, and relieving it from any tendency to burst, and adjusting it with the greatest precision. These plates are sometimes bolted to the sides of the stone, with a square shaft on which the stone is adjusted by means of screws passing through a projecting rim on the plates, but we think these holes have a tendency to weaken the stone.

Before adjusting the stone on the shaft the two sides should be made perfectly parallel, so that the flanges will bear evenly; then adjust the shaft, and if the stone does not run true the high side can be placed uppermost, and by gently unscrewing the nut and striking the stone it can be made to drop the desired distance which can be indicated by the flange. In our largest establishments the stones are turned off perfectly true outside of the shop, so as to avoid the dust which injures the machinery and by leaving a depression in the sides of the stone of the size of the flange it will run true without further labor. After being thus adjusted it should be kept true by the free use of the hacker, and should not be allowed to stand in water. A diamond carbon tool is used where great nicety is required, and the sides of the stone are painted (without the use of oil, however), in order to prevent the moisture from entering, and thereby keeping the edges square.

Why Grindstones Burst.

In olden times grindstones were always made with a square hole in the center, about six inches across, in which a square iron shaft was placed, and the stone adjusted by means of wooden wedges driven around the shaft with sufficient force to hold the stone securely in its place, and to resist the power applied to the shaft while dressing the stone off. This resistance at the edge being equal to a lever purchase of half the diameter of the stone, has a tendency to burst the stone by the pressure of the shaft in the eye of the stone, which is also frequently augmented by the swelling of the wood employed as wedges.

Bursting of grindstones was a common occurrence under these circumstances, happening sometimes soon after the stone was hung, but frequently after being weakened by wearing away a part of it. Grindstones are generally hung at nail works by means of two heavy cast iron plates with square holes and a heavy square boss cast on the outside. Four holes are bored through the stones near the corners of the eye, corresponding with the four similar holes in the plates, through which four bolts pass and fasten the plates securely to the sides of the stone by means of nuts. A square shaft passes through the center of the plates, and the stone is adjusted by means of eight set screws passing through the boss, and resting against the sides of the square shaft. This relieves the eye of the stone from any strain, but the tendency of the four holes in lines with the corners of the eye is to weaken the stone in these directions. A case occurred of grindstones having been burst by using cast iron plates with a square boss four inches long, cast on the inside of the plates and tapering toward the end which was fitted snug into the eye of the stone and the plates being pressed against its sides, the tapering boss acted as a wedge, and two stones were burst in this way before the cause was discovered.

TASTE IN CHANDELIER MAKING.—Perhaps the most prominent piece of metal work seen in our rooms is the chandelier. The various devices used to torture this material into outrageous forms, without taste or method, are commendable only for the versatility of genius which originated such designs, and remarkable chiefly for the absence of all art in their production. That thiness which is one of the legitimate conditions to be observed in the artistic treatment of this material seems utterly lost sight of, and heavy castings, apparently strong enough for an anchor of a 74, are continually produced. To invest metal with forms which might as well be executed in stone or wood is equally absurd; and some went so far a few years ago as to make gas fixtures and standards of these materials. The idea that these are simply tubes for conveying gas is apparently forgotten, even by those who are considered in advance, and huge pedestals are placed on top of the stair newels, which seem to groan beneath their weight.—*Harper's Magazine.*

How Large Metal Coils are Made.

To give our mechanical readers an idea of what the English consider the magnificent in metal working we give an account of forging the immense coils from which the heavy guns are made at the Woolwich arsenal. We condense from the *Colliery Guardian*:

A 12 cwt. pile was brought splendidly hot from one of the heating furnaces, and rolled down to a bar of about 14 feet long with dimensions of about 7¼ by 7 by 6, the bar being so shaped to permit of its coiling; when welded to others making one whole bar, measuring 170 feet, and weighing 12¼ tons, it has again passed through a furnace 100 feet in length. The bar was coiled around a revolving mandrel with comparative ease. The mandrel affixed at the mouth of a furnace of the above great length was worked by hydraulic power, and in revolving drew the bar out of the furnace with an easy determination, which for force was only excelled by a subsequent operation. The first grip of the bar was obtained by hooking its nose, through which, before it was put in the furnace, a hole had been punched, on to a stud affixed to the mandrel. With only little apparent effort bars of much larger dimensions are coiled by the same process—bars weighing 56 tons. One such bar was manipulated into a trannion coil. The coil was brought out of the furnace where it had been heating for 50 hours, at a cost in coal of some 25 tons. Aided by two cranes, each capable of lifting 100 tons, and a pair of tongs, weighing about six tons, a corps of fine-built workmen, who, however, at such work seem dwarfed to Lilliputians, swung the coil on to a 750 ton hammer block, that had in turn for its foundation one hundred 50 foot piles, 14 inches square. The hammer head weighs 40 tons, and with steam behind it has a force equal to 2,000 foot tons (foot-tons mean tons possessing a force given to them by a one foot fall.) The hammer stood there at an elevation from the ground of some 56 feet. Most delicately, like Poe's raven, it came tap, tap, tapping, for those blows, mighty though they were, seemed but as taps upon this huge coil, so firmly erect did it stand beneath the oft-descending hammer. The coil had not only to be compacted into a tube with comparatively solid sides, but it had to be kept perfectly true in its center; from the opposite side of the hammer there was therefore at this juncture reared by the aid of the cranes and another pair of gigantic tongs, a steel mandrel, which was soon forced into the center of the coil by the hammer. The 56-ton coil, now heavier by many tons, was next rolled over upon its side upon the hammer block, to have the coils beaten around their external circumference and the interstices between the coils wholly closed. The trunnion coil, it need hardly be explained, is the heaviest portion of the 81-ton gun. Upon the coil which surrounds the inner steel tube this trunnion coil, after it has been turned to an exactness which experience has demonstrated will accomplish the purpose is heated to a black heat over a wood fire, and the shrinking of the monster coil in becoming cool clips the rest of the gun with a firmness which makes the whole virtually one solid mass.

USING STEAM BOILERS.—The London *Mining Journal*, after reviewing the causes of boiler explosions, says that in the use of boilers two great fundamental principles may be taken for granted—*i. e.*, that to purchase one simply because of its cheap price is the worst policy that can be adopted, because in almost every case the article will be sure to be a useless one; and, secondly, every explosion is invariably preceded by due warning, which cannot be misunderstood by those accustomed to steam and which if disregarded, will inevitably prove disastrous. If the makers and the users of boilers would continually keep these two great essentials in view there would soon be a palpable and praiseworthy diminution of accidents, and the loss of life would be reduced to a minimum. For our part we think that every boiler should be made to bear a pressure of at least 70 or 75 pounds per square inch, nor do we think any great hardship would result if it were rendered compulsory that makers should only use iron of such a brand as guaranteed to stand such a pressure. If to this were added a requirement that every boiler should undergo periodical inspection by the properly qualified person in charge of the boiler, and that the result of such inspection should be recorded in a book kept for such purpose, and which could be produced in case of accident, then we think that both the maker and the user of boilers would have done all that could be reasonably required of them in the "interests of public safety."

AN AXLE TO EACH WHEEL.—A new car truck is at present being constructed at the car shops of Billmeyer & Smalls, in York, which is said to be the invention of a gentleman named John M. Brosius. Each axle under this truck is severed in the center, instead of extending from wheel to wheel. The inner ends of the axles each work in a box, and are independent of each other, so that in running around a curve each wheel will run the exact length of the track, and thus prevent slipping.

AN ICE BOX.—A huge refrigerator at Brussels can contain 50,000 pounds of meat; there is room for 1,000,000 tons of ice. It covers 18,000 square feet, and contains nine compartments of 30,000 cubic feet each. The walls are double, and filled with moss and sawdust.

SCIENTIFIC PROGRESS.

The Preservation of Timber.

During the last 20 years, several methods have been tried for making timber more durable, the principle of which consists in expelling the sap remaining in the ligneous fibres, in order to replace it by chemical solutions, such as sulphate of copper and creosote; but these processes, comparatively costly, and only partially successful, do not entirely accomplish their object. Starting from the fact that oak, chestnut, and certain American trees resists the action of air and damp better than others, and they owe this property to the tannin which they contain, a chemist proposes to tan the timber by substituting for the sulphate of copper and creosote a compound of tannic acid and iron. The object of injecting various substances into wood is to poison them, so that germs and microscopic growths may no longer live and propagate either on the surface or in the interior. Now tannin is one of the most active and certain destroying of germs both vegetable and animal, which in fact accounts for its preservative agency. Besides, it is to tannin that is due the almost indefinite preservation of leather. One peculiarity to be noticed in this process is that timber treated with this compound of tannin and iron, that is to say a composition similar to ordinary writing ink, is turned black.

The process of injecting timber with tannate of protoxide of iron is due to M. Hatzfeld; the Eastern railway company of France has experimented with it on some sleepers, and the telegraph department on some poats.

M. Boucherie has denied, in a note to the *Academie*, the efficacy of this process, contending that the attempts already made to preserve timber from dry rot by injecting it with iron salts have yielded only partially successful results, while sleepers treated by sulphate of copper have lasted 25 years and more. Reply is made to these objections by quoting—not the experiments of the laboratory or workshop, but those made by time itself. It is not a rare circumstance to encounter in earth of a ferruginous nature the trunks of very old oaks, blackened and perfectly preserved; at Rouen, in 1830, some old oak pailing was discovered as black as ebony, and dating back to the Middle Ages. Not very long ago, too, a Norman vessel built of oak was discovered in an almost perfect state of preservation in the neighborhood of an iron mine in Norway. It is more than probable that the preservation of the oak under these circumstances is due to the tannin contained in the wood; it follows, therefore, that by introducing a substance rich in tannin into timber that does not naturally possess it, its resistance to decay is increased.—*Jour. Society of Arts.*

LIGHTNING IN STEAM.—It would startle many people who happen to see a locomotive blowing off steam in a railway station, if they were told that there is electricity enough generated in the discharge of steam to blow the whole train of carriages to atoms, if instead of being dissipated they were collected. The fact was first accidentally noticed by an engineer at Newcastle, who perceived sparks, which proved to be electrical, among the escaping steam. The discovery was confirmed by the construction of a hydro-electric machine in the shape of a boiler set on glass legs. The steam as it rushes out of the escape valve is received on a series of metallic points, by which it is gathered and accumulated in the conductor, as in an ordinary electric machine, in which the electricity is generated by the friction of a glass plate or cylinder. Will engineers ever come to appreciate the fact that every locomotive carries the means of lighting itself far better and more cheaply than any lamp?—*Ex.*

MEIDINGER'S BATTERY.—In a recent number of *Dingler's Polytechnisches Journal*, M. Meidinger gives a description of what he considers the best form of his battery, as now used on the Baden lines. It is different in several points from that constructed by Siemens and Halske, and it is said to be more durable, economical, etc. On the bottom of a cylindrical glass pot rests a short conical glass vessel, with broad plate foot. A lead ring lines the wall of the latter vessel and serves as a negative pole, a strip of lead rising from it to the top of the outer vessel. Round the interior of the latter is a zinc cylinder reaching to near the top and a copper strip rises from it to the exterior. Above, a glass balloon is supported on the edge of the outer vessel, having its mouth below stopped with a cork, through which passes a little glass tube. The mouth is at about the middle of the inner glass vessel. The lower vessels are filled with dilute Epsom-salt solution; the balloon with sulphate of copper.

ELECTRICAL CONVERSATION.—Professor Bell, of Boston, and Sir William Thompson, the celebrated electrician, have lately made some interesting experiments in the transmission of vocal sounds and instrumental music by telegraph. An organ in the Atlantic and Pacific telegraph company's office in Boston was played, and the different tunes were easily distinguished by the operator in New York, and conversation was carried on between two Boston offices. A few days ago conversation was carried on between Boston and Rye Beach, New Hampshire, which are sixty-nine miles apart.

Magnetism in Steel.

Some important observations respecting the magnetic force contained in different kinds of steel have been made by Herr Fromme. In his treatise on this subject, published in the *Nachrichten der Gottinger Gesellschaft der Wissenschaften*, he points out the influence which the tempering of steel has on the remaining magnetism. Passing over the well-known fact that steel is a body more retentive of magnetism than any other with which we are as yet acquainted, he proceeds to say, that science has proved its magnetic properties to be regulated by two conditions, namely, its chemical composition and its mechanical treatment. The former varies according to the amount of carbon contained in the steel; the latter is regulated by the slow or quick method of tempering the metal. The magnetic properties of steel are regulated by these two conditions, and vary in accordance with them. Since Coulomb's experiments in regard to the influence of tempering on the magnetism of steel, various scientific men have, according to Herr Fromme, pronounced annealed steel to be most retentive of magnetism; others, again, have asserted chilled steel to be superior in this respect. Ruths was the first to throw light on the subject by discovering that the power of retaining magnetism differs with the dimensions of the magnetized bars of steel. Cylindrical bars, in which the length stands in a proportion of 30 to the diagonal, retain least magnetism when in a hardened state, more in a yellow annealed one, and most when the steel is blue annealed. The same is the case with thicker bars, as long as the inducted current is small; a change takes place with the induction of a greater current, so that, in general, bars in which the length stands in a smaller proportion than 30 to the diagonal—the hardened ones show the greatest retentive power. In short, with less magnetising power, an annealed steel bar accepts more magnetism than an ordinary hardened one. But as the magnetism in the hardened steel bars increases in a greater proportion than in the annealed ones, a greater magnetic power is evenly attained in the former. The thicker the bar is in proportion to its length the less is this indifferent magnetic power.

TECHNICAL SCHOOL AT ROUEN.—A knowledge of the art of dyeing is a matter of great importance to a large number of people. Not content with the rough and ready plan, usually followed in England, of taking a lad from school and putting him into a dyehouse to learn "practically," as it is supposed, the mysteries of the trade, the Rouennais have a School of Industry, to which is attached a chemical laboratory. In this are received pupils who for two years study not only elementary chemistry and ordinary reactions, but make a really practical and intelligent acquaintance with the dyeing and printing of textile fabrics. In a course of 250 lessons specially addressed to this end, supplemented by independent manipulation, the pupil learns all the details of the business for which he is being trained; to colorists are explained all that is known concerning dye drugs, grinding machinery and the apparatus needed for preparing colors or using them afterwards.—*Iron.*

FORCE EXERTED BY GROWING PLANTS.—About four or five years ago the platforms at our station here (Mitcham Junction) were laid down with a thick coating of asphalt. Nevertheless, such is the force of growth and endurance existing in the roots of the coltsfoot (*Tussilago farfara*) that every year it forces its way through the asphalt, despite the hardness of that material. The asphalt is pushed up into little hillocks, which gradually crack; very soon the young leaves make their appearance, and afterwards the whole plant. The common thistle I have also noticed doing the same. Let any one take a cake of asphalt and try to push a stick through it; he will then be able to realize how great must be the vital force exerted by the plant-roots in question, which, by adding particle after particle to their structure, are enabled to upheave and displace such a hard, compact material as asphalt.—*London Garden.*

AMBER.—Reboux states that at the eocene epoch the bed of the Baltic sea was occupied by an immense forest, which spread over nearly the whole northern continent. Dredging carried on at a depth of 6.4 feet below the sea bottom has brought to light thereby two species of conifers, a poplar, a chestnut, and various other trees. From the conifers, the author thinks, ran the resin which, through being buried in the earth, has become changed into amber. The largest quantity of the gum appears to have been derived from the *Pinussuccinus*. More than 200 specimens of objects have been found imbedded in the gum, including insects, reptiles, plants, leaves, grains, shells, fruit, etc. The density of natural amber varies from 1.09 to 1.11. Its analysis, according to Schrotter, is: Carbon, 78.82; hydrogen, 10.23; oxygen, 10.90.

LARGE SOLAR PHOTOGRAPHS.—M. Janssen writes that daily photographs of the sun are now made at the Montmartre observatory. The solar disk has been photographed 8.5 inches in diameter, with great clearness. The spots, faculæ, and granulations are distinctly marked, and are of sufficient size not to be obscured by the grain of the paper. The solar surface at the present time is completely free from spots, this being the epoch at which the same are at their minimum.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 Wk to July 27.		1 Wk to Aug 3.		1 Wk to Aug. 10.		1 Wk to Aug. 17.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	....	....
Advence	11	....	....	....	....	....	....	....
Alpha	41	37	40	43½	45¾	41¾	49	41½
Alta	3	....	4¾	3	4	3¾	3	3
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	....	....	....	....	1¾	....	....	....
Andes	2¾	2½	2¾	2½	2¾	2½	2½	....
Alps	1¾	1½	1¾	1½	1½	87½c	50c	....
Amazon	60c	....	56c	....	50c	....	....	....
Balt'm'e Con	2¼	....	2¾	....	2¾	....	1¾	....
Belcher	17¾	17	19½	17½	22	19½	25	20½
Belmont	3¼	3	3	2½	2¾	....	2¾	2½
Best & Bel	48	44	49	46	50¾	48¾	49¾	46
Buckeye	....	....	....	....	....	....	....	....
Bullion	43	41	43½	42	49	43	47	44½
Caledonia	9¾	9¼	10¾	10	10½	9	8¾	7¾
California	61¾	56¾	67¾	61¼	66	61½	61½	55¾
Challenge	4¾	4¼	4¾	4	4¾	4¼	4¾	4¼
Chollar-Pot'si	83	75	101	84	96½	92	94	87
Confidence	17	16¾	17¾	16¾	19½	18	19	17½
Con Imperial	5¼	4¾	5¼	4¾	5¾	5	5¾	5
Con Virginia	58½	53	60¾	56½	59	55¾	54	51¾
Crown Point	10	9¾	12¾	10¼	14½	12½	13¾	11¼
Osce Con	35c	30c	35c	30c	30c	....	35c	25c
Daney	....	....	....	....	....	....	....	....
Dayton	4	....	....	....	....	....	....	....
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka (V)	....	....	....	....	....	....	....	....
Eureka Con	12	10½	13½	12	12½	11¼	12	11
Exchequer	15	14½	16½	15¾	17¾	16	17¼	16½
Europa	....	....	....	....	....	....	....	....
Gila	62½c	57½c	63½c	55c	75c	60c	1	75c
Globe Con	40c	....	50c	10c	20c	12c	16c	10c
Golden Char	40c	37½c	50c	40c	45c	10c	1.10	87½c
Gould & Cur	16	14½	17	16¼	17½	16	15¾	14
Hale & Nor	10¾	8½	12¾	10¼	12½	10	11	9½
Ida Elmore	....	....	....	....	....	....	....	....
Jefferson	1¾	....	....	....	1¾	....	75c	75c
Julia	8	7¼	9¾	8¼	9½	8¾	8	....
Justice	25	20¾	26¾	24	25	24	24	22¾
Jackson	3¾	3½	3¾	3½	3¾	3½	3¾	3
K K Con	....	....	....	....	1¾	....	....	....
Kentuck	11¾	11	13	11¾	13½	12½	13¼	12
Knickerb'k'r	30c	....	50c	30c	80	62½c	62¾c	....
Kossuth	1¼	1½	1¾	1¾	1¾	1¾	1¾	1
Lady Bryan	1¾	1½	1¾	1	1¾	1	1¾	80c
Lady Wash	2½	....	3¼	2¾	2¾	2½	3	2½
Leo	....	....	1¾	....	....	....	....	....
Leopard	10	8¾	12½	10½	12	10¼	12	10½
Leviathan	8'c	6 3c	87½c	75c	1¼	1	87½c	75c
Mahogany	....	....	....	....	....	....	....	....
Mansfield	....	....	....	....	25c	....	....	....
Meadow V'y	90c	5'c	65c	42c	50c	....	50c	37½c
Mexican	34½	29¾	40	35½	36¾	33¾	35½	31½
Midee	....	....	....	....	....	....	....	....
Mint	25c	....	50c	....	25c	....	25c	....
Monticello Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	1	75c	2	75c	1	95c	1	75c
Niagara	....	....	20c	....	23c	....	....	....
Northn Belle	30	21	21	17	24	21½	25½	20
New Osceo	2¾	2	2¾	2½	2¾	2½	2½	2
Occidental	3½	3	4¾	3¼	4	3½	3½	....
Ophir	47¾	44	53	46¾	53¾	51½	52¾	47¾
Or Gold Hill	....	....	....	....	....	....	....	....
Overman	73	65	83½	74	83½	77½	78	74½
Pacific	....	....	....	....	....	....	....	....
Phil Sheridan	1¼	....	1¼	....	1¼	....	75c	....
Ploche	....	....	....	....	....	....	....	....
Poorman	....	....	....	....	55c	....	60c	50c
Prospect	5¾	5½	6½	6	7½	6¾	6¾	5¾
Pneetan	1½	1	3¾	1½	2	2	2	1¾
Ray & Ely	8½	8	9	8½	9½	8	8¼	8
Rock Island	1¾	1	3¾	1¾	2¾	2	2	1¾
Rye Patch	....	....	....	....	....	....	....	....
Savage	20½	18¼	22½	19¾	21¾	20	21	18
Seg Belcher	79	....	80	70	37	79	88	78
Sierra Nev'da	15½	13¾	17½	15¾	16¼	14½	15¾	14¾
Silver Hill	7¾	6¾	8	6	8	7¾	7¾	7½
Stb Chariot	30c	....	80c	....	25c	....	25c	....
Succor	25c	....	25c	....	25c	20c	75c	55c
Union Con	14¾	11½	16½	15½	15½	14¾	14¾	13¼
Utah	18½	17	19½	17½	19	18	23½	19¾
Wells-Fargo	140	125c	140	121c	30c	25c	28c	17½c
Woodville	1¾	1½	1¾	1¾	2½	1¾	2	1¾
Yel'w Jacket	26¾	25	30	26	32½	30½	31¾	29¾

Sales at S. F. Stock Exchange.

FRIDAY, A. M., AUG. 11.

180	Alpha	43@43½	
200	Andes		2½
400	Belcher	21¾@21½	
10	Belmont		45c
240	Baltimore Con		2½
295	Best & Belcher	47@47¼	
10	Confidence		17½
830	Con Imperial		5½
135	Challenge		4¾
130	Challenge		4¾
1575	California	61@61¾	
1615	Con Virginia	54@55	
260	Chollar	84@84½	
180	Caledonia	8¾@9	
300	Cromer	2¾@2¾	
200	Cosmopolitan		40c
130	Exchequer	16¾@16¾	
500	Gould & Curry	16¾@16¾	
2050	Globe	10@12½c	
1315	Hale & Nor	10@9¾	
205	Justice	23¾@23	
480	Julia	8¾@8¾	
10	Kentuck		12½
235	Kossuth		1¾
50	Knickerbocker	62½c	
800	Lady Bryan		1
75	Lady Wash		3
200	Leviathan	87½c	
1085	Mexican	32½@32¾	
100	Mint		25c
110	New York		75c
100	New Con Va	25@25½	
860	Ophir	50@50½	
210	Overman	78@78½	
820	Prospect	6¾@6¾	
100	Phil Sheridan		75c
305	Sierra Nevada	16¾@16¾	
1750	Savage	19¾@19	
800	Trojan	90c@1	
50	Utah	19¾@20	
455	Union	13¾@14	
80	Woodville	1¾	
200	Wells-Fargo	25c	
25	Ward	1¾	
1590	Yellow Jacket	30@30½	

AFTERNOON SESSION.

50	Alps	50c	
170	Alpha	41@41¾	
15	Bullion	45	
100	Belcher	21¾	
30	Best & Belcher	46¾	
50	Chollar	88@87½	
45	Con Imperial	5¾	
95	Crown Point	11¾	
755	Caledonia	8@8¼	
580	Con Virginia	52¾@52	
300	Coso Con	2½@2½c	
525	California	60@60½	
390	Eureka Con	11@11¼	
80	Gen Thomas	1¾	
125	Gila	87½c	
80	Gould & Curry	16¾	
400	Gold Chariot	87½@90c	
630	Hussey	10@95c	
150	Jefferson	80c	
300	Jackson	3¾@3½	
565	Leopard	12@11¾	
200	Modoc	4	
140	Meadow Valley	50@45c	
410	Mexican	32½@33	
1021	New Coso	2½@2¾	
1115	Northern Belle	25½@23½	
430	Overman	78	
155	Ophir	49¾	
200	Pocrman	30c	
10	Raymond & Ely	81	
75	Savage	18¾@18¾	
200	S Barcelona	4¼	
460	Yellow Jacket	29¾@29½	

SATURDAY, A. M., AUG. 12.

700	Alpha	42@43	
120	Andes	2.50	
220	Baltimore Con		1½
140	Ballion	44½@44¾	
580	Belcher	22@21¾	
795	Con Virginia	52¾@52¾	
720	Con Imperial		5½
45	Crown Point		13¼
460	Gila	59¾@60	
300	Gen Thomas	1¾@1¾	
400	Golden Chariot	90c@1	
101	Gould & Curry	15¾	
550	Hussey	87½@75c	
160	Hale & Nor	10¾@10½	
315	Julia	9@8¾	
125	Jefferson	87½@75c	
655	Justice	23¾@23¾	
300	Mexican	34@34¾	
300	Mallio		40c
50	Meadow Valley		50c
200	Manhattan		11
715	Northern Belle	21@20	
60	New Coso		2½
10	Overman		77
250	Ophir	50¾@50½	
250	Poorman	50@60c	
250	Panther		1½
20	Ray & Ely		8¾
40	Savage	18¾@19¼	
50	Sierra Nevada	15¾@15¾	
10	Utah		23
130	Union	14¼@14¾	
330	Yellow Jacket	31	

TUESDAY, A. M., AUG. 15.

295	Alpha	46½@45¾	
205	Alta	3@3½	
30	Andes		2½
255	Best & Belcher	49	
585	Belcher	23¼@23¾	
10	Bullion	46	
20	Baltimore Con	2½@2¾	
615	Caledonia	8¾@8¾	
10	Chollar	94	
1000	Cosmopolitan	45@40c	
320	Con Virginia	53@52¾	
40	Confidence	18¾	
265	Crown Point	13¼@13¾	
265	California	58¾@59	
650	Con Imperial	5¼	
250	Cromer	2¾	
50	Dardanelles	1¾	
110	Exchequer	17@17¾	
135	Gould & Curry	15¾@15¾	
210	Hale & Nor	10¾	
255	Julia	9¾@9¾	
315	Julia	8¾@9	
195	Kentuck	13@13¼	
285	Kossuth	1¾@1¾	
150	Knicker	62½c	
200	Leviathan	87½c	
765	Lady Bryan	1@87½c	
1970	Mexican	35¾@35½	
225	North Con Vir	37½c	
230	North York	4¾@4½	
485	Ophir	52¾@52½	
235	Overman	7c	
220	Prospect	5¾	
25	Rock Island	2¾@2¾	
150	Sierra Nevada	15¾@15¾	
585	Utah	23@23¾	
100	Wells-Fargo	17½c	
30	Woodville	2	
785	Yellow Jacket	31¾@30¾	

AFTERNOON SESSION.

745	Alpha	47@47¾	
140	Belmont	2½@2¾	
95	Best & Belcher	49¾@50	
480	California	60@59¾	
675	Con Imperial	5¾@5¼	
2500	Coso Con	2½c	
60	Con Virginia	53½@53¾	
220	Crown Point	12¾@13	
15	Eureka Con	11½	
260	Gen Thomae	1¾@2	
285	Gila	92½@90c	
40	Golden Chariot	1.05@1	
390	Hussey	85c	
5	Leopard	10¾	
300	Mansfield	25c	
300	Mstallic	50c	
325	Meadow Valley	50c	
630	Manhattan	11¾@11½	

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY A. M., AUG. 10.

595	Alpha	45@46	
160	Amer Flat	1¾@1¾	
50	Andes	2¾	
310	Baltimore Con	2½	
305	Best & Bel	48½@49¼	
365	Belcher	20½	
45	Chollar	92@93	
1845	California	62@63¾	
215	Crown Point	12½	
1645	Con Virginia	55¾@56	
1023	Con Imperial	5¾@5¾	
820	Caledonia	9	
375	Cosmopolitan	40c	
10	Confidence	18¾	
400	Cromer	2¾	
260	Exchequer	17¼@17½	
1000	Globe	15c	
310	Gould & Curry	16¾@16¾	
680	Hale & Norcross	10¾@11	
250	Julia	8¾@9	
580	Justice	24@24¾	
50	Kentuck	12½@12¾	
100	Kossuth	1¾	
660	Lady Bryan	1	
300	Leviathan	87½c	
450	Mexican	34½@34¾	
100	Mint	25c	
10	Maryland	75c	
60	New York	85c	
50	North Con Va	15c	
255	Ophir	52¾@52½	
640	Overman	80@8	
50	Piotou	20c	
110	Prospect	6¾	
1595	Savage	20@20½	
10	Seg Belcher	80	
215	Sierra Nevada	15½@15¾	
300	Succor	26@25c	
200	Trojan	85c@80c	
175	Utah	18¾@18¾	
940	Union Con	14¾@14½	
60	Woodville	1¾@2	
1350	Wells-Fargo	25c	
1595	Y Jacket	31¾@31¾	

AFTERNOON SESSION.

240	Alps	60c@50c	
140	Belcher	20¾@20¾	
110	Best & Belcher	48½@48¾	
15	Barcelona		2¾
490	Con Virginia	56	
170	California	61½	
300	Coso Con	2¾@3c	
50	Caledonia	8¾	
30	Chollar	92	
140	Eureka Con	11½@10¾	
420	Gila	75@80c	
200	Gen Thomas	2@1¾	
495	Golden Chariot	25@20c	
650	Hale & Nor	10½@10¾	
850	Hussey	95@1.05	
100	Imperial	5½	
20	Jefferson	90c	
730	Julia	8¾@8¾	
293	Leopard	11¾@11¾	
350	Meadow Valley	50c	
1140	Mexican	33¾@34¾	
585	Mexican	33¾@34¾	
1200	Northern Belle	27@22	
300	New Coso	2¾@2½	
50	Overman	80	
150	Ophir	51¾@51¾	
26	Poorman	20c	
10	Raymond & Ely	8	
140	Yellow Jacket	31@31¾	

California Board—Latest Sales.

WEDN'SDAY, A. M., AUG. 16.

1225	Andes	2¾	
5	Belcher	23¾	
150	Con Virginia	53@52¾	
1150	Coso Con	30c	
10	Caledonia	8¾	
950	Cosmop	42@45c	
10	California	59¾	
1310	Mexican	35@35¾	
310	New Coso	2¾@2¼	
360	Northn Belle	21@22	
100	Ophir	52	
1050	Prospect	5¾@6	
175	Panther	1½	
350	Poorman	60c	
700	S Barcelona	4½@4¾	
55	Savage	18¾@20	
15	Seg Belcher	82@81	
100	Sonth Chariot	25c	
200	Trojan	1½	
180	Union Con	14⅞@15	

WEDN'SDAY, A. M., AUG. 16

561	Alpha	47@48	
510	Belcher	22¾@22¼	
395	Best & Belcher	47¾@48½	
10	Bullion	46	
1050	Con Virginia	54¾@55	
325	Crown Point	11¾@12	
720	California	59@58¾	
1265	Con Imperial	5¾@5¾	
10	Confidence	18¾	
190	Caledonia	9¾@9¾	
135	Exchequer	17¾@16¾	
685	G & C Curry	14@14½	
50	Hale & Nor	10¾@11	
250	Julia	9¾@9¾	
1030	Justice	23¾@24	
40	Kentuck	12¾@13	
1225	Lady Bryan	90@80c	
1405	Mexican	34@34¾	
50	Maryland	60¾@60¾	
600	Overman	76@74½	
410	Savage	18¾@19½	
1105	Sierra Nevada	15@14¾	
50	Succor	25c	
250	Union	14¾@15	
40	Union Con	14¾@14¾	
485	Yellow Jacket	30½@30¾	

AFTERNOON SESSION.

160	Alpha	47¾@47¾	
150	Alta	3½@3	
30	Andes	2¾	
375	Alps	50c	
65	Best & Bel	48½@49	
295	Belmont	2¾@2¾	
1575	Belcher	24¾@23¾	
600	Onemopolitan	42¾@45c	
105	Con Virginia	53	
50	Challenge	4¾	
450	Crown Point	12	
100	Coso Con	3½@3c	
200	Cromer	2¾	
50	Dardanelles	1	
25	Eureka Con	11¾@12	
50	Exchequer	17	
485	Gila	1@95c	
65	Gen Thomae	1¾	
900	Globe	15@16c	
450	Golden Chariot	1.00@1.06	
500	Hussey	75c@1	
730	Jefferson	1@85c	
100	Jackson	3@3½	
100	Knickerbocker	62½c	
240	Kossuth	1¾	
200	New York Wash	2¾@2½	
665	Leopard	10¾@11	
250	Leviathan	80@75c	
120	Meadow Valley	50@35c	
830	New Coso	2½	
155	Overman	74½@75½	
120	Prospect	6	
100	Poorman	50c	
100	Panther	1½	
100	Rock Island	2	
20	S Barcelona	4	
160	Silver Hill	7¾	
100	Savage	19@19¾	
1700	Trojan	1 10	
300	Virginia	2¾	
600	Woodville	1½	
120	Ward	1½	
50	Wells-Fargo	28c	

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Cerbat Con M Co		T F Jewell	507 Montgomery st	Annual	Aug 29
Geyeer Quicksilver M Co	Cal	F H Rogers	334 Pine st	Annual	Aug 24
Gold Run M Co	Cal	C O Palmer	41 Market st	Annual	Sept 4
Meadow Valley M Co	Nev	T W Colburn	418 California st	Annual	Aug 24
Newport G M Co	Cal	A DuPont	602 Montgomery st	Special	Sept 5
Pease C M Co	Nev	T L Bibbins	402 Kearny st	Annual	Aug 31
Pyramid Lake M Co	Nev	D Cook	Nevada Block	Annual	Aug 22
Purdy S M Co	Colorado	S Franklin	Stevenson's Bldg	Annual	Aug 26
San Fernando M Co	Cal	T S Fitch	240 Montgomery st	Annual	Aug 24
Sentor S M Co	Nev	J H Sayre	330 Pine st	Annual	Aug 30
South Comstock G & S M Co	Nev	J M Buffington	311 California st	Annual	Aug 21
Tintic M & M Co	Utah	Called by Trustees	310 Sansome st	Special	Sept 18
Vermont Con M Co	Nev	S N Putnam	419 California st	Annual	Aug 28
Yellow M Co	Crescent	R H Brown	426 California st	Annual	Sept 4
Vivian Con M Co	Nev	T S Fitch	240 Montgomery st	Annual	Aug 21

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	O D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	June 19
California M Co	Washoe	C D Gordon	Nevada Block	2 00	Aug 25
Consolidated Amador	Cal	F B Latham	426 California st	25	Aug 9
Con Gold Hill Quartz M Co	Washoe	R Wegener	414 California st	25	April 17
Cons Virginia M Co	Washoe	A W Havene	Nevada Block	2 00	Aug 11
Comenche M & M Co	Nev	W W Traylor	Nevada Block	25	June 19
Empire M Co	Nevada Co	Cal D A Jennings	401 California st	2 00	April 11
Empire M Co	Sierra Co	Cal Chas Collieboux		7 50	Aug 16
Empire M & M Co	Washoe	W E Dean	414 California st	25	April 17
Imperial S M Co	Washoe	W E Dean	414 California st	25	April 17
Northern Belle M & M Co		W Willie	308 Montgomery st	1 00	Aug 15
St Patrick M Co	Cal	D F Verdenal	409 California st	30	Mar 10
West Comstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Feb 24

50	Lady Bryan	1	
100	Mansfield	21c	
40	M Valley	50c	
154	Mint	17½c	
105	Mexican	34¾@34½	
100	New Coso	2¾	
500	Ophir	50¾	
100	Poorman	59c	
500	Piotou	20c	
100	Phil Sheridan	80c	
100	Rising Star	45c	
10	Savage	19¾	
1750	Sunerior	12¾ 14c	
450	Twin Peaks	11¾@11½	
650	Trenton	2¾ 2½	
400	Trojan	1¾	
10	Utah	23¾	
700	Union Flag	95@75c	
15	Yellow Jacket	31¾	

AFTERNOON SESSION.

20	Andes	2¾	
50	Amazon	30c	
150	Adams Hill	18@20c	
1000	Baltic	22½@20c	
100	Caledonia	8¾	
400	Cosmopolitan	45@47c	
3150	Coso Con	3¼@35c	
6	Con Imperial	5¾	
60	Crown Point	11½@11¾	
200	Cromer	2¾	
200	Ely	1¾@1¾	
375	Gila	1	
900	Hussey	80@75c	
600	Interpatial	60c	
550	Jenny Glynn	5½@4¾	
75	Kossuth	1¾	
700	Lone Tree	28c	
100	Meehan	32¾@33¼	
100	Mint	17½c	
80	Meadow Valley	0c	
150	North Carson	13@12½c	
500	North Dayton	2½c	
100	N Belcher	20	
160	O G H	75@87½c	
900	Oregon	1¾@1¾	
150	Poorman	55c	
150	Panther	1¾	
100	S Barcelona	4¾	
50	S Chariot	2½c	
150	Superior	12@15c	
200	Trojan	1.05@1.02	
100	Trenton	3	
225	Union Flag	90c	
55	Woodville	1¾	

Pacific Board—Latest Sales.

WEDN'SDAY, A. M., AUG. 16.

20	Andes	2¾	
110	Belcher	2½	
160	Best & Bel	48½@48¾	
160	California	59@59¾	
215	Con Virginia	52¾@53	
810	Con Imperial	5¼@5¾	
210	City of Hoet	1¾	
195	Crown Point	12@12¾	
250	Caledonia	9¾	
100	Erie Con	80c	
200	Hussey	80c	
100	Justice	23½@23¾	
200	Julia	8¾@8¾	
100	Union	14@14¼	
140	Yellow Jacket	31@31¾	

AFTERNOON SESSION.

100	Alps	50c	
40	Alpha	47¾	
80	Belcher	22½@22¾	
2800	Coso Con	35@31c	
250	Crown Point	11¾	
50	Caledonia	8¾	
70	Con Virginia	53	
125	Con Imperial	5¾@5 29	
10	Chollar	92½@93	
55	California	59¾@59	
10	Gen Thomae	2	
300	Gen Eastern	1.05	
170	Golden Chariot	1	
100	Gila	1	
225	Gold Run	7¾@7¾	
900	Hussey	75c	
100	Jefferson	1	
900	Justice	23¾	
100	Julia	8¾@8¾	
100	Kossuth	1¾	
385	Leopard	10¾@10¾	
100	Lady Bryan	1@1¾	
100	Mexican	34	
80	Meadow Val	37½c	
120	Northern Belle	24½@24	
100	New Coso	2¾	
65	Ophir	47@50¾	
500	Poorman	55@65c	
10	Ray & Ely	8¾	
20	Savage	19	
2 0	Trojan	1¾@1.10	
19	Union	14	
100	Yellow Jacket	30½@31¼	

The Mining Share Market.

Business at the Stock Boards remains in a quiescent condition, and some of the sessions during the past week have been as dull as ever experienced. It is supposed that a good many of the sales are "washed" ones so as to keep up a semblance of brisk business. The record of sales for the week will be found in another column.

Accounts from the mines continue good and bullion comes in freely from some of them, as will be seen by the item in another part of this issue. Northern Belle is the mine which seems to have attracted the most attention from the stock dealing community of late, and a brisk business has been done in these shares this week.

The Assessor's quarterly roll shows the gross proceeds of the mines of Storey county, for the three months ending July 31st, to have been as follows:

Mine.	Value per ton.	Gross Yield.
Belcher	$21	$ 887,010 00
Crown Point	15	344,082 00
Chollar-Potosi	20	94,289 00
California	155	4,519,690 40
Con Virginia	109	3,963,280 79
Imperial Con	62	31,782 00
by C. O. Stevenson	14	13,970 00
Justice	31	40,656 15
Ophir	36	699,241 09
Overman	30	33,775 45
Ayer John	16	4,225 00
Bassett Brothers	10	1,500 00
Courser, J. C	22	2,314 00
Express Mill	9	18,069 79
Jennings, G. N	11	2 478 00
Partridge & Haines	7	1,043 00
Railroad Mill	7	11,602 12
Stevenson, C. C	5	4,050 00
Total		$10,653,928 89

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Deling'nt. Sale.	Secretary.	Place of Business.
Alpe S M Co	Ely Dist	9	50 Aug 8	Sept 12 Oct 4	O D Squire	Stevenson Bldg.
Amazon Con M Co	Washoe	3	15 Aug 8	Sept 9 Sept 30	J A Reichert	330 Pine st
Con Imperial M Co	Washoe	1	25 July 25	Aug 29 Sept 19	W E Dean	419 California st
Crown Point S M Co	Washoe	27	1 00 Aug 15	Sept 19 Oct 10	J Newlands	419 California st
Daney M Co	Washoe	2	15 July 26	Aug 31 Sept 21	Geo R Spinney	320 California st
El Dorado Sonth Con M Co	Nev	10	2 00 Aug 2	Sept 6 Sept 26	W Willie	309 Montgomery st
Florida S M Co	Washoe	5	25 June 19	July 27 Aug 22	L Hermann	220 Sansome st
Geddes & Bertrand M & M Co	Nev	1	50 July 24	Aug 30 Sept 23	J A Vance	Stevenson's Bldg
Gila S M Co	Nev	1	25 July 10	Aug 19 Sept 14	W A Knapp	309 Montgomery st
Glasgow G & S M Co	Washoe	3	15 Aug 8	Sept 9 Sept 30	J A Reichert	330 Pine st
Gold Mountain M Co	Cal	6	25 July 25	Aug 26 Sept 28	W Aug Knapp	309 Montgomery st
Golden Chariot M Co	Idaho	17	50 July 11	Aug 18 Sept 8	L Kaolan	Merchants' Ex
Gould & Cnrry M Co	Washoe	27	1 00 Aug 21	Sept 15 Oct 5	A K Durhrow	309 Montgomery st
Hale & Norcross S M Co	Washoe	51	1 00 Aug 8	Sept 12 Oct 3	J F Lightner	Nevada Block
Ida Elmore M Co	Idaho	20	1 00 June 26	July 31 Aug 21	W Willis	309 Montgomery st
Kossuth M Co	Nev	7	5 Aug 15	Sept 19 Oct 12	E F Stone	419 California st

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR.

Mining at Volcano.—Cor. Amador *Dispatch*, Aug. 12: The Volcano gold gravel mining company commenced the work, and broke ground for the tunnel on the 31st of July, and the work has been pushing an as rapidly as possible ever since, and will continue to be pushed on until the great enterprise is completed. The people of Volcano are waking up—they see the vast amount of good that will be accomplished when the tunnel is completed. It will open up a large mining country that has been idle for years, and millions of gold reclaimed from its bed of long seclusion. Now this enterprise will open up and drain this flat at a depth of 44 feet below the old works. The agent of this company was up from San Francisco, and at a called meeting at the town hall gave the views and explanations in regard to the enterprise, which appeared to be satisfactory to a large number of the citizens. The bright prospect of Volcano's future glory is radiating the hitherto forlorn looking countenance of nearly all her citizens. Volcano will soon be one of the best and richest mining camps in the county.

Big Clean-Up.—Cor. Amador *Ledger*, Aug. 12: The Amador Consolidated mine, of Sutter creek, as the result of last month's operations cleaned up $25,000—the best yield they have realized in many months.

CALAVERAS.

Quartz.—Calaveras *Chronicle*, Aug. 12: Saturday last we visited a few of the principal quartz mines in this vicinity, and found that operations are being industriously forwarded. At the Quaker City mine, near the Junction, work is still confined to running the 200-ft level. At the distance of 80 feet from the shaft the ledge shows as good as ever, with no indications of approaching the terminus of the pay chute. There is evidently an immense body of rich ore in the mine, the full extent of which is not yet determined. At the Lamphear mine everything has been got in tip-top shape for working, and labor upon the contract for sinking the shaft an additional 100 feet was commenced yesterday morning. The shaft has recently been put in good repair, and work is to be pushed energetically. At the Boston mine work is confined to getting the mill in running order. It will probably be ready the latter part of next week.

Gwin Mine.—The Gwin mine continues its regular gold product. The sinking for the 1200-ft level is completed. The new machinery for the lower or Alexander mill will be finished about the middle of the month, which will increase the crushing capacity and at the same time materially reduce running expenses by permitting the water purchased for motive power to be used twice. Everything connected with this mine is looking first-rate.

Specimen.—We have been shown a very pretty gold specimen, by Mr. Schlund, of this place, who deals in this article. The *chispa* weighed about four ounces. It was taken from the mine of Jackson, Miller & Co., near Central hill.

Upper Country Mining Jots.—At West Point there has been but little change since our last report. Work is progressing favorably at all the mines. Champion still sinking. A crushing of rock is on the dump, which is to be hauled to the mill shortly. The Josephine mill is finished, but has not been started yet. Mina Rica still running the 300-foot levels and getting good rock. San Bruno, at Mosquito, still pumping water.

Mount Tmolus Mine.—The contract taken by the Messrs Rigney for sinking the shaft in the Mount Tmolus mine, Jesus Maria district, is completed. The shaft is now 82 feet in depth, all the way in fair grade ore. Water was struck in the shaft just as the last sinking was completed. Mr. C. J. Nelson, superintendent of the mine, informs us that the company owning it are not yet fully determined upon the next step in its development.

A Good Clean Up.—Veith, proprietor of the big hydraulic on Tunnel ridge, cleaned up lately after a short run. Two thousand dollars were netted, averaging a yield of $200 for every day water was run. It will bother hydraulics anywhere to beat that, and it is a steady thing in the Veith claim. Calaveras hasn't got through supplying the world with gold yet.

CONTRA COSTA

Empire Coal Mine.—Antioch *Ledger*, Aug. 5: A recent visit to this newly opened coal mine convinces us that, beyond a question of doubt, the Empire will, when fully developed, prove one of, if not decidedly the most profitable of the numerous Diablo coal bonanzas. It is true that the quality of coal thus far taken out for shipment has been severely criticised, and that in quality it is probably not equal to the best of the Black Diamond or Central products, yet when it is remembered that the coal now being extracted is taken out at a depth of only 160 feet from the surface, the fact is apparent that no vein of coal yet opened on the coast ever produced as good a quality at the same depth—virtually croppings. Examination of the mine also shows that at the present depth the quality of coal now being extracted from the east side of the slope, which brings it at a greater depth from the surface—the breast running under a hill—will compare favorably with that of the Somersville or Nortonville mines. For several weeks past the owners have shipped about 50 tons daily, but with the completion of the contemplated railroad from the mine to Antioch, a distance of five miles, and the opening of the middle vein by running a drift 240 feet southward from the bottom of the slope, the work of which has already been commenced, probably between 400 and 500 tons will be shipped daily.

EL DORADO.

The Kelsey Mine.—El Dorado *Republican*, Aug. 10: During the past three or four months, under the superintendence of Mr. B. C. Hodge, the tunnel in the Kelsey has been extended about 75 feet along the ledge, making the entire length of the tunnel about 150 feet. At the end of the tunnel the ledge was cut, and looks exceedingly fine. The ledge is four feet thick and well defined. The rock is of the same character as that taken out of the old Pacific, in this city, and the Kelsey is doubtless on the same vein. Millions of dollars were taken out of the Pacific, and the general belief of those who are familiar with it is that it can be made to give up millions more. The Kelsey has the most promising outlook of any partially developed mine in the county, we think, to-day.

The Robinson mine, at Prospect flat, is again looking up, a rich bed of gravel having been struck recently, and gives promise of a yield greater than has heretofore been produced. This, for several years, was one of the best paying mines in the county.

FRESNO.

Placer Mines.—Fresno *Expositor*, Aug. 9: We learn that a considerable excitement prevails at Centerville and vicinity over the reported discovery of rich placer mines on Mill creek. We understand that L. A. Clarke exhibited some large specimens of gold that he found. A number of persons have visited the mines and located claims. Mill creek is a tributary of King's river, and rises in the eastern portion of the county. Rich copper and gold-bearing quartz has been discovered in the vicinity. We hope the newly discovered mines will prove as rich as reported.

LAKE.

The Eclipse Quicksilver Mine.—Lake County *Democrat*, Aug. 12: The company organized last week for the purpose of working this valuable mine have a gang of four men at work. There is every indication from the appearance of rock already uncovered that this mine will prove one of the richest in Lake county. It is located between the Uncle Sam mine and Thurston lake.

MENDOCINO.

The Gold Region.—Mendocino *Democrat*, Aug. 12: We hear that J. St. Robertson, with several men, came up last Sunday from San Francisco to work in the supposed gold region near Calpella, and it is said a large additional force may be expected in ten days or so. The first move is to look out and procure the most practicable route for the conveyance of water, and this is what Mr. R. will start on. We are told Calpella lots are being applied for. By the way, anyone wishing to confer with Mrs. Captain DeWolf, can find her address at the office of Dr. Barnes, Ukiah; at the Calpella hotel, Calpella; or by calling on Mrs. E. R. Worth, Worth house, San Francisco.

MONTEREY.

Coal.—Watsonville *Pajaronian*, Aug. 10: We understand from good authority that the coal mine is now being developed by Slader & Co., on Ford & Sanborn's property, near Corralitos, is giving very encouraging indications. The coal now being taken out is of excellent quality and promises well in quantity, and better as a greater depth is reached. A good deal of interest is felt here in the perfect success of the mine.

NEVADA.

From the Ridge.—Cor. Nevada *Transcript* Aug. 12: The Weaver dam, at the head of the Miner's ditch, gave way on Wednesday afternoon, and an immense body of water came down the river, carrying everything before it. Every flume and wing down the middle Yuba was washed away, and quite a number of Chinamen barely escaped drowning in their cabins, one mile below here. The rush got down here at 11 o'clock last night. The Weaver dam is one of the oldest of the Eureka lake company's dams. The company have been repairing and raising it up some time. I have not been able to find out the amount of damage that has been done, but as there is no water in the Milton or Miners' ditches to-day, I suppose considerable damage has been done to those two ditches. The Chinamen have lost everything, and are cleaned out cleaner than a shotgun. No lives were lost, as the dam broke after quitting time last night.

A very rich ledge was struck last week in the northern part of Washington township, in the vicinity of the Yuba mine. The ledge is four feet in width and is literally speckled with free gold and galena sulphurets. That is the most promising field for prospectors in the county.

The Gold Run mine, of this place, produced $5,500 in gold bullion last month.

Milton Tunnel.—*Foothill Tidings*, Aug. 12: The Milton tunnel, at French Corral, is now running and using 1,000 inches of water, the company will be able to make a full work of sending through the rich gravel of the ancient river channel owned by them, which is said to be 3,000 feet long by an average width of 1,000 feet. The tunnel has cost the company nearly $175,000, and occupied over four years' time in its construction. About once a month hereafter a big clean-up may be expected from this work.

Kentucky Rhoe.—We hear this mine well spoken of and should judge it had a bright prospect. Rock from the croppings milled $18 per ton, and when cut by the tunnel, which must be about this time, about 80 feet of backs will be at hand. The mine is on Deer creek, about a mile below Newtown, and being so situated as to be opened by tunnel and the rock worked by water power, has many advantages.

The Union G. & S. M. Co., running a tunnel for the Alta gravel channel, over on Warner's ranch, beyond Alta hill, are progressing favorably with the work. About 200 feet more will, it is expected, bring them to the pay channel, where the reward of all their labor lies. High hopes are entertained by posted ones, of the result of this enterprise.

PLACER.

Coarse Gold.—Dutch Flat *Forum*, Aug. 10: A few days since we were shown a lot of genuine coarse leed gold from the Badger claim; it was taken out from a crevice, overlooked by the parties who drifted here in years gone by. One mouth waters to see the beautiful pumpkin seed shaped pieces of pure yellow gold, just as nature deposited it, and to listen to the miners tell of the enormous amount taken from this and adjoining claims in that way, suggests the reflection, what may not the Cedar Creek company expect when the tunnel reaches the ground that has not been drifted.

Colfax Items.—Although this place is not at present as prosperous as prior to the introduction of the narrow gauge railroad, yet it is a town of no common importance. The quartz mines in its immediate vicinity are being gradually developed, and rock which shows a rich sprinkling of free gold is found in several different ledges. We were shown two specimens by Mr. E. Webster, taken from the Meda ledge, at the depth of 75 feet, which is encouraging if not flattering. The company are now negotiating for the Montana mill, and if they succeed they will soon test the paying qualities of the ledge.

Mining Items.—The Yankee tunnel is being driven with the usual vigor. For the five days preceding Saturday evening the tunnelers worked nine shifts, but owing to some necessary repairs only fired six face shots, advancing 25½ feet. The Baker shaft is being worked by three shifts of men. It is the intention of the superintendent to have this shaft to cradle by the time the Yankee tunnel reaches that point. In order to do so, however, no time is to be lost, for should the tunnel continue to progress at the present rate of speed it will reach that point about the middle of October. The Polar Star claim continues washing. The Elmore Hill and Yankee claims are cleaning up bedrock. The Franklin and Lacamp claims continue washing a few hours each day. The Pacific claim was cleaned up on Monday after a short run, realizing satisfactory returns for the water used. This claim is now hung up for the season. The Southern Cross claim is being rapidly fitted up. The sluices in the tunnel are about completed, and the claim will be ready for washing as soon as the new string of pipe leading thereto is finished. The Indiana Hill claim, at Gold Run, recently fired a blast of about 300 kegs of powder. The powder was placed in drifts, run from the shaft, where the gravel and bed-rock vault. An immense amount of hard cemented gravel was thus loosened up like ashes, and is now ready for successful washing. As a natural consequence, however, the shaft was filled to the surface, but water has been turned on, so the shaft and tunnel will soon be clear again. This claim is procuring the surplus water from the Yuba ditch company, and expect to complete another successful run this season. The Cedar claim, adjoining, is washing. So far Mr. Stone, the energetic superintendent, has only been enabled to wash the poor intermediate gravel, which on this claim is of great depth. It is expected that the present run will clear sufficient space to enable him to reach the bottom and run powder drifts in readiness for next season. All miners in this vicinity are anxious for the result of a run on this bottom gravel, it being the general impression that it will equal anything heretofore reported in the State in proportion to the amount of water used.

PLUMAS.

Green Mountain Mine.—Plumas *National*, Aug. 12: Mr. Charles Rodgers, superintendent of the Green Mountain, which is located above Crescent, called on us Thursday. He says the prospects of the mine are flattering in the extreme. The prospecting tunnels have developed an immense ledge, and the header of the lower tunnel is 800 feet under ground. The rock is "pay rock" in every sense of the word. The new 20-stamp mill will be ready to run in a few weeks, and with the old Dixie mill will give the company 28 stamps to operate with. "Charley" says they have got ten years' pay rock in sight. He seems to think the chance for the quartz mines in all the Greenville section better than ever.

Golden Enterprise.—We had a talk with Mr. Richard Jacks, of Meadow Valley, the other day, regarding his flouring claim, and found him in high spirits—in fact elated with his prospects. His flume has a grade of only 1¾ inches to 12 feet, and it was an open question with the miners—many doubting it—whether it would operate successfully. The past winter has thoroughly demonstrated the practical success of the project, and with plenty of water the flume works like a charm. His main cut is now 720 feet in length, and the head of it—120 feet wide—now shows two feet in depth of blue gravel, which prospects splendidly, and in which Mr. Jacks says it is safe to say that a man could make $10 per day with a pick and shovel. "Uncle Dick" says that he will get a "boot-box full" of gold dust out of the Golden Enterprise, and we are inclined to think he will—hope so, anyway.

A 170 pound boulder, lousy with gold, was recently taken from Gard & Orr's hydraulic claims at La Porte, and it is reported that this company are rolling out the gold in a manner calculated to make the owners happy.

SAN BENTIO.

Strike.—San Benito *Advance*, Aug. 12: A. L. Smith informs us that he saw the rich strike of the Salinas company quicksilver mine on Sunday last. Their ledge connects with the Queen Victoria ledge of the Wonder company. Their tunnel is in about 150 feet, and a solid body of rich antimony and quicksilver a foot thick and of unknown extent is visible.

SIERRA.

Sierra City Items.—Cor. *Mountain Messenger*, Aug. 12: Prospects look a little better up here now, the Keystone has put a small force of men to work, and if they succeed in keeping the water in check with the power machinery they have, there may be a chance for some of the idle men around this camp to obtain work. Ginvollo & Co.'s claim, at Loganville, is doing as well as ever. There are are always eight or ten men at work, and to all appearances the owners get handsome pay out of it, Sam Hartley's celebrated Centennial claim could not do better; last week they took out of it two pieces that weighed respectively 13 and seven ounces. I am almost positive that the two men working there don't average less than $15 per day. J. Beerd & Co. are the extensive of the Centennial are also progressing splendidly, I hope they will soon realize their expectations.

Splendid Ore.—Superintendent Hodge brought several sacks of quartz over from the Kelsey mine last Friday, for shipment to San Francisco. He has driven his new tunnel in to a distance of about 70 feet, when he again cut into the ledge, which at that point is of immense proportions, the full extent of which he has not yet ascertained. We carefully examined many samples of the ore. It is very handsome, beautifully ribbonded, shows free gold and abundantly loaded with fine looking sulphurets. Mr. Hogde, and Seneca Davis, who owns an adjoining claim, are greatly elated, and we make no question but that their sanguine expectations are fully justified.

TRINITY COUNTY.

A Deserted Region.—Trinity *Journal* Aug. 12: Business led us down the Trinity river on Monday, and to one who has seen that portion of the stream lying between Douglas City and the Arkansas Dam in its palmy days, the sight is by no means one of pleasure. Ten years ago this section of the this river spoken of was one of the most thriving and prosperous in the county. At the present time it is almost wholly surrendered to Chinese. Leaving Douglass City, the claims of Wallace and Gruthis can be seen toward the Graveyard Point. They have paid well this winter, notwithstanding the many interruptions occasioned by the big slide back of Douglas City, which kept settling more or less all winter, rendering it a dangerous proceeding to turn water into Tourot's ditch, which runs across it. With the exception of this one claim there is no mining being done in the vicinity of Reading's Bar, the place where gold, was first found in Trinity county. Down this river a little are the claims of Charley Tourot, very deep banks and but little dumpage, but they, too, have paid well considering the difficulty in keeping water upon them. At Buckeye Bar, A. W. Hubbard has found fair prospects on which we understand he intends to put a hand, and we know there is a fine scope of country between Reading's and Brown's creek which will pay splendid if properly worked. At Steiner's, Swift and John Hurst are working, and we have reason to know they are well satisfied with the result of this winters' labor. They are the only white men mining at this once flourishing camp. From this point down, the river is given up to the Chinese who are to be found on every bar though not in such great numbers as formerly. From Douglas City to the Arkansas Dam, a distance of nine or ten miles, but three companies of white miners are at work.

At Evan's Bar, one of the richest on the river, the Chinese who had built out the McGovern claims are going back to the primitive style of mining and have the foundation and frame work up for a large side water wheel. Time was when there were twenty and thirty of these wheels in operation on the river, but at present, so far as we are aware, there are none. Report says the Chinese have struck very rich dirt in the bar, hence the outlay. Evan's Bar was formerly worked by water conveyed across the river by two flumes, which brought Dutch and Maxwell's creeks to the mines. The flumes were swept away by the great flood of 1861; were rebuilt, but a few years ago yielded to the inroads of time and now scarce a vestige of them remain. The Chinese who took out the land have called to obtain the material for the flumes in the successive buildings, and with the increasing expense which would have occurred, their owners did not feel like replacing them. Chinese enterprise will hardly be equal to the task of rebuilding, and the country would be very little benefitted if it should.

TUOLUMNE.

Marka & Darrow.—Tuolumne *Independent*, Aug. 12: This mine is now having a prospecting shaft (No. 6) enlarged for a main hoisting shaft, divided into two compartments, but of sufficient dimensions to make a third compartment at any future time. Beyond this (290 feet to the north), Discovery shaft No. 7, three weeks ago sent some rich ore to San Francisco, which milled nearly $700 per ton. Recently a lot was sent showing no visible color, that by mill process yielded at the rate of $189 30 per ton.

Daniel Hennessy and Patrick King took about $1,000 from a quartz pocket recently, at Sawmill flat. The claim is situated in the hill, back of Mr. Donnegan's old house, where a number of rich strikes have been made by parties at different times.

A Connection.—Union *Democrat*, Aug. 12: We are informed by the managers of the Soulsby mine, in this county, that the statement in regard to the payment of the miners in silver coin is incorrect. They state that under the present management it has been the invariable custom to pay the men in gold, and that silver is only used to pay the fractions of the gold pieces. It is asserted that the company is so punctilious on this point that they have had $1,000 in silver on hand for months, which might have been paid to the men, but which has been withheld in favor of gold.

TULARE.

New Placer Mines.—Cor. Visalia *Delta*, Aug. 10: Now I will sum up by that the diggings look well, but the other side of the picture is: it is a very hard creek to work; boulder strewn upon boulder, and the bed-rock up and down. It is too level for sluicing to advantage. When there is water in the creek it cannot be worked; when there is no water, how can they wash? The only way is to work with rockers, or use dump boxes in connection with sinices, and use those large pumps such as stock men have, and pump the water from the holes on to the dirt in the dump boxes, and wash the dirt in that way. The diggings are wet, and it is hard to prospect on account of water, and no way of draining; but it could be opened with pumps, and once a race opened, perhaps the pumps might be dispensed with. Now I would tell my friends who have large muscle and small employment, that perhaps the mountain air and a trip to Mill creek might do them good, but those who have legitimate business had not better neglect it to "see the elephant." It will be a herd piece to serve the Lord in. I don't want any of it. The miners have met and made laws to govern the workings. Three hundred feet on gulches constitute a claim.

Arizona.

Rich.—Wailapai *Enterprise*, July 29: One ons-half tone of ore from the Laport mine, near town, recently worked $580. Several tons of ors from this mine worked a short time previous panned out $534 per ton. They have on the dump over a tou of the same kind of ore, and six tons of what they call second-class ore, which is worth $300 per ton. It is a blind ledge but has been traced for 1,000 feet, several shafts having been sunk and the ledge shows a uniform thickness.

James F. Reilley has sold to Robert Upton, for the sum of $6,000, a half interest in the Mocking Bird lode, near Stockton, in this district; and John P. Reilly has sold the Laura Shomo, the first south extension on the Mocking Bird, to James Milay. We have not learned the price paid for the latter.

Local Matters.—Arizona *Citizen*, July 29: Another load of provisions was taken to the Trench this week. A new and better furnace has just been built and everything working well. The Ostrich mill company has sent to E. N. Fish & Co. two more pieces of silver weighing 30 pounds evoirdupole—the result of a clean-up of $6,000, a half interest in the Mocking Bird placer gold from Santa Rita this week, and sold the same to E. N. Fish & Co. Herman Welisch and others came from San a Bita this week with various lots of gold. Over 100 people have come into these mines within a short time, and all there are making or can make something. Some rain has fallen in the mines, but much more down the Sonoita valley.

Idaho.

Atlanta Items.—Idaho *Statesman*, Aug. 10: The mining prospects of Alturas are commencing to show up grandly. The amount of ores shipped since the roads have been opened up to travel, is favorably impressing on the minds of capitalists and men of speculation, that there is something in these Alturas mountains that may be invested in with profitable results; the weekly average of snipping ors from these mines to the reduction works is somewhere in the neighborhood of from 10,000 to 15,000 pounds. None shipped less then $300 per ton, and assaying as high as $10,000.

Mining in the Basin.—Owyhee *Avalanch*, Aug. 12: Placer mining has about closed for the season, except some of the claims supplied with water from the main or long ditches. We believe there has been no total failures this season in the placer mines. All seem to be satisfied with the season's operations. Our great trouble is our money all leaves as soon as it is taking out. We are a non-producing people. Nearly everything we consume has to be brought here at a heavy cost for transportation. This is not as it should be, and until the evil is remedied we shall be poor. Our quartz interests are encouraging and the future looks bright for all concerned.

The Ida Ellmore.—The movement looking to future operation in the Ida Ellmore is regarded with hope and favor by all interested in the welfare of the camp. When operations were suspended in this mine several months ago, there was a general feeling of regret, as it was known that the ledge in the vicinity of the 12th level gave promise of the existence of a bonanza that was calculated to make every man interested in this mine feel hopeful for its future. A few weeks labor in removing the water and in prospecting operations would bring the Ellmore to the front again as the key to the situation, and if the gentlemen of San Francisco who are interested in the property will study their interests they will not allow the season to pass without making another effort at development. If honestly worked, there would not be a better paying mine on the Pacific coast.

Oregon.

New Ditch.—Oregon *Sentinel* Aug. 9: Jack Leyton is now having a ditch dug for the purpose of mining Whisky and Farris gulches, in Josephine county. The water will be taken from Williams creek and the ditch is to be 16 miles in length. He expects to have it completed for next season's work.

Foundry Started.—Bedrock *Democrat*, Aug. 2: On last Tuesday morning, M. Hyde, superintendent of the Virtue mine, started up the foundry at our city. The machinery, furnace and every thing connected with this new and useful manufactory worked to a charm. The casting done was of the best. Everyone present, of whom there were several of our citizens, were well pleased with the workings of the Baker City foundry. James King, foreman of the foundry, understands his business and has made a complete success in his management of the workings of this foundry. Those wanting castings can now send in orders and have their work done at short notice, and as good as the best.

Mining Items.—*Oregonian*, July 29: Prospecting for gold, silver, mica, etc., is being done extensively by the people of Jacksonville in the hills and gulches adjacent to that town. Several Chinamen are making from $1 to $2 per day by taking dirt from the streets in Umatilla and washing it through rockers at the river.

Nevada.

WASHOE DISTRICT.

Imperial Con.—Gold Hill *News*, Aug. 10: Daily yield, 30 tons of ore. This ore is being mostly taken from the winze while sinking and the prospecting drifts being run from the winze sunk below the 2000 ft level. The face of the east cross-cut from the winze below the 2000-ft level is again showing some fine ore.

Julia.—The main south drift on the 1600-ft level is steadily advancing, the face still in quartz of a fine character, portions of which give excellent assays. On the 1800 ft level the face of the main south drift is in very favorable ground, with excellent indications of soon finding pay ore. The face of the east drift on the 1800-ft level has cut through a streak of clay, and is just entering what appears to be a fine body of quartz, with every appearance of pay ore. This is no doubt a continuation of the ore vein struck east of the shaft on the 1700 ft level.

Bullion.—Every effort was still being put forth up to last evening to complete the air connection between the winze below the 1400 and the upraise from the 1700-ft level. At that time the men in each shaft could distinctly hear each other's voices through the intervening space, and it was confidently expected that the connection would be made some time to-day.

Alta.—Sinking the shaft is being pushed with all possible energy, four shifts of men of six hours are being employed. It is confidently expected that with this force of men the shaft will be sunk 100 feet deeper per month, a rate of speed unprecedented on the line of the Comstock.

Amazon & Glasgow.—Sinking the joint shaft is going rapidly ahead, the bottom in rock which shows signs of gradually softening, with some indications of water ahead. New and more powerful machinery is now on its way from San Francisco.

Yellow Jacket.—Retimbering the main shaft below the 1030-ft level is finished. Timbering the connecting

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far removed from the coast, the iron interest became so fully established that no nation accessible to her ships could successfully engage in the same pursuit, until by following her example its own mines and resources could be fully developed." In 1810 the amount of

Pig Iron Produced in the United States

Was 54,000 tons, in 1828 this had increased to 130,000 tons, in 1842 to 240,000 tons, and in 1870 to the enormous result of 2,052,881 tons, this vast quantity being the product of 3,210,918 tons of iron ore. It may be well for me to add that fully one-half of this was mined in the State of Pennsylvania alone, though large deposits of ore exist in Ohio, New York, Missouri and Michigan; in fact there are no States in the Union, with the exception of Florida, Texas and Louisiana, which do not contribute their quota to this priceless branch of industry. Year by year the yield of iron in the United States, as well as in Europe, is constantly increasing, and from the most reliable statistics at my command, the total product of the year 1874 amounted in round numbers to about 9,000,000 tons, the value of which, taking the average price of pig iron at that time, was not less than $200,000,000. The mind almost staggers under these tremendous figures, and did we not know how universal was the use of this metal, we should hesitate to accept such statements. But the purposes to which it is applied in our social economy are all but infinite, and as civilization advances with giant strides, "iron, more iron" is the cry forever upon her lips, as the grandest need of our progressive path. It is away from my present purpose to talk to you of the

Chemical Composition of Iron.

I would not if I could, and I could not if I would, but it may be well for me to state that iron is never in a state of nature found absolutely pure, but exists in combination with other substances, forming oxides, carbonates, phosphates, silicates and iodides of iron, which are again subdivided into various specific metallic forms and compounds. Probably the richest of all known ores, containing I believe nearly 73 per cent. of pure iron, is that technically known as the black oxide, a variety for which Sweden is especially famous, the metal produced from it being generally esteemed the best in Europe. The mines of Dannemora, in Sweden, have been constantly worked since the 15th century, while large deposits of this variety (known also as magnetic iron) are found in the Ural mountains of Russia, and in this country in Canada, New Jersey, Pennsylvania and Virginia. "The rock formations in which magnetic iron ore occurs contain no coal, hence it is almost always smelted with wood-charcoal, which, as it contains no sulphur, is one great cause of the superiority of the iron produced from it." With regard to the process of smelting, I find in the authority of *Chambers' Cyclopedia*, that "charcoal was constantly used for this purpose up to 1618, when Lord Dudley introduced the use of coal, but the iron-masters being unanimously opposed to the change, Dudley's improvement died with him, and was not re-introduced until 1713, when Abraham Derby employed it in his furnaces at Coalbrook Dale, About 1750 the introduction of coke gave renewed vigor to the iron trade, and then followed in rapid succession those

Improvements in Its Manufacture

Which give to the history of iron all the interest of a romance. The steam engine of Watt, the process of puddling and rolling invented by Henry Cort in 1784, the employment of the hot blast by Neilson of Glasgow in 1830, and the well known Bessemer process of later days, were grand discoveries in this branch of industry, and worthy pioneers of the more extended knowledge of the reduction and utilization of the metal which year by year is made to dawn upon the horizon of mechanical science. Indeed, the energy and intelligence bestowed upon the subject of iron throughout the world, are in themselves sufficient to prove its extreme importance to the race, did not its multifarious uses come hourly beneath our notice and testify to its existence as a necessity of our being. Who can over-value its worth? Who can attempt to sum up the comforts we derive, the blessings we enjoy from a knowledge of

Its Uses and Its Power.

The miles on miles of railways which stretch themselves like a net-work over the surface of our planet, binding continents together in a bond of fellowship, and linking distant nations hand to hand, would have no existence but for iron. The pumps which draw the sparkling water for us from the depths of the earth; the pipes which convey it from distant reservoirs for our cities' use; the fleet of white-winged ships which stud our seas like messengers of love, carrying blessings from one land to another, exchanging the fruits of the earth and cementing the whole world in one compact and universal brotherhood; the grand and complicated machines which attract the attention and move the wonder of mechanical minds; the lofty structures which rise around us on every hand, sublimely reaching up to heaven, as if in meek but earnest praise to the grand creative mind whence all has sprung—attest in trumpet tones the precious boon which iron has been to man, the most important want and blessing of his race. Turn where we will its worth is seen, examine where we may its power and its uses are experienced and known. There is no position in life or rank in society which is independent of its assistance. Not only in those mighty works which assert man's claim to the gratitude of coming ages, but in the minor details of our daily life, in all the countless relations which go to make up the sum and comfort of our being, the value of this marvelous product is enforced upon our attention. The surgeon's instruments, and the bridge which spans a cataract, the dainty needle, and the hammer which can crush a ton, the scythe of the mower, and the lever which can stir a palace, the fearful war guns before whose fire whole armies sink as puppets, and the wire which cages the imprisoned bird, the lighthouses which protect our coast, throwing their beacon lights far across the deep as the wanderer's warning and his sign, and the pen which writes our messages of love, the delicate mechanism which guides the movement of our watch, and the stupendous columns which lift themselves far up into the eternal and bare their brows to God—these are but a few of are varied purposes to which it is applied, and for which it claims our recognition and regard, and let us ever remember that for it

No Substitute Can be Found.

No metal known to us can take the place of iron in its controlling and multifarious uses. For gold, silver, copper, lead or tin, something may be found to supply the place; for iron nothing! It is terrible to contemplate the utter blank which the world would become, if it were possible that by

Some Sudden Convulsion

It could be withdrawn from us, and banished from the earth. As if by the touch of the magician's wand, a desolation, vast and awful, to which the most fearful earthquake that ever devastated the world would be but the falling of a house of cards, the plaything of a child, would come upon us, a desolation so stupendous and so crushing in its immensity as to suggest the day foretold by the prophet, "a day of darkness and of gloominess, a day of cloud and of thick darkness," a desolation which would send our planet with its 1,300,000,000 of souls drifting backwards and ever backwards to her primitive condition, the intelligence of her inhabitants fading with the lapse of the ages, and her surface becoming gradually unfitted for the abode of man.

The mind can hardly realize the change—the paralysis of all endeavor, the destruction of the mighty aids to labor, the uprooting of all social and business institutions, and the total annihilation of commerce in all its forms which would follow such a vast and overwhelming catastrophe! Our grandest edifices would crumble into dust, our noble ships would fade into shapeless masses, and go down rotting to the sea's extremest depths; our telegraph would no longer waft its messages with lightning speed, putting "its girdle round about the earth," our mighty engines which now with almost a living voice proclaim themselves the emperors of force and power, which carry us with such rapidity from place to place, making the once unknown corners of the earth but pleasant visiting spots for a summer tour, would pass forever from our sight—our printing press would cease its holy labor—our fields would become choked with weeds, and the furrows of the plough would be seen no more! The civilization of which we now so worthily boast would have run its course, would lapse into the barbarism out of which it sprung, and

"Like an insubstantial pageant faded,
Leave not a rack behind."

This may be a melancholy picture, but it by no means exaggerates the endless evils we should suffer could the iron of the earth be at once eliminated from its products, and the contemplation of such an appalling wreck should at least help us to be grateful for so powerful an adjunct to our social wants. And looking down the vista of the coming years, do we not with our more interior vision see the possibility of a still wider application to the cravings of a succeeding race than any we have known? Does not the

Daily Growth of the Arts and Sciences

Which occupy man's attention to-day, and the cultivation of which adds hourly to his refinement, and brings his nature nearer to the Divine—does not this suggest the existence of uses for this metal even greater than those we already know, uses as yet but dimly seen even by the speculative and far-seeing mind? Perhaps we are but yet upon the threshold of the temple, and the secrets beyond the vestibule may yet be hidden from our gaze. In the more refined arts of life—in engraving, in photography, in the polishing of various substances, in the cutting of glass and in the structure of ornamental designs our knowledge may be fairly said to be in its infancy, and turning from the peaceful and purifying arts of life to considerations of an opposite character, do we not with a thought perceive how of late years, at least within our present century, iron has been employed by man to meet one of the exigencies of his nature in the construction of those vast and fearful implements of war which are one of the most striking features of our age.

The Iron-Clad Ships,

Which in their present and more perfected form at least, had their origin in America, and which to the number of nearly 400, with the aggregate equipment of over 3,000, are now employed by all the warlike nations of the globe, are due to the existence of iron. The perfect immunity of these vessels to the discharges of cannon in vogue among our fathers suggested heavier artillery, and more powerful guns were needed to penetrate the armor of this mighty fleet. Those of modern times have attained such sizes and such power that we stand aghast at the marvelous amount of ingenuity and constructive genius which men have devoted to the destruction of each other, and wonder if that glorious period spoken of by Tennyson—

"When the war drum throbbed no longer, and the battle flags were furled
In the Parliament of man, the Federation of the world;"

Lives but in a poet's dream.

The Guns Made by Krupp,

Of Prussia, who was one of the pioneers of this branch of industry, challenge our admiration, at the same time that they excite our awe. One of these stupendous weapons, made for the Russian Government in 1868, had a total weight of 50 tons, the diameter of the bore being 14 inches, and the length of the barrel 210 inches. This gun would carry a shot weighing 1,212 pounds, the propulsion of which would require a charge of not less than 115 pounds of powder. The price of this gun, with its carriage and turn-table complete, amounted to $150,000 of our currency, the time occupied in construction being 16 months of unremitting labor. How terrible the expenditure of all this skill and power for the one purpose of destruction! But as in the physical world we see that earthquakes, hurricanes and volcanoes subserve a useful purpose, and prepare the earth for the culture and use of man, so it is held by many thinking and philanthropic minds that with the improvement of our weapons of war the era of peace will more speedily come, that era of which Elihu Burritt, the learned worker in iron, who was "transplanted from the anvil to the editor's chair by the genius of machinery," triumphantly says: "War shall die, and all things that love the face of man and the face of nature; that love to look up in the pure and peaceful sky; that commune with the silent harmonies of the great creation and listen to the music of reasoning things—all these shall fill the heavens with one grand jubilate that the great cannibal is dead." But however this may be, certain it is that through these mighty engines of destruction the strife of nations will no longer be decided in close contact upon the blood-stained deep or on the crowded battle-field. "The sword may not be turned into a plowshare and the spear into a pruning-hook," but the horrors of war will be rendered more short-lived, even if more devastating, and more decisive, if apparently more cruel in their operation, and while we sorrow over the deadly feude which agonize our race, let us remember that the destinies of nations are in wiser hands than ours, and that we in our impotence can but look on, wonder and revere!

I feel that I have already detained you too long, but I must, before I conclude, say a few words as to the existence upon

Our Own Coast

Of the metal we have had under consideration, and the probability of its one day becoming an object for the employment of capital. It may be already known to you that in several portions of this State deposits of iron ore exist, which need only increased enterprise to render them of immense value and importance. In Sierra valley, near Marysville, and near Colfax, large beds of ironstone have been discovered, and when it is known that, according to a statement recently made in the *Mining and Scientific Press*, "the quantity of iron annually used upon this coast cannot be less than 60,000 tons, worth in the rough about $3,000,000, and in a manufactured state not less than $10,000,000," it must be allowed that the development of the iron resources of California and the neighboring States is at least worthy of consideration. In Oregon, some excellent mines, producing ore of the very finest quality, have long been profitably worked, and in British Columbia, a whole island in the Gulf of Georgia, known as Texada island, waits but the energy of a few determined men to give to the world iron ore sufficient to keep employed hundreds of laborers for many decades to come.

The City of San Francisco

Alone has within its limits no less than 47 iron foundries, machine shops and boiler factories, employing upward of 3,000 hands, expending annually for wages not less than $1,000,000, and yet it is safe to say that not more than 2,000 tons of the iron used by these establishments is the product of our own region. It would appear that there is something wrong here, when we consider that the deposit on Texada island, to which I have just alluded, contains on a rough estimate nearly 12,000,000 tons of ore, and that the cry of dear coal and scarcity of wood for the purpose of making charcoal, which may have some weight in California, cannot prevail there, abundance of both coal and wood being close at hand for the purposes of smelting, while nature affords every facility for shipping the result of the enterprise, and carrying it to its markets in other lands. And surely it cannot be deemed Utopian to believe that the day is not far distant when this production of a metal in so general demand all over the world, will become one of the most attractive industries of our coast, and that we may supply our numerous foundries with the

Basis of Their Labor,

Mined and smelted within the limits of our own boundary. At the close of the first century of her independent existence, America has no reason to be abashed at her condition among nations, and when we think that California has hardly completed her first quarter of the same period we may well be proud of the progress which she displays to-day. States, like children, must have time to grow, and expanding into maturity, to shake off the weaknesses of their early growth, and if we are now passing through a stage of fast life, too eager for the sudden acquisition of wealth, and neglectful of the opportunities which lie within the reach of our hands, the day is not far distant in which we shall cast off the too feverish excitement which surrounds us now, and with more sober judgment, and tha experience none the less valuable because purchased in the market of failure, direct our energies and our power to the grandest foundations on which the prosperity of a country can be based, the enlightened cultivation of her soil, and the industrious and intelligent development of her mineral treasures.

The Mechanics' Institute Library.

The Mechanics' Institute of San Francisco was organized March 29th, 1855, and has, like other enterprises of similar character, passed through many vicissitudes before it reached its present standing. Thanks, however, to those who put their shoulders to the wheel at different times, it has now long been established on a substantial basis and in a flourishing condition. In March, 1856, the library consisted of 487 volumes, all told. It now contains upwards of 30,000 volumes. The association procured its own building in 1863, and has since occupied it. The lower floor of the building is occupied by stores, and the upper portions are devoted to the use of the library, reading rooms, etc.

By recent additions of valuable books, the whole second floor is now used for library purposes. The reading room is now on the third floor, one story higher than it should be for comfort, but unavoidable under the circumstances. The library now contains a greater number of books of real practical value than any library west of the Rocky mountains. The recent additions made have been of a substantial character, and in books of reference in particular, the library is rich.

At the time of the last annual report of the President of the Institute, there were on the shelves 27,206 volumes. The number drawn from the library averages 7,840 per month, or 94,080 during the year.

Among the recent valuable additions is a complete set of *Dingler's Polytechnic Journal*, 116 volumes in all; also 218 volumes of *Poggendorf's Annalen*—a work on natural sciences. Another very interesting work for scientific men is that published by the Royal Society of London, which is a catalogue of scientific papers published from 1800 to 1875. This gives a complete list of scientific papers on different subjects, in all languages and all countries, between the dates mentioned, with names of authors, etc.

The most valuable set in the library, probably, is that comprising the British Patent Reports. There are about 3,300 volumes in all, about 250 volumes of which are in large folios. They are bound in half morocco, the expense of binding the whole set in England being $6,735. The set is complete, running back to the earliest dates, and, as the gift of the English government, includes those to be published in the future as well as those already received. A separate room has been set aside for these and the American Patent Reports, access to which is free to all. It was originally when the set of British Patent Reports was presented to the Institute, that they should be free to the public. The Institute is now the official depository of both the American and English Patent Reports.

The value of this set to the mechanic and inventor is beyond calculation. Reference is continually made by our patent office to these reports, and heretofore it has been impossible for our applicants to find out whether the reference really met the case or not. It happens that in a great many cases inventions have originated in England and have been improved upon here in many ways. Accordingly any mechanic or artisan who wishes to follow up the progress of any particular machine must have access to the records of the English patent office to get reliable data. No more valuable works of reference than these could have been provided for the library, and it is a matter of congratulation to the mechanics of San Francisco that they are now able to examine the books at their leisure and free of cost. There are only four other sets in the United States—one at Washington, one at St. Louis, one at Chicago and one at Philadelphia. The Institute now have the whole set, as well as the abridgements and the indices. The indices are very complete, referring to date, subject matter and name of inventor.

It would be, of course, impossible to enumerate more than a few of the valuable books in this large library. Besides the books of reference, the usual books of fiction, travel, general literature and essays, history, poetry and drama, etc., are to be found on the shelves. The association is in a sound condition, the net assets at the time of last meeting being $157,258, the lot and building being estimated at $130,000.

A BLAST FURNACE FALLS IN.—Shortly after midnight on Saturday morning, June 24th, one of two blast furnaces at Swede's ford, below Norristown, on the Schuylkill river, owned and operated by Mr. James Lanigan, fell in while filled with molten iron. The furnace was built about 15 years, and was built of sand-stone. It had been in constant operation lately, and some apprehensions of danger being felt among the workmen when it was filled to an unusual extent, the proprietor thoughtfully ordered that the molten ore be drawn off. While this was going on the accident happened. The loss sustained is estimated to reach $20,000. No one was dangerously hurt, one man being slightly hurt by a stone.—*Iron Age.*

[Continued from page 125.]

drift between the north and east winzes on the 2040-ft level is making good progress and will soon be completed.

Hale & Norcross.—The pumps and columns are in place and the attachments all complete to the surface. The engine is all in complete readiness to start.

Mint.—The shaft has reached a depth of 1200 feet, at which point a station is now being opened. As soon as the station is completed, sinking the shaft will be resumed and the shaft sunk to a depth of two feet before commencing to drift.

Mexican.—The face of the west cross-cut on the 1465-ft level is nearly all in ore, which is steadily improving in quality as the drift progresses westward. The north drift on the same level is showing strong stratums of good ore, dipping steadily to the eastward.

Centennial.—Considerable progress has been made during the past week in grading for building and hoisting works.

Ophir.—Daily yield, 300 tons of ore. The ore breasts are looking well and yielding good ore. The new east ore body on the 1600-ft level is opening up splendidly. It has been opened at three different points on the mill floors, and affords ore that will yield from $100 to $150 per ton. This body of ore was struck after passing through 43 feet of porphyry east of what was supposed to be the principal ore vein. It does not have the broken appearance of the west ore bodies, and has the regular Comstock dip to the eastward, fully supporting the opinion that the vein is again assuming its regular course and dip, having passed the break or upheaval which occurs in it on the levels above. The rich ore in this new discovery is 30 feet in width, and has been struck and is now being opened on in a drift at the bottom of the east winze at the 1650-ft level, where it is fully as strong and rich as on the level above, with every indication of extending downward to the 1700 ft level. The north drift on the 1700-ft level is within 80 feet of the Mexican line, and is showing good ore prospects. The west cross-cut from the north drift on the 1600-ft level, 200 feet south of the Mexican line, is also showing well.

Con. Virginia.—The main shaft has been completed to the 1500 ft level sufficient to admit of supplying the timber for the use of both the Consolidated and the California mines on the lower levels. The ore stopes on both the 1400, 1500 and 1550-ft levels are looking finely as usual. The ore body south on the 1400-ft level is proving much richer than has been expected, and now ore of a rich quality is also being opened northward on the same level. The usual monthly dividend of $2 per share, aggregating $1,080,000, was declared on the 4th inst. The mine, down to the 1550-ft level, never was as well ventilated and in as good condition for the rapid extraction of ore as now.

Lady Washington.—An important and valuable change has taken place in the quartz and ledge matter in the shaft during the week. The shaft is now down a little over 800 feet, the last 200 feet having been sunk the entire distance in ledge matter. At the point where the country rock ceased and the ledge matter set in, a heavy clay wall, with all the characteristics of the Comstock, was encountered. After penetrating this wall a soft species of porphyry mixed with clay slips and occasional stratas of quartz was passed through, which lasted for nearly a distance of 150 feet, when the streaks of quartz became more frequent and the general character much improved. Four days ago the quartz changed to a much firmer and still more favorable description, carrying a large amount of sulphurets of iron, giving favorable assays and bearing the general appearance of antimonial silver ores. This body of quartz still continues in the bottom of the shaft, pitching at an angle of 45 degrees to the eastward, and bears the appearance of being a genuine portion of the Comstock. If the quality of ore continues to improve for the next 50 feet as it has through the past 50 feet, the Lady Washington will, without doubt, open up a paying mine.

California.—Daily yield, 700 tons of ore, keeping the mills steadily running. The yield of bullion for the month of July was $2,062,000, and will not be far from the same amount for August. The ore stopes, wherever they have been opened on the 1500 and 1600-ft levels, are showing just as richly as ever. Beyond this there are no changes to report of the mine. The usual monthly dividend of $2 per share, aggregating $1,080,000, was declared on the 8th inst., and the mine never looked as prosperous in the past as it does today. The pumping machinery of the C. & C. shaft is working splendidly, and sinking the shaft has been resumed. The new stamp mill is about completed, and will be ready to steam up by Sunday next. It will then take some three or four days to turn down the pulleys and regulate the machinery, when everything will be in readiness to commence crushing ore. This mill will add a crushing capacity of 300 tons to that already now in use, which will increase the amount of ore extracted and crushed to about 1,000 tons per day, and the yield to nearly or quite $3,000,000 per month.

Justice.—Daily yield, 75 tons of ore, keeping the mills steadily running. The ore breasts and stopes show a steady improvement. The east cross-cuts on the 800-ft level are showing finely; in fact the general appearance of the mine exhibits a gradual improvement in almost every quarter.

Sierra Nevada.—Opening the 1700-ft station in the shaft is going steadily forward and soon be completed.

Belcher.—Daily yield, 300 tons of ore. The erection of the new pumping machinery is being finished as fast as the nature of such work will permit. The hoisting engines are used daily in lowering the immense pumps and pump columns into place.

Crown Point.—Sinking the main incline is making excellent progress, notwithstanding the extreme hardness of the rock. The main south drift on the 1700-ft level is being steadily pushed ahead to connect with the bottom of the Belcher air shaft, the face still in a fine character of quartz. This quartz is all low-grade ore, but none of it will pay the expense of extraction and milling.

Superior.—Owing to a necessity for some repairs to the boilers the sinking was suspended during the greater part of the week. During the time the sinking was stopped the water rose nearly 100 feet in the shaft. Last evening, however, the water had been drained.

Gould & Curry.—The old machinery has been taken out and the heavy stone foundations are being put in place for the reception of the new and powerful pumping machinery soon to be erected.

Savage.—The old pumps are being taken out, the shaft repaired, and the new one put in as rapidly as such work can be done well. The engine and other machinery is all ready to start up as soon as the pumps are in.

North Con. Virginia.—The new pump bob is in place. The engine is on its bed, and the erection of the entire machinery is being forwarded at as rapid a rate as such work can be done consistent with its durability and completeness.

Ward.—Sinking the shaft is making the same excellent progress as heretofore. It is now down 425 feet, the bottom in good sinking ground.

Caledonia.—The rock in the bottom of the shaft is of the hardest, toughest character possible, it being difficult for the best of workmen to sink over a foot a day.

Prospect.—The drift at the 400-ft level is in 18 feet, and is now being enlarged for a station. When this station is properly opened out, sinking the shaft will be resumed.

Utah.—Sinking the main shaft is going steadily forward 25 feet per week.

Silver Hill.—Sinking the main incline is progressing at the rate of 2½ feet per day. Driving the north drift on the 444-ft level is making progress at the rate of 25 to 30 feet per week.

Union Con.—The face of the north drift on the 1300-ft level has greatly improved during the past week. The drift from the bottom of the winze below the 1300-ft level is also showing a much better quality of quartz and ledge matter.

West Belcher.—The two up-raises to connect with the ore body are making good progress. The mine is being steadily opened.

Nevada.—Face of main drift west, cross-cutting through the ledge in solid quartz, or low grade ore, which shows improvement.

Leviathan.—The north drift on the 600-ft level is steadily advancing along the west wall of the ledge, the face in good running ground. Occasional streaks of quartz and ore are encountered, affording a very favorable prospect.

Baltimore and American Flat.—Sinking the main incline is making good progress, considering the amount of water to contend with.

Chollar Potosi.—Daily yield, 100 tons of ore, keeping the mills steadily running.

Sutro Tunnel.—Excellent advancement is now being made, the face of the header being in easy working porphyry, soft limestone and clay. Total length of tunnel this morning, 13,900 feet.

East Justice.—Sinking the shaft is being energetically pushed ahead.

Florida.—Material in the face of the north drift works easy. Good assays continue to be given by the stringers of quartz coming in.

Herald.—The ore vein in the bottom of the main shaft, although not so wide as it was supposed to be, is still strong and the ore of a very rich character.

Best & Belcher.—Repairing the drifts and winzes on the 1700-ft level and getting ready for steady and active cross-cutting operations.

Buckeye.—Driving the north and south prospecting drifts on the 550-ft level, with very favorable prospects.

Mitchell.—Bottom of winze continues in very favorable vein matter, streaks of which assay well.

Useful Information.

On Packing Flowers.

The following practical suggestions on packing flowers for transportation by mail are condensed from an article on the subject in the London *Florist:* Always cut the flowers early, in the cool of the morning, and when in their prime. Take a piece of cotton-wool, wet it and wring it out, and twist it about the stalks. If tin boxes are used they must not have sharp corners, or they will be rejected at the post-office, but when properly made they excel all others for the purpose in question. At the bottom of one of these place a piece of stout brown paper (if thin, double it); let this be well dampened, then lay the flowers carefully in, placing a piece of silver or tissue paper between each to prevent their bruising each other. Over all place a piece of the same paper, and on this a little cotton-wool. Cover the box with paper, and the flowers will reach their destination in good condition.

Let us add the modes of faulty packing to warn our friends against their adoption: 1. Placing the flowers in contact with dry cotton-wool, which clings to them and abstracts their moisture. 2. Putting them in thin boxes which invariably get crushed in passing through the post-office. 3. Putting the cotton-wool about them too wet, the moisture from which gets shaken over the flowers, and spoils their colors. 4. Cutting the flowers after exposure to the sun, which ensures their falling to pieces on the journey; this also occurs if the blooms are stale.

Some persons in sending flowers think it best to cut them when not fully open, knowing that they will expand in water; but they should learn they do not show their true character either in shape or color under such circumstances. A better plan is to cut off the pistil as soon as it can be done; this will insure the flower lasting a considerable time.

Nickeling Small Articles.—Many unsuccessful attempts have been made to nickel small articles by boiling, just as pins, hooks and eyes, etc., are silvered or tinned. A Nuremberg chemist named Dr. Kayser, has succeeded in coating metals with an alloy resembling German silver, thus giving them a handsome finish, and making the surface more durable and permanent than that of tin or silver. He first melts together one part copper and five parts pure tin—preferably the Australian, which has recently come into commerce, almost absolutely pure, yet cheaper than Banca tin. The alloy is granulated as usual, but not too fine, and then mixed with water and tartar, as free from lime as possible, into paste. To each 200 parts of the granulated alloy is added one part of nickel oxide of nickel, and the articles are laid in it. After boiling a short time they become beautifully silvered. Some fresh oxide of nickel must, of course, be added from time to time. Brass and copper articles can easily be silvered in this manner without previous preparation; those of iron must first be copper plated. By adding some carbonate of nickel to the above bath, or to a common white bath, and boiling, a coating richer in nickel is obtained, and darker, varying in color from that of platinum to a blue black, according to the amount of nickel salt added.

Lightning and Petroleum. — Lightning plays sad havoc with the oil interest of Pennsylvania. The following is a statement, in barrels, of the oil destroyed by lightning since April 12th, 1876: Parker, April 12th, 46,000; Sligo, April 13th, 1,000; Oil City, June 3d, 44,000; Petrolia, June 8th, 300; Petroleum Center, June 13th, 300; Bradford, June 13th, 25,000; Troutman, June 17th, 3,000; Fairview, June 26th, 24,000; Rynd Farm, July 2d, 200; Pittsburg, July 9th, 12,000; Millerstown, July 11th, 22,975; Pittsburg, July 12th, 7,500; Beaver City, July 12th, 1,200; Dilk Station, July 20th, 64,869; minor fires, 4,000. Total, 256,354.

On railway car axles, 20 pints of oil lubricate eight journals of care for 5,000 miles, or one pint for 250 miles.

Varnish for Paper.—An elastic flexible varnish for paper, which may be applied without previously sizing the article, may be prepared as follows: Crush transparent and clear pieces of dammar into small grains; introduce a convenient quantity—say 10 grains—into a flask, pour on it about six ounces of acetone, and expose the whole to a moderate temperature for about two weeks, frequently shaking. At the end of this time pour off the clear saturated solution of dammar in acetone, and add, to every four parts of varnish, three parts of rather dense collodion; the two solutions are mixed by agitation, the resulting liquid allowed to settle, and preserved in well filled phials. This varnish is applied by means of a soft beaver hair pencil, in vertical lines. At the first application it will appear as if the surface of the paper were covered with a thin white skin. As soon, however, as the varnish has become dry it presents a clear shining surface. It should be applied in two or three layers. The varnish retains its gloss under all conditions of weather, and remains elastic; the latter quality adapts it especially to topographical crayon drawings and maps, as well as to photographs.

Facts About Machines.—Velocity of circular saws at periphery, 6,000 to 7,000 feet per minute. Rate of feed for circular saws, 15 to 60 feet per minute. Velocity of hand saws, 3,500 feet per minute. Velocity of gang saws, 20-inch stroke, 120 strokes per minute. Velocity of scroll saws, 600 to 800 strokes per minute. Velocity of planing machine cutters at periphery, 1,000 to 6,000 feet per minute. Travel of work under planing machine 1-20 of an inch for each cut. Travel of molding machine cutters, 3,500 to 4,000 feet per minute. Travel of squaring up machine cutters, 7,000 to 8,000 feet per minute. Speed of wood carving drills, 5,000 revolutions per minute. Speed of machine augers, 1¼ inches diameter, 900 revolutions per minute. Speed of machine augers, ¾ inch diameter, 1,200 revolutions per minute. Gang saws require, for 45 superficial feet of pine per hour, one horse power indicated. Circular saws, for 75 superficial feet of pine per hour, one horse power indicated. In oak or hard wood, three-quarters of the above quantities require one horse power indicated.

To Test the Strength of Vinegar.—The strength of vinegar is determined by the number of grains of bicarbonate of soda a troy ounce will completely neutralize. For instance, to test the strength of vinegar, weigh out one ounce, then find how many grains of bicarbonate of soda the vinegar will neutralize or dissolve. If thirty grains are neutralized, the vinegar is said to be thirty grains strength. To test the purity of the vinegar, pour out half a wine-glassful and add ten or twelve drops of the solution of muriate of barytes. If the vinegar is pure it will show no change. If it contains acid it will gradually turn to a milky hue, according to the quantity of acid it contains.

Estimating the Value of Coal.—In an exchange we read the following conception of the display of coal from the Cape of Good Hope, at the Centennial: The display of fuels, though occupying but little space, is entertaining and instructive, for quite a variety of coals are exhibited, each accompanied by its coke and ash. To us this means of exhibiting fuels is remarkably appropriate, and is worthy of imitation; for by an examination of the physical properties of coals, their cokes and the resultant ash, an intelligent opinion of the commercial value of the fuel can be formed.

Good Health.

Personal Care of Health.

A manual of health issued by the "Society for Promoting Christian Knowledge," (an English organization), contains many very valuable hints, some of which are given herewith to our readers. This volume is the last literary labor of the lamented Dr. Parkes, and is one of the most useful of the many useful books the society alluded to has yet published.

Dr. Parkes regards the diseases so widely spread among us to a great extent self inflicted, and even those which we are powerless to prevent often controllable by man. By legislative enactment very much has been done in providing pure air, pure water, and food free from deleterious adulterations, to ameliorate the conditions of city and village residents. But legislation cannot deal with those conditions which belong to the individual. Amelioration here can be the result only of an intelligent understanding of the laws of life and health. The frightful difference between the infant mortality of the rich and the poor is chargeable chiefly to the ignorance and carelessness of the latter. If by any means the masses can be taught the simple and almost self-evident laws of health, the rate of mortality among children would decline and approximate to the rate which is found in healthy districts.

The critical period in the life of men and women Dr. Parkes places between the ages of 14 and 21. During that period not only is the mental character formed and developed, but also the physical constitution on which so much of the after life depends. Strength and activity of body may be cultivated or neglected, while the mental character, though it may to a certain extent be influenced by the training of earlier years, is mainly developed and determined by personal action. During this period eight hours, and preferably nine of the 24 should be devoted to sleep. Of the remainder, three to four might be occupied with meals and rest during the day, and the others should be given up to exercise, equally divided between mental and physical, but in such a manner that the two kinds of exercise are alternated. Two hours of real study is quite sufficient at a time for the growing brain. Young women ought to be physically trained as carefully as men. They ought to have strong, firm muscles, and be well developed. Five or six hours of daily exercise, involving real bodily labor, is not too much for even "young ladies." Much of the exercise which is taken by young people is of too violent a character to be of any permanent benefit. What is wanted is a steady, progressive cultivation of the muscles, such as is attained by walking, running, rowing, swimming, when those exercises are carried on quietly, and without the strain which too often occurs in their daily practice. Young people should never feel that they have a stomach; they should eat when hungry till hunger is gone, and should feel neither weight nor uneasiness, nor sleepiness after meals. Nitrogen enters into the construction of every nerve, every muscle of the body. Both the animal and vegetable kingdoms supply nitrogenous foods which man can use, and with any of which he can attain his highest bodily and mental development. Where pecuniary circumstances permit it is best to let meat supply a considerable portion of the nitrogen required; but the laboring man, by ringing the changes on oatmeal, maize, peas, beans, rice, and macaroni, to which may be added occasionally cheese and bacon, may bring up his children as well nourished as those of the richest people at a small cost. As to drink, young men and women are strongly advised to abstain from alcohol, for it is certain that it does harm to the growing body; and with regard to persons of adult years, the uncertainty which prevails as to the value of alcohol turns the scale in favor of total abstinence instead of moderate drinking. Dr. Parkes is decidedly in favor of early marriages—seeing, as he has, that much ill-health among both sexes would have been prevented by the occupations and even by the cares of married life.

Grapes as Food.

We have on former occasions, says the *Journal of Chemistry*, referred to the value of fruits as articles of diet, both in health and in sickness. Grapes may deservedly claim a high rank among the fruits in this respect. They contain a considerable amount of hydrocarbonaceous matter, together with potassium salts, a combination which does not tend to irritate, but on the contrary to soothe the stomach, and which is consequently used with advantage even in dyspepsia. According to Dr. Harteen, of Cannes, in France, who has recently contributed an article on the subject to a foreign medical journal, the organic acids in the grape, especially tartaric acid, deserve more consideration than they have generally received. Their nutritive value has, he thinks, been much underrated. It is known that they are changed to carbonic acid in the blood, and possibly careful research may show that they are convertible into fats. Dr. Hartsen thinks that they should be ranked with the carbo-hydrates as food. They have been found a valuable diet in fever, and the success of the "grape cures" in the Tyrol and other parts of Europe appears to show that they are positively beneficial in other diseases. No doubt the good results of a residence at these establishments are in a measure to be ascribed to the climate and the general hygienic discipline adopted. The advantage does not wholly consist in the fact that so many pounds of grapes are eaten daily, but partly in the fact that other less healthful things are *not* eaten; and pure air and exercise are also important elements in the curative treatment. But after giving all due weight to these allied influences we must allow no small fraction of the beneficial result to the grapes.

Bodily Weight and Nutrition.—Professor C. Voit in a lecture at the Public Health Congress held at Munich, remarked: "The weight of the body has often been assumed as no infallible proof of the maintenance of the condition of the body, or of a deposition of tissue, and the food which keeps up a man's weight has been regarded as on that account satisfactorily nutritious. But the weight of the body is no criterion of the value of the food taken, because while the weight remains constant, or even increases, water may increase in the tissues and albumen and fat diminish; or there may be an increase of weight and deposition of fat while there is also at the same time a diminution of the albumen of the body. Badly nourished people are usually not lighter than others, but their bodies contain more water and less albumen and fat than those who are well nourished. Every cattle feeder knows that cattle which are being fattened do not at first increase in weight proportionately to the food they take. And yet people commonly regard weight as of great importance in the case of men, though a butcher will not buy a carcass on the merits of its weight alone. He must know the quality of the meat. The subjective feeling of satisfaction is equally deceptive. The Irish peasant who consumes 10 pounds of potatoes in the day feels quite satisfied, and yet is badly nourished. The bad effects of an improper dietary are often seen only after a considerable period has elapsed."

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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THE ORIGINAL ARTICLES in this paper are mostly set in solid type, giving in our columns one-third more reading than is contained in ordinary leaded matter.

Our latest forms go to press on Thursday evening.

San Francisco:
Saturday Morning, Aug. 19, 1876.

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Paul's Dry Process, Almarin B. Paul, S. F.; Mariposa Land and Mining Co.—Sale; Antilles Mining Co.—Sale; Mariposa South Mining Co.—Assessment; Tintic Milling and Mining Co.—Meeting.

"A PRACTICAL TREATISE ON TESTING AND WORKING SILVER ORES."—The work under this title, by Chas. H. Aaron, published by Dewey & Co., will be ready for sale in a few days. No work of equal interest to practical miners has yet been issued. Although a small volume, it contains hundreds of practical hints which are available in every-day work to those miners who have not unlimited capital at their command, as it describes so many simple things to take the place of costly ones. The processes referred to are described in a clear and unmistakable manner, and in an easily comprehensive style. We shall in our next issue give a more extended notice of Mr. Aaron's work, which will give an idea of its contents to contemplative purchasers.

OLD MINES IN THE BLACK HILLS.—The *Deadwood Pioneer* says: On claim No. 12, Cape Horn district, 14 feet below the surface, in a boulder weighing about 3,000 pounds, was found a perfectly drilled hole, proving conclusively that mining has been done in this locality at some previous day, and it is not unreasonable to suppose that the party who came to the hills some forty years since and were never heard of afterward, were the same who mined some in this locality and met their death at the hands of Indians at the cave, where bullet-marks on the trees are plainly visible to this day.

THERE was a terrific rainstorm in Elgin county, Canada, on Saturday, with immense destruction of roads, bridges and crops. Twelve bridges were swept away in a radius of three miles. The streams were never known so high. Pails, etc., exposed to the weather, were found to contain seven inches of water.

NOTICE is hereby given that J. M. McArthur is no longer agent for this paper in Arizona or any other sections. The paper will be sent to all who have subscribed through him previous to this notice.

Hard Times Among Miners.

Although times are not so flush among the miners on this coast as usual, and, perhaps, more of them are out of employment than has been the case for a long time, they have little to complain of compared with their brethren in other parts of the world. Wages here remain at their usual standard, and, although, in one or two instances attempts have recently been made to reduce them, they have not been successful in any case. The only fault to find now, is that in many of the large camps the force of miners has been reduced, and those thrown out of work have found it difficult to find employment, as most of the local papers in the different camps contain frequent warnings for men not to come there, as there are more men than there is work for. It is to be hoped that this state of things will not last long, and that a fresh revival of interest in mining will return with the increase in value of silver.

All over the United States and England a bad state of affairs exists in its mining community. In the middle and northern coal fields of Pennsylvania, the situation is very bad, and is becoming worse every day. There never was a time in the history of coal production in which labor was so poorly paid as now. In many parts of the middle fields last month, skilled miners averaged about $12 during the working period, and the same was the case in other parts of the coal regions, and how they have managed to keep the wolf away from the door is difficult to imagine. Those who have been unemployed have suffered severely, and instances of actual starvation are recorded in the Wyoming and Lackawanna regions. Cases have come to the knowledge of the authorities of families subsisting for several days upon the flesh of domestic animals that have been butchered.

The mining and transportation companies have been fighting amongst themselves, and an extended suspension of operations has been the result. It is said that the general suspension which occurred on the 8th inst. threw 30,000 miners and laborers out of employment. The colliers are still struggling against the schemes of the monopolists and the oppressive "company store" system, for it must be understood that the companies not only cut the wages of the employees, but they also force them to buy at the stores owned and managed by them; and very frequently a miner, after he receives his "hook" from the "company store," has nothing left. The combined impositions of the great coal ring—particularly the continued suspensions—while heavy and increasing prices are demanded from wholesalers, retailers and consumers, are exciting the colliers, and serious trouble is apprehended at the close of the month. Many persons who testified in the recent Molly Maguire trials have received "coffin notices," cautioning them to quit the region within a specified time, and there is proof that the murderous spirit of the terrible organization has not yet been crushed. What the end of all this will be of course no one can tell, but it is greatly to be hoped that operations will again be resumed shortly and the men given employment.

It is stated that the effect of the great depression in the mines of Cornwall, England, has been to reduce not only the working miners, but the small shop-keepers in the mining districts, to the borders of starvation, and all who can raise money by any means are emigrating. The working-men are leaving the country by hundreds, and leaving the women, children, old and infirm to be supported by the parishes. It is reported that in one parish alone there are 500 women and children thus left. Groups of emigrants can be seen almost daily at the railway stations on the Cornwall and West Cornwall lines. This is more or less the case all over England. It will be seen from what we have said, that, although the times may be considered hard among the miners on this coast, they are nothing like so bad as elsewhere.

The Eleventh Industrial Exhibition.

The Mechanics' fair is now in full running order and the attendance continues to be quite large. Our home industries are all pretty well represented with the exception of machinery, which department does not make the showing it should. There are, however, a number of interesting articles in this department, one of which is described on our first page. We give also on another page considerable space to the oration of Henry Edwards, Esq., delivered at the opening exercises. The subject is "Iron and its Relation to Civilization." It will amply repay perusal to even those to whom the subject is familiar.

The displays made at the fair this year are characterized by being somewhat more elaborate than usual, and with the decorations of the building, combine to make a spectacle of excellent general effect. The display of agricultural machinery by different firms makes an attractive feature. So also does the exhibit of the different carriage and furniture manufacturers. The latter in particular shows both taste and skill in our artizans. The manufacturers of glassware, woodenware, rope, pottery, etc., etc., all make creditable displays in their lines. We shall, during the continuance of the fair, take occasion to mention in detail those things which have the merit of novelty or superiority.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

IMPROVED BOILER.—A. J. Stevens, Sacramento. Mr. Stevens' invention consists in the employment, in return tubular boilers, of two chambers situated one above the other, and at some point between the ends of the boiler, so that four fine sheets are provided for receiving the tube and flues which are thus made correspondingly shorter, while the elasticity of these sheets allows for the difference of expansion and contraction between the tubes and the shell of the boiler much better than when the flues extend the full length, and thus reduces the danger of breaking the flues off at the point where they are secured to the sheets. The chambers give more room and time for the combustion of gases and a larger amount of heating surface, while by connecting the upper and lower chambers by short tubes flame is allowed to pass from the lower to the upper one so as to ignite and keep up the combustion of the gases which have passed through to the back connection and returned to this point. A further advantage of Mr. Stevens' arrangement is that he is enabled to make the flues and tubes in four sets, less than half the usual length, and with a correspondingly less contraction and expansion by heating and cooling. The walls of the chambers receiving the ends of the tubes in the same manner as the flue sheets, provide an elastic support at each end of each set of flues, which will easily compensate for the difference of expansion and contraction which takes place between the tubes and the shell of the boiler, and the inventor is thus enabled to entirely prevent the breaking of the tubes at the neck or point where they are secured to the sheets, a common difficulty where flues extend the full length of the boiler.

ORE FURNACE.—Henry H. Eames, Oakland. The patent covers certain improvements in that class of furnaces for roasting fine or pulverized ore, in which a series of horizontal shelves or partitions are placed at intervals one above another, inside of an upright stack or shaft, and in which the ore is caused to drop from one shelf or partition to another by arms or sweeps attached to an upright rotating shaft. The chief feature of the invention relates to a novel arrangement for supplying a constant stream of cold water through a hollow shaft, one end of which is permanently closed so as to terminate inside of the furnace. Such a shaft is used for carrying the arms or sweeps in the class of furnaces above mentioned, of which the furnace described in the letters patent, No. 152,943, issued to Eames and Walbridge, July 14, 1874, is a sample. When a simple iron shaft is used for this purpose the intense heat to which a portion of it is subjected causes it to warp and soon become useless. It is therefore necessary to devise some means for keeping the shaft cool when the furnace is in operation, in order to work the furnace successfully. If the shaft passed entirely through the furnace it could be made hollow, and a stream of cold water passed through as has frequently been done heretofore, but as it terminates inside of the furnace a special device is necessary for cooling it. This is done by Mr. Eames by extending the water pipe into the hollow shaft from the outside of the furnace, until its extremity is close to the closed bottom of the hollow shaft. The stream of water will then be discharged into the bottom or closed end of the shaft and will flow back through the annular space between the two pipes to the outside, where it is discharged. The invention also relates to an improved device for protecting the shaft and its arms or sweeps from the corroding action of the fumes of sulphur, which are generated in the furnace; including also an improved device for securing the arms or sweeps upon the shaft; and an improved arrangement for feeding the fine ore to the furnace so as to render its operation continuous.

FAIR LEADER.—James Sampson, S. F. This invention relates to certain improvements in that class of devices known as fair leaders for running rigging in vessels, and it consists in so constructing the leader that while the inventor retains a block containing a number of leading holes or openings through which ropes from different parts of the rigging may be led to the proper points, he is still enabled to reduce it materially in size and secure it to a shroud without its being in any way clumsy.

KITCHEN ACCOMMODATION CHEST.—George McIntyre, S. F. This is an improved kitchen chest or cabinet, which is not only useful for holding articles used in cooking, but which is also provided with drawers and shelves for containing napkins, towels, cutlery, and other articles used in kitchens or dining-rooms. It contains a bread board, flour bin, dough box, salt box, etc.

ABOUT fifty English miners arrived at New York on Sunday in the *City of Chester*, from mining districts in Westmoreland and Cornwall, England. They leave for Virginia City, under contract with some English mine owners.

A SCHOOL is to be established in the Black hills.

Comstock Papers.

NO. 4.

Mineral Wealth of Western Utah—Early Traditions and Opinions on the Subject—First Silver Ore Found in '49.

It is an error to suppose that the discovery of silver mines east of the Sierra Nevada was to the people of California wholly a surprise. Antecedent to that event, many people in this State had, for various reasons, entertained the idea that deposits of this metal existed in the expanse of country laid down on the early maps as the Great American desert, and latterly known as the Utah basin. First, the region lay contiguous to, and, following the trend of the great mountain chains, directly in the path of the silver producing belts of Mexico. Then there were Spanish legends ascribing to it a great wealth of this kind, stories of successful expeditions thither in search of the precious metals having come down to us from former times. Many intelligent persons, more especially those conversant with Mexican history, cherished the belief that important discoveries would some day be made off that way. Among this number was Judge James M. Crane, an early settler in California, but who, impressed with this opinion, passed over the mountains in 1857, and took up his abode at Genoa, then the principal town in Western Utah, to represent which section he was afterwards chosen delegate to Congress. Crane, who had made himself familiar with the mining chronicles of Northern Mexico, was an enthusiast on the subject, and after traveling much over Western Utah, now the State of Nevada, predicted that it would soon become conspicuous for its production of the precious metals, and even outrank California in this respect. As this was before the discovery of the Comstock lode, the expression of this opinion may be supposed to have been due to some mental prevision of these after events. What was then foretold has already come to pass; the gray deserts of Nevada produce to-day more than twice as much bullion as the "Golden State."

The venerable pioneer and eminently good man,

Peter Lassen,

When crossing the Black Rock country, in northwestern Nevada, observed there such signs of silver bearing lodes as induced him to return in 1858 and prospect that region, and but for his untimely death at the hands of the Indians, while out on that expedition, it is probable enough that he would have attained the object of his search.

Nor was the existence of the precious metals in these desert lands to the east a mere matter of opinion or conjecture founded on traditious and theories alone. The survivors of the immigrant party, so many of whom perished in Death valley in the fall of 1849, while making their way over the mountains into California, found and brought with them some pieces of very rich silver ore. So rich, in fact, was this ore that it attracted the attention of all who saw it and led to many parties going afterwards to search for the place where it was found. Associating the locality with the scene of these immigrants' sufferings, the most of these parties sought for it in the vicinity of Death valley, going, as recent experience has shown, much too far east. Last year some miners prospecting in the Coso mountains, Inyo county, came upon the exact spot where this ore was obtained, its identity being established by the most ample and unmistakable proofs. It is situated in what is now known as the Lee district, the ledges from which this rich ore was broken off being at present owned by the Emigrant company, who are working them with capital results. The finding of this rich ore by these immigrants ante-dates the discovery of the Comstock lode nearly ten years, during all which time the attention of prospectors and explorers was more or less occupied with the subject of mineral discoveries off in that direction.

Brewing of the Washoe Excitement.

With the public mind this somewhat prepared for an event of the kind, it is not at all strange that a large number of Californians were ready to credit the report and to take their departure for the "Eastern Slope," the name by which this trans-Alpine region had come to be known immediately upon the announcement being made of this rich metaliferous find over there. Only the year before many thousand miners had precipitately left the State for British Columbia, but meeting with only disappointment there, the greater portion of them had already returned to their old haunts. Once on the wing, however, the most of these men remained uneasy and ready for a new flight should anything occur to set them in motion. Being in this condition of industrial disorder and mental unrest, the discovery of these silver mines opened to this class a new and inviting El Dorado, the evidences of whose wealth rested not, as in the case of Frasier river, upon dubious rumors and the statements of interested parties, but on the more substantial proofs of ore shipments and bars of bullion.

As already stated, Judge Walsh had before the end of 1859 brought to San Francisco, ore that yielded nearly $120,000 worth of gold and silver. In addition to this other parties had shipped to the city some small lots of rich ore,

and as there had been a considerable number uf arrastras kept ranniug at the miues, with some gold dnst gathered from the placers, the total bollion product of these Washoe mines for the year mnst have exceeded $200,000; the whule of it produced with a comparatively small outlay of labor, and in the course of ahout six muath's working time. There was no gainsayiug this sort of evidence. Here were ocular and tangible proofs such as any reasoaable mind would accept as conclusively establishing the great valae of the mines. Sach, at least, was ths views that the mssses were pleased to take of the matter, and by the time that winter had set in these facts, growing as they spread, had become widely disseminated throughout the State, creating a great excitement amoag all classes, aad inspiring multitudes everywhere with the purpose uf aa early emigration to a region that promised an easily gaiaed fortnne to all, and the opening up to capital aad enterprise of a new aad profitableindastry. Alresdy, thea, by the end of the year there had been laid the foandation for a miniag stampede of more formidable proportions than aay that had preceded it, the movement having been partially restraiaed for two or three months uatil the snow had settled on the Sierra Nevada, these mountaias, before the constrnction of wagon roads over them, having been difficalt of passage during the winter.

Meantime, the adventurers whu had already gathered on the

"Easlern Slope"

Had not beea idle. Before the winter set ia, though it commenced that year with much rigor, on the 2d of November, these wide-awake and active men had taken up every thiag in the shape of qaartz croppings along and adjacent to the line of the main lodo. The surrounding coantry for a distance of fifty miles or more had been prospected aad many new miaing districts laid ont, ia each one of whioh a great many company claims had been located and upon some of the latter mnch work had been done. Foreseeiug the urgeat necessity that wonld soon arise for the employmeat of propulsive power the waters of the Carson river had for many miles been claimed for this purpose. All the more available creeks, spriags, wood aad farming lands had been taken up, the latter having in maay iastances been sarveyed and partially secured by enclosure or other improvements. Some water driven arrastras had been put np aloag the Carson, and steps taken for the construction of moro exteasive and efficient reduction works at the miaes. Virginia City had been laid ont and several substantial stoae buildiags, with a much larger number of wood, canvas or other temporary structnres, erected on the spot. The hamlet at Gold Hill had doubled its size, while Carson City, which the summer before had drawn to it most of the basiness from the old Mormon town of Genoa, had grown from some half dozen houses into a good sized village. Namerous town sites had been selected at other snpposed eligible points, npon all of which cities of magnificent proportions had been projected. Notwithstanding the difficulties aad great cost of transportatiou over the monatains several traders were able to sh ow very respectable stocks of goods, and not had the following winter proved to be one of nnnsual severity, there wonld have been provisioas enongh in the country to have subsisted the popnlation until spriag with comfort. As it was, maay were forced to forego the ase of most of their accustomed lnxuries at the table, not a few haviag been content before the winter was over to accept for ratioas a short allowance of beans and bacon.

It might prove interesting to the public of today to say something here of the history of this Washoe country, prior to the period of which we are now speaking, when it was as yet occapied by an almost evenly divided population of Mormons or Gentiles, whose religious aad social differences lead to animosities that made these remote aad secluded valleys the scenes of perpetual turmoil and strife, converting them not nnfrequently into the theatres of fearfol tragedies and revolting crimes, and we should feel inclined to devote a chapter to the narration of these strange and little known events, did not this involve such a wide departure from the original purpose of these papers as to forbid the nadertaking.

Unemployed Men in New York.—The New York *Herald* says: Our nnemployed workmen number not fewer than forty thousand, and it is only natural there should be mntteringa of discontent and portents of a terrible fntnre. What is the worst featnre of this problem is the fact that the suffering and agitation come at a time when retrenchment is absolutely necessary. While municipal bankrnptcy would result from inaugurating public works merely to fill so many mouths, it ought to be known that the Department of Public Works employs barely five hundred men, while the salaried officials annually take about eleven millions of dollars ont of the city treasury.

Mining Superintendent.—In onr advertising columns will be fonnd the card of Mr. E. B. Smith, miniag superintendent. Mr. Smith has been for many years connected with mining enterprises on this coast, and for some time past has been engaged in Mexico. He has had great experience, particularly with the "Sonora process," so-called, with which he has been very snccessful on what are termed rebellious ores. An opportnnity ia here offered to thoee who need one, to secure the services of an experienced and intelligent man as superintendent, competent to open or work mines, construct mills, etc.

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Mechanical Ore Concentration and Separation.—No. 4.

(Written for the Press by Francis F. M. Cazin, M. E., Santa Fe, New Mexico.)

Specific Gravity the Principle Qually Acted Upon for the Mechanical Separation of Minerals.

The specific gravity of a miaeral is its weight compared with that of some substance, taken as a standard. For solids and liquids, *distilled* water uf 60° Fahrenheit, is the standard ordinarily used; and if a miaeral weighs twice as much as water its specifio gravity is two; if three times, it is three. It is then necessary to compare tho weight of the mineral with the weight of an equal bulk of water.

The Process

Is as follows: First weigh a fragment of the miaeral in the ordinary way, with a delicate pair of scales; next saspend the mineral by a hair or fiber uf silk to une of the scales, immerse it thus suspended in a tambler of water, (keepiag the scales clear of water), aad weigh it again; sabtract the second weight from the first, to ascertain the loss by immersion, and divide the first by the difference obtained; the resnlt is the specific gravity. The loss by immersion is equal to the weight of the same bulk of water as the mineral.

Another and better, because more simple method than the above for determining the specific gravity, and which will be sufficient for all mineral dressing purposes, becanse applicable to porous material also, is the following:

Select a glass vessel of not too large a size, an d fill it with di.tilled water. The correct weight of the vessel empty and of the distilled water in it must be determined, and a mark should be made of the surface line of the water, best on a narrow neck of the vessel. Take out from the vessel, best by sucking through a glass pipe, a portion of the water, mark the lower surface now on the narrow neck again and weigh the entire vessel again so as to ascertain the difference of weight, or the weight of the water taken from the vessel between the two marks on the narrow neck of the vessel.

Reduce some of the mineral, whose specific gravity is to be determined, to powder, and ponr as much of it in the water as will make the surface of the water rise to the first and upper mark. The powder shonld be weighed in total, and the remaining part after the required quantity be submerged in the water, in order to ascertain the difference in the weight of the powder, snbmerged. Divide the weight of the powder submerged by the weight of water whose place it took (between the two marks) and the resnlt (quotient) is the specifio gravity sought for.

The United Sons of Vulcan and the Heaters' and Rollers' Assooiation have been merged in the National Amalgamated Assooiation of Iron and Steel Workers, comprising all the iron and steel-makers in the United States and Canada, and formed for their protection in strikes.

The Centennial at Philadelphia.—No. 11.

We give herewith a ground plan view of the great exhibitiun building of the farmers, known as

Agricultural Hall.

Last to be completed, but chief in importance to all is this great hall of the farmers. From the delay in the commeacement of the structure, the idea got abroad that the farmers were to be igaored in this grand exposition of our Centennial progress; that they were tu be crowded into some corner uf one of the other buildiugs, and not brought prominently forward as a distiactive class. We have no evidence, however, that such was the inteat, yet the idea, beyond a doubt, had the effect to detract much from the enthusiasm which, had their eventaal position been fully understood at the start, would have animated the farmers of the country. In the early months of preparation, appeals were made for the farmers to help on the graad project; but the reply went back that they were promised no exhibition building, aotwithstaading the fact that they represented a majority of the real wealth of the coantry, aad out-nnmbered ia popnlation all other indnstries combined. There is ao

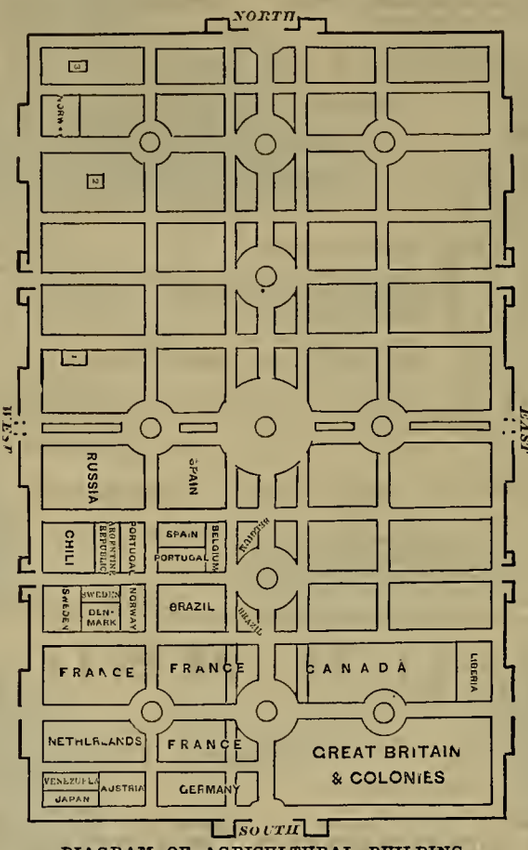

DIAGRAM OF AGRICULTURAL BUILDING.

doubt bat the commissioners did an nnwise thing in putting off to the last the construction of an agricultural building; and then in placing it on the most distant portion of the grounds, and finally in so limiting it in size that two or three important annexes have had to be added to accommodate exhibitors in that department. This combination of circumstances has caused this really most important feature of onr American international exhibition to appear as a matter of merely third-rate importance; and the wonder is that so creditable an exhibition has been made. The building appears, to one looking at it from a distanoe, as a mass of green roofs, scarcely distingnishable from the green hills above and beyond.

It consists of a nave 826 feet long by 100 wide, oro sed by three transepts, each 472 feet long and 80 and 100 feet wide. The spaces between the transepts and nave and at the corners is roofed over, so that the interior presents an enclosed and covered area, 826 feet long by 465 wide—about 10 acres—with vistas broken at intervals by the tall, timber bases of high pointed arches which rise to the hight of 30 feet or more. Overhead and above these colnmns the eye rests upon a bewildering network of trusses and beams, where bnt little ornamentation has beeu attempted, and where whitewash has been employed instead of paint to cover the nakedness of the work and throw light npon the exhibits below. The principal archway which covere the nave rises to the hight of 75 feet.

What is to be Seen Here.

Within this struotnre are exhibited, or were intended to be exhibited, all the processes of agricultural machinery and the prodacts of the farm, the orchard, the garden and the sea. Snch was the intention; but the narrow limits of the building have crowded the great interest of cheese makiag iato one "annex," and the still greater interest of pomology into another. With a proper management and an earlier annouacement of iateations in this direction, the farmers of the United States, and those from other lands, would have filled to its ntmost capacity, a building equal in area to that of the main building—21 instead of 10 acres.

With all its short-comings, however, this department of the exhibition may be considered one uf its most interesting and important featares. Never before has such an exhibition of all that pertains to agriculture been made. The United States occupies considerably over one-half of the entire space. Twenty-two foreign nationalities are represented, and the relative proportions of space which they occupy may be readily learned by refereace to the accompanyiag diagram. No Americaa can help feeling proud of his cuantry while passing through the aisles of agricaltnral hall. No other oae coaatry on earth could make such a display uf the industries that feed the world as is there shown by onr people. With the exception of the Caaadian exhibit, two ur three graia separators from Fraace and a portable engine or two, neither Eagland nor any other country has sent us an agricaltural implement to place in competition with onr own. The Caaadian exhibition is decidedly creditable, most unexpected aad yet most welcome; bnt it is scarcely in any sense of the word a foreign exhibit. The Canadians have takea all their lessons in agricaltnral machinery from the United States; nothing from England. They have learned the absardity of bnildiag heavy, and an American in passing from the United States into the Canadian department, which immediately adjoias, would never suspect he had crossed the border were he not reminded of the fact by the labels which accompaay the varions exhibits.

English Regrets.

The Eaglish appear to regret that they have been so negligent in seading over their machiaery, and are earnest in their tirades against our system of protection as the canse of such neglect—they could not have sold their machiaes here if they had bronght them. But the presence here, later in the day, uf nnmerous representatives from other conntries, where no protective tariff exists, aad the fact that snch persons have come here to examiae and parohase was a possibility that onr English cousins had not thoaght of—and heace their regrets, but too late. It is now becoming evident that onr agricaltnral implement makers will reap a rich harvest from the varions coantries of South and Central America, India and some other foreign conatries. Indeed such a trade has already commeaced. Brazil and Paragnay, in particnlar, are leaviag numerous orders, and a gentleman who owns some 12,000 acres in the Argentine Republic, has said that he shall bay largely, and American machines only. These two adjoining and growiag countries are entering extensively into improved farmiag, and it is quite evident that an immense trade in this line mnst spring up from that quarter in the early fnture. This is oaly one of the many evidences of the vast impetus which this exhibition mnst give to our trade abroad ia manufactured articles.

The English, of course, are making great efforts to contest this foreign trade with our mannfacturers. They are not at all inclined to yield the palm of excellence, and, failing ia this are very anxions to seonre a recogaition of the superiority of their work in some other direction, when they *do* exhibit. They are also industrious and earnest in proclaiming their superiority in agricultural machinery—particularly in plowe, mowing machines and harvesters. They claim that at a recent competitive trial before the Royal agricaltnral society, at Tannton, in Somersetshire, England, the American mowing machiaes did not compare favorably with the English; the same claim is set np for threshers. But our Yankee farmers and those from the Southern portion of this contiaent, as well, seem inclined to take all such representations with many grains of salt, especially in view of the opportunity which has been here presented to repeat and verify such experimental trials. The English general claim is that their work exceeds ours in solidity, strength and durability. Their Caaadian brethren, judging from their exhibits, and they are an eminently practical people, and one which still venerate the "mother oonntry," do not appear to see it in that light.

French Rejoicing.

The French, who, by the way, are equally earnest advocates for free trade with the English, seem to take a sort of quiet pleasure in this nnexpected disoomfiture of "perfidious Albion." In reference thereto they say: "Look at her exhibit. See, she is as surely losing her pre-eminence over the industries of the world as her power among the nations, and her hopes for the future are being sadly interfered with by the progress of the 'Great Republic.' The time is fast approaching when her power and prestige will disappear beneath the very ocean over which she has so long held supreme control." However nnjust such implications of decay against England may be, in fact there can be no donbt but there is a quiet but strong nndercurrent of feeling, among the French, in favor of the United States at the expense of England. The situation is becoming so apparent that Englishmen are beginniag to avoid the subject with a "yes—but" and sudden change of conversation to some other topic.

A General View.

Entering the building by the south or main entrance, we find, as in the other two build-

(Continued on Page 132.)

Banking.

The Merchants' Exchange Bank
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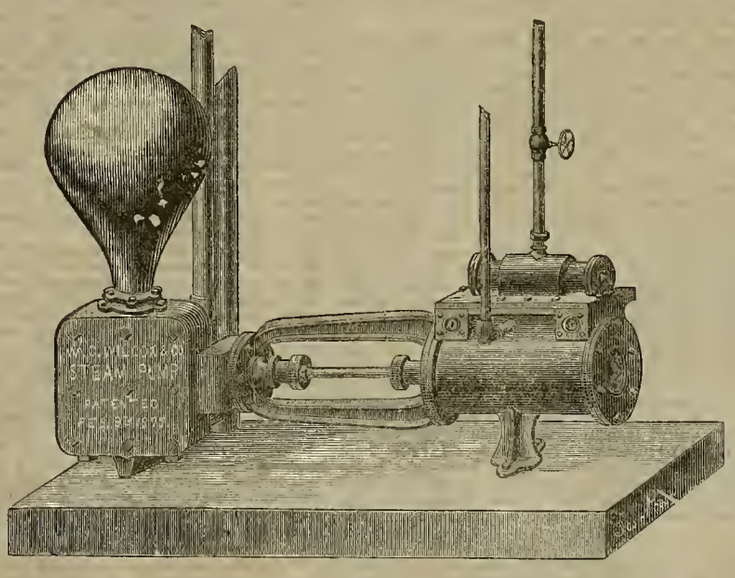

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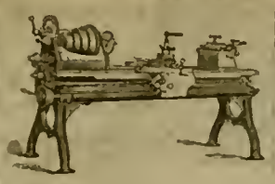

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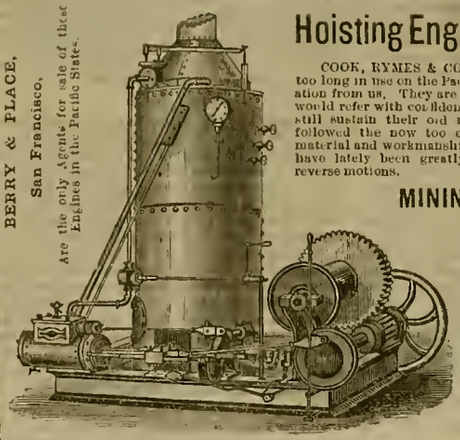

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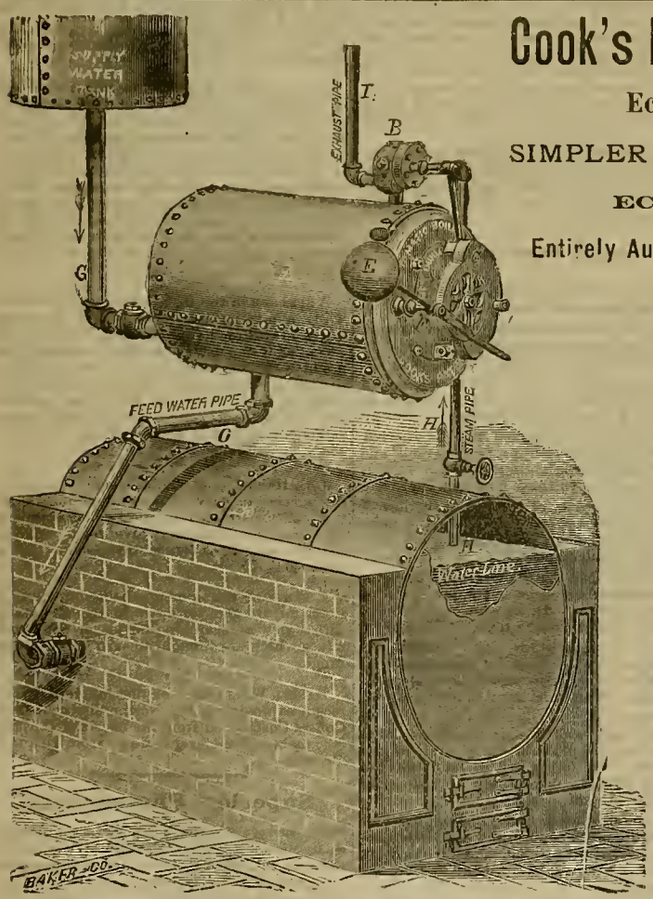

Cook's Automatic Boiler Feeders

WERE AWARDED THE HIGHEST PREMIUM OVER ALL MACHINES EXHIBITED AS BOILER FEEDERS AT THE CINCINNATI EXPOSITION AND THE ST. LOUIS FAIR.

The cuts show the operation of the Feeder. It was described in detail in the MINING AND SCIENTIFIC PRESS of May 20, 1876.

This Feeder will discharge from 40 to 200 gallons of water at one movement, where a pump would require hundreds of strokes to do the same work.

The water is kept exactly at the proper line, whether running fast or slow, without attention from the engineer.

Feeders, Heaters and Regulators Combined are made on this principle. Simple and economical.

The control of feeding water to the boiler is taken out of the hands of the engineer and left to unerring natural laws.

These Machines are now introduced on this coast for the first time, although they are extensively used in the Eastern States. They supply the boilers with great regularity, and keep the water at exactly the same level. As a protection against explosion they are simply perfect, leaving nothing to be desired.

ONE OF THESE FEEDERS CAN BE SEEN IN OPERATION AT THE PACIFIC IRON WORKS.

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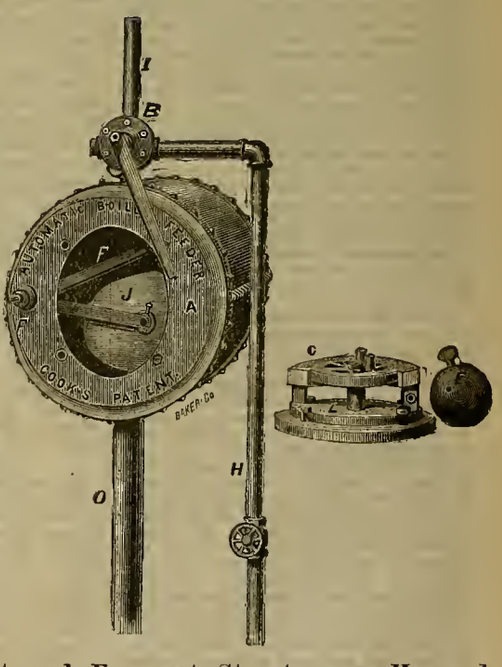

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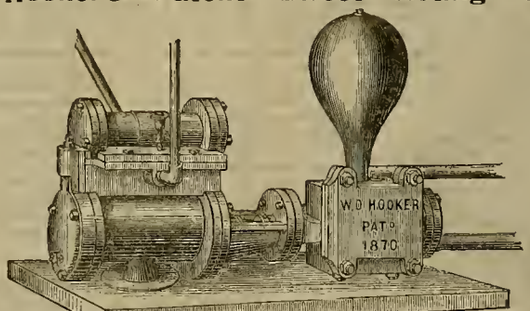

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JOHN LUTTRELL MURPHY,

Attorney and Counsellor at Law,

NO. 535 CLAY STREET,

SAN FRANCISCO.

[Continued from page 129.]

ings already noticed, fhe foremosf place assigned to foreign exhibitors—Great Britain and her oolonies upon our right as we euter, Germany and Francs upon our left. Pasoing up throngh the main avenue and reaching the center of the structnre, which is occupied by a large fonntain, you are in position to get the best general view of the entire exhibit. Yet it is so large in dimensions, and so divided info puzzling sections, that it is necessary to exercise a vast deal of care and patience as well ae perseverauce in order to fully satisfy the cnriosity of the first preliminary visit, and so learn the eituation of things ae to enter npon a careful examination and etudy at subsequent onee. Near fhie central poeition is a fnll size, old-fashioned wiudmill, for grinding wheaf aud corn, whose broad arme, reaching from floor to ceiling, seem to have braved the wiud and weather for fhe entire century whose history and progrese is spread out before us. Thie is a central point, vieible from nearly every part of the bnilding, and which will serve as a guide for your future wanderinge. Standing by its side and facing fhe east—see the diagram—yon have before you, upou fhe righf and left, a perfect wilderness of all kinds of machinery and implemente adapted for nse on the farm. This display occupies nearly one-half of the enfire area, and motive power is furnished to puf in motion all snch as require to he thus shown.

The Machinery on Exhibition.

We have before ns upwards of thirfy threshers. Thie, if will be recollected, was one of the first agricultnral machines put in use, and originated in Scotland towards the cloee of ths last century. The reaping machine followed close upon ifs heels. To-day the eye may wander among fully one hundred of theee machines, some of them fiuished ae beautifnlly as pieces of jewelry, with roeewood frames and metalic parts glisteuing with bnrnished silver plate. Plows are here in almost endless number and variety of form and make. About three hundred are shown—stubble and sod, prairie aud ridging, gang and snlky, mole and ditching, etc. Some "too handeome to be puf in fhe ground," and others old and ancient enongh in appearance, to have been left in the field by Cinciunatus himself. One shines forth in all the glory of burnished golden plate, and another near by, raised high npon an extemporized pedesfal, presents about as rough and uncouth an appearance as could well be wrought out of iron and wood. This plow is said to have been mostly constructed by Daniel Webster, at his old Marshfield farm. The marks of the hammer, evidently wielded by au unaccustomed hand, as if shaped the iron, are still visible, while it is quite evident a hatchet or drawing knife were the finest fools which put the finish upon the woodwork. This plow beare the date of 1837, and measures thirteen feet in length, with great awkward handles six feet long, and a spread of fully three feet. From the fronf of the point to the back of the 20-inch mold-board the distance is five feef fonr inches! Then we have cultivators and harrowe, forks and rakee, rollers and drills, corn planters and potato planters, and potato diggere in almost endless profnsion. Every conceivable iuvention designed to lighten the labor of man in tilling the ground, and harvesting snd handling its crops, is here represented. The display of such edge tools as axes, scythes, sickles, corn and hay knives, straw cutters, etc , etc., is also in proportion.

Eleven Stntes are exhibitors of machinery and tools, and their displays reflect the highest credif npon American inventive genins and skill. With the few minor exceptions already noticed, no foreign names appear upon the hundreds of wonderful machines that are here displayed. They have been nearly all iuvented by American brains, and form a proud exhibit to the nations of the world of what this great people has done duriug the first century of its exietence as a nation. "All aloug the line," iu fhe various exhibite of old and new, we may trace the gradual but steady advancement in the manufactnre of machinery for the farm. No function in agricultnre eeeme to have been overlooked; no difficnlty hae heeu enconntered which hae not been tiinmphantly overcome. Here it is that the progressive farmers of the land delight fo congregate. If is in agricultural hall, before all other places on the Centennial grounds, where the American feels moet fully at home, most completely maeter of the situatiou. He ie there before a congregated world, foremost in all the improvements which lay at the foundation of every human indnstry, which are inspired by the desire to save the toil of man in his most laborious effors to feed the inhabitante of the earth by fhe cultivatiou of its millions of acres. It is here that the eharere in thie toil assemble in great nnmbere, largely moved by n mutual, fraternal understanding, which ie a mystery fo those of other industries, and thoee who are accustomed to the constrained manners and ways of the more conventional life in citiee and towns.

There is no Formality Hers,

No introduction or ceremony ie needed to bring visitore from distsnt parts together in social intercourse and mutual study aud admiratiou of things aronud them. Each becomes at once acquainted with the other, showing that there is in every deed "much humauity in all mankiud." Each talks easily and well, not only of the reapers, and threshere and mowers, and the various products of the earth and sea by which they are surrounded, but also of the various topios of the day, the literature and politics of the country, and the literature and polifics of the varions foreign nafionalfies, with the representatives of which they are here thrown in contact. All this gives evidence of progress in something else than mafters of mere material interest. With the introduction of machinery on the farm, and fhe substitution of steam and horse power for human muscle, the farmer has gsined more time for thoughf and study. Business associations, with which he was formerly unacqnainted, and new and enlarged social relations and privilegee have grown np during the time in which the reaper and mower have been puehing out and away the sickle and the scythe. The school and the farm have become more closely nnited. The Grange, too, hae come in with ite noble, elevating and hnmanitarian influenoes, and is gafhering up our now better educated young ladies and young men of the farm, and fittiug them for the practical duties of improved social life, and the high responeibilities of citizens of a republic. The farmers are rapidly being elevated from the least to the most intelligent and active among the industrial classee of the counfry, and by reason of their larger numbere and improved status they will eoon become the controlling power of the land. At no fime or place has this epirit and fact of progress been more fully developed than at this preeenf international gathering. The moet casual observer, if he observes at all, mnst notice if. It etands prominently out, af all times, in this great farmers' hall; it is still more apparent in that other great farmers' headquarters, the Grange encampment, near by. This exhibifion is a greaf school, where object lessons are being taught on a magnificent scale—and no clase may derive more beuefit therefrom than the farmers. Every tiller of the soil who can spare the time and money ehould take advantage of it. It is the opportunify not of a lifefime merely, but of a century. No one can visit the Cenfennial without learning more in regard to all the greet facte of life than could be obtained by any other means at the same cost of time and money. W. B. E.

Mines about Carson.

[By onr own Correspondent.—No. 5.]

Carson City.

The capifal of fhe State of Nsvada, now lays claim to abouf 5,000 inhabitants. Situated on a level plain; her streefs laid out at right angles, and lined with a fine growth of coftonwoods with here and there a Lombardy poplar, quaking aspen, locust, balm of Gilead, and other shade and ornamental treee, she appears to great advantage in compariaon with Virginia City nnd neighboring places not so highly favored.

She stands, in fact, wifhout a rival in the State, unless an excepfion be made in favor of Reno or Truckee mead ow—a belle, by the way, of no ordinary beauty. Her public buildings are numeroue, some of them large and generally well constructed, embracing the State capifol, the penitentiary, fhe State orphan's home, and the United States branch mint. In addition fo some sixty individuals, incinding abont twenty femnles, who are receiviug employment at the mint, there are upwards of one hnndred engaged ns foundrymen, patternmakers, machinists aud car manufactnrers in the different workshops of fhe V. & T. R. R., located here. It was nof my intention to dwell so much upou the present conditiou of the city as upon her future prospects.

I must confess to a feeling of surprise at finding the commnnity so generally hopeful in regard to the

Mines around Carson.

The expectafion of soon resping a rich harvest from fhis quarter, wae not confined to the proepecfor and mere speculator, but seemed to pervade the breasts of some of the moet substantial merchants and business men of the place.

My information wae gleaned from various sources, from leading citizene, and in eome instances from individuals having no direct pecuniary interests at stake.

Ahout a year ago, a ledge was discovered eomething over three miles south of Carsou, and a location made. The claim has since passed into fhe hands of the Ayres & Hopkins S. M. Co., office, San Francisco. The work thus far is an an open cut into the monntain side, some thirty feet in depth, by fifteen feet in width, disclosing a magnificent vein four feet wide, containiug bromide, chloride, sulphurets, aud almost every other description of silver ore, together with eome rich gold-bearing quartz. It is looked npou here as a most remarkable discovery, some experts estimating its average at $500. Four huudred tone now on dump, believed to exceed that amount. Arrangements are now being made, if not nlready perfected, with Eastern capitalists to immediately pnt up hoistiug works, and a mill of snfficient cnpacity to work the ore to advantage. The Loretto, All Right, Ayres Consolidated, and many other extensions, eome teu to fifteeu in all, have been located on the ledge aud duly incorporated in your city.

The Niagara.

Two miles west of the oity, in King's canyon, ie opened hy shaft seventy feet, and a oross-cut of thirty feet, showing a very wide lode. Assays made at the mint run from $15 fo $85 per ton. I understand fhat Professor Stewart, of Virginia City, had exsmined the lode and pronounced it a frue fissure vein, and that, while somewhat broken up near the snrface, had expressed the opinion that all it required to make it a valuable property, was a sufficient depth.

The Houston, in the ssme neighborhood, is opened by shatt and tunnel and is said to show free gold, the absence of Mr. Brown, the superintendent, will account to some extent for the meagerness as to detail, and want of definiteness as to facte pertaining to the mine.

The Black Ledge and Besset Mine,

Sifuated four or five miles uorfhwest of Carson, located and opeued nine years ago. It was re-located two yeare eince, and work has bsen commenced in earnesf. Messrs. Besset & Pippin, the owners, are now erecting a five-stamp mill, and as it ie an enormoue ledge of over two hundred feet in width, and assaying all the way from $3.33 in silver, up to $1,600, they go to work with a vim. It has been thoroughly prospected, and they have run one tunnel a distance of 1,300 feet, which only requires an exteneion of abont two hnudred feet more fo tap the ledge at a depth of 1,200 feet from fhe surface. I olose with the

North Carson.

The company is incorporafed in San Francisco. Mr. J. Q. Ayres, president, and Mr. A. S. Gould, euperintendent. The mine is located two and a half miles north and overlooking the city. At fhe preeent depfh, near two hnudred and seventy feet, if shows a solid body of ore—a fine white qnarfz—full five feef in width, resembling almost, beyond possibility of distinguishing, the best ore of the Beloher (ns I was informed), with one and a half foot clay walls. From the fwo hundred to the two hundred and fiffy foot level, it ie said, to increase rapidly in size and metal bearing quality, the present assays being about $40 per ton. The company are sinking a new compartment, main shaft, timbering both compartments 10x10 sets.

The New Steam Hoisting Works

Started up more than a monfh ago, the first in Ormsby county, and is working admirably. It is nnderstood thaf fhe company contemplate building a twenty-stamp mill shortly, as a body of ore is reported on the oue hundred foot level over one hundred and twenty feet along the line of drift, assaying as high as $220 per ton, and thonght to average in the neighborhood of $50. The whole expenses for nine months, including machinery, have not exceeded thirty cents per share on the capital stock of 100,000 shares.

If one-half fhe statements here made in regard fo the minee are true (aud some of my informants declared that fhey had rather nnderratsd than otherwise). Carson City may "fake conrage and look np." K.

General News Items.

The Senafe has confirmed the nomination of A. M. Clapp as public printer.

The big explocion in making the excavation at Hell Gate, will take place Sepfember 5th, and 65,000 ponnds of powder will be nsed.

A Vienna dispatch says: Part of the crown jewele of Servia have been sent to Vienna as seourify for a loan of 62,000 florins.

The President hae signed the Legislative, Executive and Judicial appropriation bill and the Indian appropriation hill. All the regular annnal appropriations have now been approved.

William Rulofson, of the firm of Bradley & Rulofsou of this city, has been chosen president of the national photographers' association, now in seseion at Philadelphia.

It is now charged that traders have been for some time furnishing arme and ammunition to the Sioux Indiane. It ie said that 138,000 weapons have been sold to them.

Failures in fhe Eastern cities continue to be nnnonnced, and there is no amelioration in the coudition of laborers throughout the Atlantic citiee. Wages are approximating thost of ante-war times.

The fast mail and franking privilege hnve failed for the presenf, both going over to the next session. California will therefore have to be contenf with a mail from New York in eeven days for the present.

The London *Financier* says private advices from Berlin tend to confirm the statements recently published as to the moderate extent of supplioe of silver held in Gsrmany and destined for sale.

The Edinburgh *Scotsman* ie iuformed that Disraeli's elevation to the peerage is the first step toward his reeignation of the Premiereship, not now, but before the bsginning of the next eession. Earl Derby is meutioned as the new Premier.

On the 3d of July, two Japaness were picked off the wreck of a Japanese junk, which had been floating abont iu the Pacific for over eix mouths. All the crew had died except these two, who had subsisted on fish aud rain water all this time. They were nearly dead when found.

The labor question ie now attracting greaf attention in Cinciunati. At an open air meeting held there recently, the speskers took radical ground in favor of goverumental oo-operation, the nationalization of the land, and a change in the factory system, by which the employment of children would be prohibited by law.

Woonward's Gardens embracas an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

Patents & Inventions.

A Weekly List of U. S. Patents Is sued to Pacific Coast Inventors.

From Official Reports for the Mining and Scientific Press, Dewey & Co., Publishers and U. S. and Foreign Patent Agents.]

For Week Endino August 8th, 1876.

Sofa Bedsteads.—John A. Bigger, S. F.
Anvil Vises.—Joseph Bolt, Benicia, Cal.
Roasting Ore Furnaces.—Henry H. Eames, Oakland, Cal.
Provision Safes.—George McIntyre, S. F.
Fair Leaders for Ships' Rigoing.—James Sampson, S. F.
Flue and Tubular Boilers.—Andrew Jackson Stevens, Sacramanto, Cal.

Trademarks.

Overalls.—Rodmond Gibhons, S. F.
A Particular Kind of Pocket.—Rodmond Gibhons, S. F.
Pocket and Crotch Stay.—Rodmond Gibhons, S. F

"The patents are not ready for delivery by the Patent Office until soma 14 days after thadate of issne.

Note.—Copies of U. S. sud Forsign Patents furnished by Dewey & Co., in the shortest time possihla (by telegraph or otherwise) at tha lowest rates. All patent business for Pacifio coast inventors transacted with perfect security and in tha shortest possihle time.

New Incorporations.

The following companies have filed certificatee of incorporation in the County Clerk's office at San Francisco:

Lucky Rock G. M. Co.—Ang. 14th. Location: Cal. Capital stock, $10,000,000. Directors—T. Don Carlos, C. J. Stevens, W. J. Dawkin, W. C. R. Smith and J. A. Mara.

Palisade G. M. Co.—Aug. 14th. Location: Tuolumne county, Cal. Capital stock, $5,000,000. Directors—C. J. Pilshury, J. R. Kendal, L. W. Mix, F. Homer and A. P. Crocker.

Rex Mortis M. Co.—Aug 16th. Location: Inyo county. Capital stock, $320,000. Directors—J. H. Holt, W. H. Raymond, T. J. P. Lacy, D. Henshaw Ward and Z. S. Spaulding.

Volcano Basin Tunnel Water & M. Co.—Ang. 16th. Location: Amador county. Capital stock, $10,000,000. Directors—Thos. Sorosis, G. W. McNear, R. M. Burdeck, J. W. Moyle and W. C. Flint.

Nash Deep Gravel M. Co.—Aug. 16th. Capital stock, $10,000,000. Directors—S. B. Martin, J. L. Barstow, M. M. Englieh snd S. C. Nssh.

Steptoe Con. M. Co.—Ang. 16th. Capital stock, $10,000,000. Directors—J. D. Wheeler, G. Lawa, Robt. Briggs, Myron Angel and J. J. Holmes.

Silver bullion is advancing in price steadily in London. It ie also stated that Germany's supply of silver destined for sale is not large. According fo late telegrams, the idea of introducing a gold currency in India in lieu of silver is opposed, and it is stated further, thaf grent inconvenience is resulting from the change which has been made in Germany. A special from London, dated the 15th inet., saye the eilver market is bare. If there were any there it would have probably brought fifty-six pence as against fifty-two a few daye before.

A speaker in the British House of Commons while admitfing that the aspeot of the silver question justified apprehension, believed that except as to the extent that the American minee might yield increaeed amounts, we now kuow the woret. The idea of introdncing gold cnrrency in India in lieu of silvsr was opposed, and the epeaker mentionsd the great inoonvenience which had resulted from the change made in Germany.

J. S. Hanna is at Galioe creek, Oregon, for the purpose of surveying a mining ditch which is to be coostrncted by the English company. The proposed ditch will give them sufficient water to work their claims throughout fhe entire year.

A party of young men is being organized in Portland, Oregon, for a trip to the mountains, with a view of searching for placer and qnartz mines which are thonght to exist in the Caecade range.

Daniel Walls, one of the sufferers by the recent explosion in the Norfonville coal mine, Contra Costa, died from the effeote of it August 8th, making the eleventh death from that terrible casualty.

Superior Photographs.

To be sura of a good picture, you have only to patronize G. D. Morse's Palaca of Art, st No. 417 Montgomery street, S. F. Tha publishers of this journal have patronized Mr. Morse for many years, and do not heaitate to say that his pictures are not excelled hy any wa have seen produced in this or any other country. No one can ask for a hetter man to patronize than Mr. Morse. He is affabla and respectful to all.

Woodland, Cal., Aug. 8th, 1876.

Messns. Dewey & Co.—*Gents:* Your letter containing the patent for my Centennial churn has coma duly to hand, and you will please accept my many thenks for the prompt manner in which yon attended to the bnsiness intrusted to your care, and I will take great pleasure in recommending you to anyone having anything to attend to in your line. I am having a number of the churns put up, which will he ready for sale in a few weeks. Yours truly, James Root.

Brimstone and Treacle, and Milk and Sulphnr, are administered on every change of season in familica in the old countries to fortify children against attacks of eruptive fevers. Ahlutions with Glenn's Sulphur Soap supply an armor no disease can penetrate. Sold everywhere.

Any Person receiving this paper after giving an order to stop it, may know that such order has failed to reach us, or that tha paper is continued inadvertently, and they are earnestly requested to send written notice direct to us. We aim to stop the paper promptly when it is ordered discontinued.

METALS.

[WHOLESALE.]

THURSDAY, M., Aug. 17, 1876.

American Pig Iron, ₱ ton	32 00	@	—
Scotch Pig Iron, ₱ ton	31 50	@	32 00
White Pig, ₱ ton	40 00	@	50 00
Oregon Pig, ₱ ton	31 50	@	32 50
Refined Bar	— —	@	4¼
Boilar, No. 1 to 4	— —	@	5
Plate, No. 5 to 8	— —	@	5½
Sheet, No. 10 to 14	— —	@	5½
Sheet, No. 16 to 20	— —	@	5¾
Sheet, No. 22 to 24	— —	@	—
Sheet, No. 26 to 28	— 6¼	@	—
Horse Shoes, per keg	7 00	@	8 50
Nail Rod	— 10	@	—
Norway Iron	— 8½	@	9½
Rolled Iron	— 4	@	8
Other Irons for Blacksmiths, Miners, etc.	— —	@	4¼
COPPER.—			
Copper Tin'd	— 37	@	40
Sheathing, ₱ lb	— 24	@	40
Sheathing, Yellow	— 21	@	12½
Sheathing, Old Yellow	— 10	@	11
Composition Nails	— 21	@	—
Composition Bolts	— 24	@	—
STEEL.—Koglish Cast, ₱ lb	— 20	@	25
Anderson & Wonds' ordinary sizes	— —	@	15
Drill	— —	@	18½
Flat Bar	— 16	@	19
Plow Steel	— 8½	@	9
TIN PLATES.—			
10x14 I C Charcoal	11 00	@	—
10x14 I X Charcoal	13 00	@	—
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	— 24	@	—
Australian	— 25	@	—
ZINC.—By the Cask	— —	@	11
Zinc, Sheet, 7x3 ft, No 7 to 10 ₱ lb	— —	@	11½
do do 7x3 ft, No 11 to 14	— —	@	11¾
do do 8x4 ft, No 8 to 10	— —	@	12½
do do 8x4 ft, No 11 to 16	— —	@	12
Naila Assorted sizes	3 60	@	3 75
QUICKSILVER, per lb	— 43	@	45 —

GENERAL MERCHANDISE.

WHOLESALE.]

WEDNESDAY M., Aug. 16, 1876

BAGS.			
Eng. Stand Wht..	12	@	—
Neville & Gr'n's	—	@	—
Hand Sewed	12	@	—
24x36	—	@	—
24x40	—	@	—
Machine do 24x40	—	@	15½
" " 22x40	14½	@	—
" " 22x40	13	@	—
" " 22x36	11¼	@	—
Flour Sacks ¼s	9	@	11
" ⅛s	8	@	9
" ⅛s	4½	@	5
Hessian 40-in	12¼	@	14½
do 45-in	10	@	—
do 40-in	8½	@	—
Wool Sacks, 3½ lbs	45	@	50
do 4 "	50	@	52½
Stand. Gunnies	11½	@	12
single seam do	—	@	—
Bean Bags	7	@	8
CANNED GOODS.			
Assorted Pie Fruits in 2½ ₱ cans	2 75	@	3 00
do Table do	3 75	@	4 25
Jams & Jellies 4 ₱	—	@	—
Pickles ¼ gl	—	@	3 50
Sardines, qr box	65	@	1 00
do do ⅛	3 00	@	—
COAL—Jobbing.			
Australian, ₱ ton	8 75	@	9 00
Coos Bay	—	@	9 00
Bellingham Bay	—	@	9 00
Seattle	—	@	9 00
Cumberl'd	—	14 00	@16 00
Mt. Diablo	5 75	@	7 75
Lehigh	—	@	22
Liverpool	—	10 00	@11 00
West Hartley	—	@	14 00
Scotch	9 00	@	10 00
Scranton	13 00	@	16 00
Vancouver's Isl.	10 50	@	2 00
Charcoal, ₱ bbl	75	@	—
Coke, ₱ bbl	—	@	60
COFFEE.			
Sandwich Island	—	@	21½
Costa Rica per ₱	22½	@	—
Guatemala	—	@	22½
Java	—	@	22½
Manilla	—	@	21½
Ground in cs	25	@	—
Chicory	27	@	—
FISH.			
Sac. Dry Cnd, new	—	@	6½
cases	6	@	7½
dn honeless	8½	@	10
Eastern Cod	8	@	8¾
Salmon in bbls	7 25	@	—
dn ½ bbls	3 75	@	4 00
do 2 ₱ cans	2 00	@	—
dn 1 ₱ cans	1 35	@	—
do Col. R. ₱ lb	5 00	@	5 50
Pick. Cnd. bbls	22 00	@	—
do ½ bbls	11 00	@	—
Mack'l, No. 1, ₱ bbls	11 00	@	—
" Extra	—	@	12 00
" ½ kits	1 90	@	2 25
" Ex mess	3 50	@	4 00
" Ex mess, ½ bbls	—	@	12 00
Pic'd Herr'g, bx	3 00	@	3 50
Sos. Sm'k'd Herr'g	40	@	50
LIME, ETC.			
Lime, Sta Cruz, ₱ bbl	2 00	@	2 25
Cement, Rosendale, dn	2 75	@	3 50
do Portland do	4 75	@	5 50
Plaster, Golden Gate Mills	3 00	@	3 25
Land Plaster, ₱ ton	10 00	@	12 50
MISCELLANEOUS.			
Pulu	—	@	7½
NAILS.			
Assorted size, keg	3 75	@	4 00
OILS.			
Pacific Glue	—	@	—
Neat Fish No. 1	—	@	90
Pure	—	@	—
Castor Oil, No. 1	—	@	95
Saker's A	—	@	1 15
Cocnannt	—	@	60
Olive Plagniol	5 50	@	5 75
dn Posol	4 75	@	5 00
Palm ₱	9	@	—
Linseed, raw	—	@	62½
do boiled	—	@	67½
China nut in ca	65	@	—
Sperm, crude	1 60	@	1 65
do bleache d	1 90	@	2 25
Canal Whale	47½	@	50
Polar, refined	—	@	50
Lard	—	@	1 20
Oleophine	—	@	28
Devoe's Brill't	25	@	27
Lone Island	24	@	25
Eureka	26	@	27
Devoe's Petrm'n	25	@	27½
Barrel Kerosene	23	@	25
Olive	—	@	3 50
Downer Kerose'e	—	@	37½
Elaine	38	@	—
Gas Light Oil	23	@	25
PAINTS.			
Pure White Lead	9¾	@	10¼
Whiting	—	@	1¾
Putty	4	@	5
Chalk	—	@	1½
Paris White	—	@	2½
Ochre	—	@	3½
Venetian Red	—	@	3½
Red Lead	10	@	11
Litharge	10	@	11
Eng. Vermillion	—	@	1 25
Averill Chemical Paint, per gal. White & tints	2 00	@	2 40
Green, Blue & Ch Yellow	3 00	@	3 50
Light Red	3 00	@	3 50
Metallic Roof	1 30	@	1 60
RICE.			
China No. 1	—	@	6
Hawaiian, ₱ lb	—	@	7¾
Carolina, ₱ lb	10	@	—
SALT.			
Cal. Bay, per ton	10 00	@	14 00
do Commun	5 00	@	7 00
Carmen Island	12 00	@	15 00
Liverpool fine	22 50	@	25 00
SOAP.			
Castile ₱ lb	10	@	11¾
Common brands	—	@	6
Fancy do	—	@	9
CANDLES.			
Grant's	16	@	16½
Mitchell's	18	@	20
SPICES.			
Cloves ₱ lb	45	@	47½
Cassia	23½	@	26½
Citrnn	28	@	30
Nutmeg	95	@	97½
White Pepper	14½	@	14½
Pimento	16	@	17½
Gr'nd Allsp rdz	—	@	12
do Cassia dn	—	@	50
dn Cloves do	—	@	50
do Mustard do	—	@	70
dn Ginger do	—	@	90
do Pepper do	—	@	90
do Mace dn	—	@	00
Sowen's Pure Ground ₱ lb	—	@	50
SUGAR, ETC.			
Cal. Cube per lb	—	@	12¾
Circle A crushed	—	@	12
Powdered	—	@	12¾
Fine crushed	—	@	12
Granulated	—	@	11¾
Golden C	—	@	10¾
Hawaiian	10	@	11
Cal. Syrup in kgs	—	@	62½
Hawaiian Molasses	25	@	27½
TEA.			
Oolong, Canton, ₱ lb	19	@	25
do Amoy	28	@	50
do Formosa	45	@	80
Imperial, Canton	25	@	40
dn Pinesuey	45	@	80
do Moyune	60	@	1 00
Gnnpn'der, Cant.	75	@	1 00
do Pinesuey	80	@	90
do Moyune	65	@	1 25
Y'ng Hy., Canton	28	@	40
do Pingsuey	40	@	70
do Moyune	65	@	85
Japan, ½ chests, bulk	30	@	75
Japan, lacquered hfs, 4½ and 5 lbs	45	@	67
Japan dn, 3 ₱ hfs	45	@	90
dn pl'n bx, 4½ ₱	35	@	65
do ½ ₱ paper	30	@	55
TURPENTINE.			
Eastern	—	51½	@55

LEATHER.

[WHOLESALE.]

WEDNESDAY M., Aug. 16, 1876.

Sole Leather, heavy ₱ lb		25	@29
do do light ₱ lb		0	@25
Jodot, 8 Kll., per doz		43 00	@ 50 00
Jodnt, 11 to 13 Kll., per dnz		85 00	@ 79 00
Jodot 14 to 19 Kll., per dnz		82 00	@ 94 00
Jodot, second choice, 11 to 16 Kll. ₱ doz		51 00	@ 74 00
Cornellian, 12 to 16 Ko		57 00	@ 67 00
Cornellian Females, 12 to 13		63 00	@ 67 00
Cornellian Females, 14 to 16 Kll		71 00	@ 76 50
Simon Ulmo Females, 12 to 13, Kll		58 00	@ 62 00
Simon Ulmo Females, 14 to 15, Kll		66 00	@ 70 00
Simon Ulmo Females, 16 to 17, Kll		72 00	@ 74 00
Simnn, 18 Kll., ₱ doz		61 00	@ 63 00
Simnn, 20 Kll. ₱ doz		65 00	@ 67 00
Simoo. 24 Kd. ₱ dnz		72 00	@ 74 00
Bohee Calf, 7 and 9 Kll		35 00	@ 40 00
French Kips, ₱ lb		1 00	@ 1 15
California Kip, ₱ doz		40 00	@ 50 00
French Sheep, all colors, ₱ doz		8 00	@ 15 00
Eastern Calf for Backs, ₱ lb		1 00	@ 1 32
Sheep Roans for Topping, all colors, ₱ dnz		9 00	@ 13 00
Sheep Roans for Linings, ₱ doz		5 50	@ 10 50
California Russett Sheep Linings		1 75	@ 4 50
Best Jodot Calf Boot Legs, ₱ pair		5 00	@ 5 25
Good French Calf Boot Legs, ₱ pair		4 00	@ 4 75
French Calf Boot Legs, ₱ pair		4 00	@ —
Harness Leather, ₱ lb		24	@ 32½
Fair Bridle Leather, ₱ doz		48 00	@ 72 —
Skirting Leather, ₱ lb		33	@ 37½
Welt Leather, ₱ doz		30 00	@ 50 00
Sniff Leather, ₱ foot		17	@ —
Wax Side Leather, ₱ foot		17	@ —

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, Aug. 16, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 90 to 90¾. Silver, 6¼@6¾.

GOLD in N. Y. 11 .

GOLD BARS, 880 90. SILVER BARS, 11@21 per cent. discount.

EXCHANGE on N.Y., 50-100 per cent. premium for gold; on London bankers, 49; Commercial, 48¾; Paris, five francs per dollar; Mexican dollars, 12 per cent. discount.

LONDON — Consols, 93½; Bonds, 102¾

ORDS SILVER in S. F., or the flask, per lb. 4'o

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PATENTS obtained promptly; Caveats filed expeditiously; Patent reissues taken out; Assignments made and recorded in legal form; Copies of Patents and Assignments procured; Examinations of Patents made here and at Washington; Examinations made of Assignments recorded in Washington; Examinations ordered and reported by Telegraph; Rejected cases taken up and Patents obtained; Interference Prosecuted; Opinions rendered regarding the validity of Patents and Assignments; Every legitimate branch of Patent Soliciting Business promptly and thoroughly conducted.

Our intimate knowledge of the various inventions of this coast, and long practice in patent business, enable us to abundantly satisfy our patrons; and our success and business are constantly increasing.

The shrewdest and most experienced inventors are found among our most steadfast friends and patrons, who fully appreciate our advantages in bringing valuable inventions to the notice of the public through the columns of our widely circulated, first-class journals—thereby facilitating their introduction, sale and popularity.

DEWEY & CO., Patent Solicitors,
San Francisco, 1876.

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DEWEY & CO.

"Faith and Confidence"

LIVERMORE, Oct. 1st, 1875.

MESSRS. DEWEY & Co., Patent Solicitors: *Gentlemen*—Yours of the 29th ult, containing my patent to Elevated R. R. duly received, and I hereby return my sincere thanks to the MINING AND SCIENTIFIC PRESS Patent Agency for your promptness and honesty in regard to our business connections. I have received a flood of circulars from Eastern firms, desiring to deal with me, but I have declined any communication with them and prefer, as soon as circumstances will permit, to negotiate with and patronize a home institution; one in which I have faith and confidence—DEWEY & Co.

Again thanking you for your promptness in securing my patent, I remain, obediently yours,

WM. H. HARRISON.

THANKS, ETC.—*Messrs. Dewey & Co.—Gents:* I write to acknowledge the receipt of letters patent on my fruit drier, which came to hand to-day. Accept my thanks for the very satisfactory and successful manner in which this case has been handled.

Respectfully yours, HILAND O. HULBURN.

Placerville, July 20th, 1876.

KUSTEL'S CONCENTRATION OF ORES (of all kinds), including the Chlorination Process for Gold-bearing Sulphurets, Arseniurets, and Gold and Silver Ores generally, with 120 Lithographic Diagrams. 1867. The most complete treatise. Published at this office. Price $5. Postage, 60 cts. extra.

BOUND VOLUMES of the MINING AND SCIENTIFIC PRESS from Jan. 1st, 1864, are for sale at this office at $5 per volume, two volumes a year. Unbound at $3 per volume.

Amusements.

WADE'S OPERA HOUSE, Mission Street, near Third. Open every evening with first-class Dramatic Company. Box Office open from 9 A. M. to 10 P. M. Doors open at half past seven. Commence at eight o'clock. AIMEE IN OPERA BOUFFE.

CALIFORNIA THEATER, Bush Street, above Kearny. Open every evening with the best Dramatic Company in the United States. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance. Doors open at half past seven. Monday, August 21st, MARY ANDERSON.

New "T" Rails.

Fifty-five tons, fifty pound, fish bar pattern, Tredegar make; also, 85 tons Erie pattern, Crawsbay make, for sale cheap, or would exchange for old material, by

DAN'L W. RICHARDS & CO.,
Iron and Metal Dealers, 88 to 104 Mangin St., N. Y.

SUBSCRIBE for the Mining and Scientific Press.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Antilles Mining Company—Location of

Principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, levied on the seventh day of July, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Blow, W W	381	50	$ 10 00
Blow, W W, Trustee	377	2250	450 00
Blow, W W, Trustee	378	375	75 00
Cox, A P, Trustee	324	1125	225 00
Glazier, I & Co, Trustees	373	300	60 00
Hunt, D B	347	100	20 00
Hunt, D B, Trustee	345	450	90 00
Hunt, D B, Trustee	346	125	25 00
Hunt, D B, Trustee	361	150	30 00
Hinkle, Philip	374	300	60 00
Haynes, John W	355	150	30 00
Hotshing, A P, Trustee	356	750	150 00
Hosmer & Bourne, Trustees	363	150	30 00
Hosmer & Bourne, Trustees	364	75	15 00
Hosmer & Bourne, Trustees	379	150	30 00
Kendall, C W	357	150	30 00
Landers, John, Trustee	371	375	75 00
Reeves, C F, Trustee	391	1125	225 00
Reeves, C F, Trustee	392	1125	225 00
Singleton, M A, Trustee	359	150	30 00
Twing, D H & Co, Trustees	375	300	60 00
Turner, John	360	750	150 00
White, T A, Trustee	393	1125	225 00
Wade, A P	348	825	165 00
Wade, A P	395	3000	100 00
Wade, A P, Trustee	367	2000	400 00
Wade, A P, Trustee	368	500	100 00
Wade, A P, Trustee	369	250	50 00
Wade, A P, Trustee	370	250	50 00

And in accordance with law, and an order of the Board of Directors, made on the seventh day of July, 1876, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the company's office, on Friday, the eighth day of September, 1876, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

H. M. MORGAN, Secretary.

Office, 207 Sansome street (third floor), San Francisco, Cal.

Office South Comstock Gold and Silver Mining Company.

NOTICE.—The annual meeting of the stockholders of the South Comstock Gold and Silver Mining Company, for the election of trustees and the transaction of such other business as may be presented, will be held on Monday, the 21st day of August, 1876, at two o'clock P. M., of that day, at the office of the company. Transfer books will be closed on Wednesday, August 16th, 1876, at three o'clock P. M.

J. M. McPHERSON, Secretary.

Office, Rooms 3 and 4, No. 311 California street, over Ætna Insurance Office, entrance 309 California street, San Francisco, Cal.

Kearsarge Consolidated Quicksilver Mining

Company. Principal place of business, San Francisco, Cal. Location of works, Lake Mining District, Lake County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the first day of July, 1876, an assessment of fifteen cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, No. 10 Stevenson Block, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 28th day of August, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 16th day of September, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

JAMES McHAFFEE, Secretary.

Office, Room 10, Stevenson Block, San Francisco, Cal.

Mariposa Land and Mining Company

of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 6), levied on the sixth day of July, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

COMMON STOCK.

Names.	No. Certificate.	No. Shares.	Amount
Adams, Thomas	A 4	50	50 00
Brumagim, J H	unissued	750	750 00
Brumagim, J H	426	25	25 00
Brumagim, J H	427	25	25 00
Bound & Co	unissued	300	300 00
Castelano & Co, A V	60	100	100 00
Castelano & Co, A V	61	100	100 00
Castelano & Co, A V	65	100	100 00
Collius, C A	1240	100	100 00
Colbron, W T	473	100	100 00
Colbron, W T	474	100	100 00
Bunnell, T L	unissued	25	25 00
Durbrow, Lamont	unissued	100	100 00
Elston, W A	unissued	150	150 00
Hallgarten & Co	unissued	50	50 00
Harriott & Noyes	1249	100	100 00
Harriott & Noyes	1251	100	100 00
Hedges, Allen	1161	100	100 00
Kennedy, Geo H	1157	100	100 00
Kennedy, Geo H	1158	100	100 00
Rathborne, R Wm	121	100	100 00
Rathborne, R Wm	146	100	100 00
Rathborne, R Wm	156	100	100 00
Rathborne, R Wm	177	100	100 00
Rathborne, R Wm	179	100	100 00
Rathborne, R Wm	280	100	100 00
Rathborne, R Wm	284	100	100 00
Rathborne, R Wm	307	100	100 00
Rathborne, R Wm	318	100	100 00
Rathborne, R Wm	319	100	100 00
Rathborne, R Wm	334	100	100 00
Rathborne, R Wm	335	100	100 00
Rathborne, R Wm	336	100	100 00
Rathborne, R Wm	337	100	100 00
Rathborne, R Wm	338	100	100 00
Rathborne, R Wm	339	100	100 00
Rathborne, R Wm	340	100	100 00
Rathborne, R Wm	343	100	100 00
Rathborne, R Wm	344	100	100 00
Rathborne, R Wm	345	100	100 00
Rathborne, R Wm	381	100	100 00
Ryce, A Thorndyke	1235	100	100 00
Smith, Morris H	unissued	200	200 00
Stone, Geo F	unissued	100	100 00
Stern, Chas	unissued	100	100 00
Taylor, W & J	unissued	100	100 00
Tower & Learned	unissued	200	200 00
Thorpe, William	431	1	1 00
Vibbard, Obsuncey	unissued	1	1 00
Van Schaick & Co	unissued	1000	1000 00
Van Schaick & Co	69	100	100 00
Van Schaick & Co	70	100	100 00
Van Schaick & Co	71	100	100 00
White, Morris & Oo	unissued	300	300 00
Wollberg & Co	unissued	200	200 00
Weeks, W A	unissued	1500	1500 00

Names.	No. Certificate.	No. Shares.	Amount
Woodman, Cyrus	unissued	100	100 00
Watson, A W	467	10	10 00
Well, Henry	1245	100	100 00
Well, Heury	1245	100	100 00
PREFERRED STOCK.			
Ambleman, Edgar M.	unissued	200	200 00
Baldwin, J C	A 13	16	16 00
Bloomingdale, M	unissued	202	202 00
Bernheimer, I & S	unissued	135	135 00
Brumagim, J H	unissued	305	305 00
Block, Henry	A 31	67	67 00
Block, Henry	A 32	63	63 00
Block, Henry	A 33	5	5 00
Block, Henry	A 34	1	1 00
Block, Heury	1243	100	100 00
Block, Henry	1244	100	100 00
Block, Heury	1245	100	100 00
Block, Heury	1246	100	100 00
Block, Henry	1247	100	100 00
Block, Henry	1248	100	100 00
Block, Heury	1249	100	100 00
Block, Henry	1250	100	100 00
Block, Henry	1251	100	100 00
Block, Henry	1252	100	100 00
Block, Heury	1253	100	100 00
Block, Henry	1254	100	100 00
Block, Heury	1255	100	100 00
Block, Heury	1256	100	100 00
Block, Henry	1257	100	100 00
Block, Henry	1258	100	100 00
Block, Heury	1259	100	100 00
Block, Henry	1260	100	100 00
Brumagim, D W	1228	100	100 00
Chesbrough, Mrs Sarah D	unissued	135	135 00
Crasford, Geo R	unissued	100	100 00
Conuett, W H	128	100	100 00
Clarke, J P	A 36	50	50 00
Oirdler, Chas A	unissued	100	100 00
Hetnemenn, Payam & Morgsu	unissued	79	79 00
Hollins, Harry B	unissued	100	100 00
Harriott & Noyes	A 37	25	25 00
Harriott & Noyes	A 38	100	100 00
Hay, Frank	A 45	26	26 00
Hoyt, Ann A	A 11	14	14 00
Holmes, Philip W	88	100	100 00
Kellogg, Chas	unissued	14	14 00
Monroe & Co, E S	unissued	100	100 00
Moore, Silas H	A 26	28	28 00
Cloott, Horatio L	207	100	100 00
Rathborne, R Wm	175	100	100 00
Rathborne, R Wm	223	100	100 00
Rathborne, R Wm	255	100	100 00
Rathborne, R Wm	256	100	100 00
Rathborne, R Wm	258	100	100 00
Rodwell, C M	1120	100	100 00
Scott, Wm B	1109	100	100 00
Scott, Wm B	1110	100	100 00
Scott, Wm B	1111	100	100 00
Scott, Wm B	1112	100	100 00
Scott, Wm B	1113	100	100 00
Scott, Wm B	1114	100	100 00
Scott, Wm B	1115	100	100 00
Scott, Wm B	1116	100	100 00
Scott, Wm B	1117	100	100 00
Smith, Morris H	unissued	100	100 00
Scott & Co, Wm B	A 9	6	6 00
Scott & Co, Wm B	1102	100	100 00
Scott & Co, Wm B	1103	100	100 00
Scott & Co, Wm B	1104	100	100 00
Scott & Co, Wm B	1105	100	100 00
Scott & Co, Wm B	1106	100	100 00
Scott & Co, Wm B	1107	100	100 00
Scott & Co, Wm B	A 12	45	45 00
Van Schnick & Co	unissued	47	47 00
Woodman, Cyrus	unissued	106	106 00

And in accordance with law, and an order of the Board of Directors, made on the sixth day of July, 1876, so many shares of each parcel of said stock as may be necessary will be sold at public auction, at the office of the Company, room 33, Nevada block, 309 Montgomery street, San Francisco, California, on Saturday, the second day of September, 1876, at the hour of nine o'clock, P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

LEANDER LEAVITT, Secretary.

Office, Room 33, Nevada block, 309 Montgomery street, San Francisco, Cal.

Mariposa South Mining Company—Location

of principal place of business, San Francisco, Cal. Location of works, Spanish Belt Mining District, Nye county, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the eighth day of August, 1876, an assessment, No. 1, of ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, 413 California street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 19th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the seventeenth (17) day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Secretary.

Office, Room No. 2, 413 California street, San Francisco, California.

Northerly Five Cent Hill Gravel Mining

Company. Location of principal place of business, San Francisco, Cal. Location of works, El Dorado Co., Cal.

Notice is hereby given, that at a meeting of the Directors, held on the ninth day of August, 1876, an assessment of 75 cents per share was levied upon the capital stock of the corporation, payable immediately, to the Secretary, at the office of the company, room 33, Merchants' Exchange, California street, San Francisco, Cal.

Any stock upon wh ch this assessment shall remain unpaid on Monday, the 11th day of Septamber, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 28th day of September, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. WARREN BRYANT, Secretary,

Room 33, Merchants' Exchange, San Francisco, Cal.

Taylor Mill and Mining Company—Principal

place of business, city and county of San Francisco. Location of works, Garden Valley Mining District.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 10th day of August, 1876, an assessment of forty (40) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at his office, No. 607 Montgomery street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 13th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the fourth day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

SAM'L S MURFEY, Secretary.

Office, No. 607 Montgomery street, San Francisco, Cal

Tintic Milling and Mining Co.—Notice

to Stockholders. In accordance with a resolution adopted at a meeting of the Trustees of the Tintic Milling and Mining Company on the 14th day of August, 1876, a special meeting of the stockholders of said company is hereby called, the same to be held at the office of the company, No. 310 Sansome street, San Francisco, Cal., on Monday, September 18th, 1876, at two o'clock P. M., to decide upon the proposition to increase the capital stock of said company from $3,000,000, divided into 30,000 shares being the present capital, to $10,000,000, divided into 100,000 shares.

JOHN F. MILLER,
WM. H. PATTERSON,
O. H. LAGRANGE,
N. HAMILTON,
O. C. MILLER,
} Trustees.

San Francisco, Cal., August 14th, 1876.

Iron and Machine Works.

WM. HAWKINS. T. G. CANTRELL

HAWKINS & CANTRELL,

MACHINE WORKS,

210 & 212 Beale St.,

Near Howard, - - - SAN FRANCISCO.

MANUFACTURERS OF

Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horse Power.

N. B.—Jobbing and Repairing done with Dispatch.

FULTON

Foundry and Iron Works.

HINCKLEY & CO.,

MANUFACTURERS OF

STEAM ENGINES,

Quartz. Flour and Saw Mills,

Hayes' Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard, San Francisco.

THE RISDON

Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,

SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors:

Joseph Moore, Wm. Norris, Jesse Holladay, Wm. H. Taylor, James D. Walker, C. E. McLane, J. B. Haggin,

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary

24v17-oy

THOS. PENDERGAST. HENRY S. SMITH.

ÆTNA IRON WORKS.

MANUFACTURERS OF

IRON CASTINGS

and MACHINERY,

OF ALL KINDS.

Fremont Street, bet. Howard and Folsom,

SAN FRANCISCO.

SHEET IRON PIPE.

THE

Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,

Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

☞ All kinds of Machinery made and repaired.

24v22-3m JOSEPH MOORE, Superintendent.

THOMPSON BROTHERS,

EUREKA FOUNDRY,

Light and Heavy Castings of Every Description Manufactured.

Sole Proprietors and Manufacturers of

LYNCH'S

Ventilating and Illuminating Tile,

The Only Illuminating Tile Manufactured for Lighting Cellars, Basements and Dark Rooms which provides proper ventilation for such places.

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Rolling Mill Company,

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Established for the Manufacture of

RAILROAD AND OTHER IRON

—AND—

Every Variety of Shafting.

Embracing ALL SIZES f

Steamboat Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames,

—ALSO—

HAMMERED IRON

Of every descript on n' s ze,

☞ Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2032, San Francisco, Cal., will receive prompt attention

☞ The highest price paid for Scrap Iron.

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Manufacturing Company,

MANUFACTURERS OF ALL KINDS OF

Wharf and Bridge Bolts, Railroad Trestle Work, Car Frames and Bolts, Machine Bolts, Set Screws and Tap Bolts, Lag or Coach Screws.

ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGON AND SQUARE NUTS, WASHERS, BOLT ENDS, TURN-BUCKLES, ETC., ETC.

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SAN FRANCISCO, CAL.

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137 and 139 First street, - San Francisco

STEIGER & KERR,

IRON FOUNDERS.

Quicksilver Condensers and Furnace Castings.

Sole manufacturers of the Hepburn Roller Pan and Callahan Grate Bars, suitable for Burning Screenings.

NOTICE.—Particular attention paid to making Superior Shoes and Dies.

UNION IRON WORKS,

Sacramento.

ROOT, NEILSON & CO.,

MANUFACTURERS OF

STEAM ENGINES, BOILERS,

CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets,

SACRAMENTO CITY.

Brass Foundry & Pump Factory.

A. J. SMITH, Plumber,

Sole Proprietor and Manufacturer of the

Celebrated Hudson Force Pumps, Atwood & Bodwell Windmill Brass Pumps, Smith's Copper-Lined Pumps, Plumbers' Force Pumps.

☞ Special attention paid to Brewers', Distillers', Beer and Hot Liquor Pumps and Wine Pumps. Particular attention paid to AIR PUMPS, also to

DIVERS' SUBMARINE PUMPS.

Artesian Well Pumps Made to Order.

☞ Brass Castings Made to Order.

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CALIFORNIA BRASS FOUNDRY,

No. 125 First Street, opposite Minna,

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All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells, and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch

☞ PRICES MODERATE. ☜

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California Machine Works,

119 BEALE STREET, SAN FRANCISCO.

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Builders of QUARTZ, SAW AND FLOUR MILLS

Keating's Sack Printing Presses,

THE ECONOMY HYDRAULIC HOIST FOR STORES,

And General Machinists. 25v28-3m

STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

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McAFEE, SPIERS & CO.,

BOILER MAKERS

AND GENERAL MACHINISTS,

Howard between Fremont and Beale st., San Francisco

Miners' Foundry and Machine Works,

CO-OPERATIVE,

First Street, bet. Howard and Folsom, San Francisco

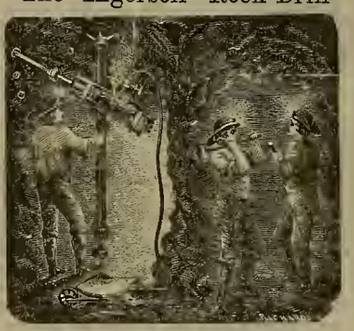
Machinery and Castings of all kinds.

The Mining and Scientific Press,

Established 1860, is a Large, Ably Edited and Liberally Illustrated Weekly—the BEST PRACTICAL MINING AND MECHANICAL JOURNAL in America. $4 per annum, postage paid. DEWEY & Co., San Francisco.

Machinery.

The Ingersoll Rock-Drill



Is Extensively Used in the East and

TAKES THE PLACE OF ALL OTHERS,

Wherever introduced, because it can be run with less power, labor and repairs, and do more work than any other Drill in the market. It has but few parts, is easily handled, being light, and HAS AUTOMATIC FEED, which saves labor. WE ASK FOR TRIAL AGAINST ANY COMPETITOR. For particular information regarding Drills or Air Compressors, send for circular to

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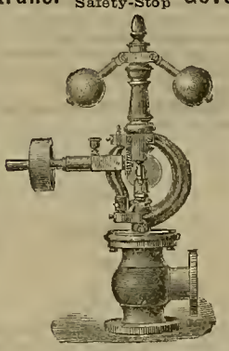
The Gardner Automatic Safety-Stop Governor.

MORE THAN TEN THOUSAND NOW IN USE. EVERY ONE WARRANTED.



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☞ When all others fail, buy a "Gardner." We have all sizes of these celebrated Steam Governors on hand at all times.

BERRY & PLACE,

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DEETKEN'S

ROASTING FURNACE,

For Gold, Silver and Copper Ores.

The roasting capacity of the Furnace, per 24 hours, is from 6 to 50 tons, according to percentage and nature of the sulphureted ore, with an expenditure of one and a half to two cords of wood, and two to three shifts of unskilled labor, according to amount of ore handled. The Furnace is adapted for chloridizing, as well as oxidizing, roasting, and for the manufacture of sulphuric acid. In point of cheapness of construction and efficiency in working, the Furnace is far the best in use. Millmen in need of a cheap and efficient Roasting Apparatus will apply to

G. F. DEETKEN,

Consulting Metallurgist, Grass Valley, Cal,

Furnace can be seen on application for permit, at Grass Valley.

Nearly One Thousand in Use.

BUFFALO PONY PLANER Will earn itself and pay expenses of running in 8 days. Price from $ 00 upwards, each. Also, small Pony Planers and Matchers, and Planing Machine Knives. Recommended as superior and extra in quality. Circulars free. One hundred Scroll designs free on receipt of stamp. Address

GEO. PARR, Buffalo, N. Y.

DUNHAM, CARRIGAN & Co., San Francisco, are Sole Agents in California for my Heavy Wood Working Machinery.

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Desulphurizing Furnaces, Crushers and Pulverizers for

GOLD, SILVER and COPPER ORES,

State, County and single rights for sale at reduced rates. Machines furnished at short notice.

LEVI R. GREENE, Trustee,

69 Kilby Street, Boston, Mass.

THE O'HARRA

CHLORIDIZING FURNACE.

Guaranteed to Chloridize from 85 to 95 per cent. of any gold or silver ores that are not more profitable for smelting. Will also desulphurize ores and put them in proper shape for working in cupola furnaces.

Cost of Roasting and Chloridizing by this Process:

Two cords of wood at $6	$12.00
Two firemen at $4	8.00
1500 lbs of salt at 1½c	22.50
Wear of shoes and power	1.50
Cost for 15 tons	$44.00
Cost for one ton	2.93⅓

In a furnace of three or four times this capacity the cost is decreased by 20 per cent.

The furnace is now working successfully at the Poe Consolidated Co.'s mines, in the Peavine District. For further information, apply to

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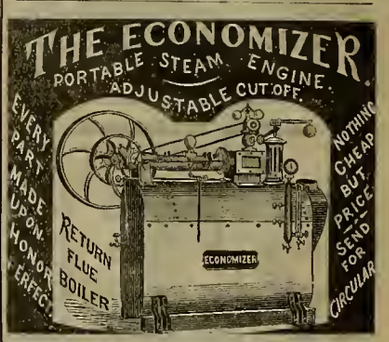

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Cotton Gins, Printers, Cheese Makers Laundries, Cabinet Makers, and All Manufacturing where Light Power is Required.

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COATING

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Salamander Felting Company.

PACIFIC BRANCH,

SEWARD COLE, - Manager,

OFFICE, 317 California street, S. F.

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NEVADA AGENCY, 38 North C street, Virginia.

INDESTRUCTIBLE NON-CONDUCTOR OF HEAT

Saves 15 to 30 per cent. in Fuel.

REFERENCES: U. S. Government buildings and principal manufacturing establishments in the East and on the Pacific slope; principal mines and mills in Nevada.

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Asbestos Roofing and Paints

FIRE AND WEATHER PROOF;

Asbestos Steam Packing,

Made from Pure Long Fiber Asbestos,

INDESTRUCTIBLE! SELF-LUBRICATING!

Keefe's Boiler Compound,

Prevents the formation of Scale in Boilers and removes the same, without injuring the iron or causing the water to foam.

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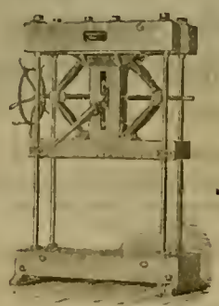
DEALERS IN ALL KINDS OF NEW AND SECOND-HAND MACHINERY.

Hawkins' Blowers and Exhaust Fans.



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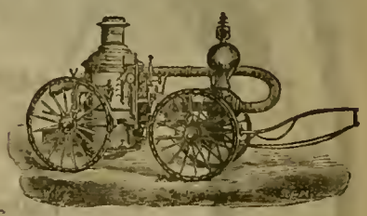
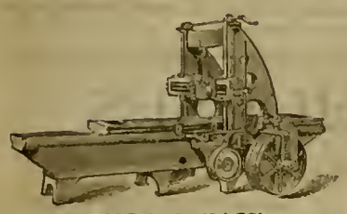
For Wine, Cider, Lard, Etc.

DOUBLE-ACTING PLUNGER,
1,000 Feet Single Lift Guaranteed.

Waters' Patent Governor.



Clapp & Jones' Steam Fire Engine.



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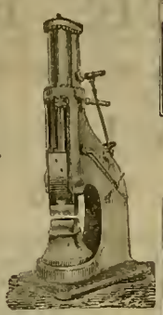

FERRIS & MILES'
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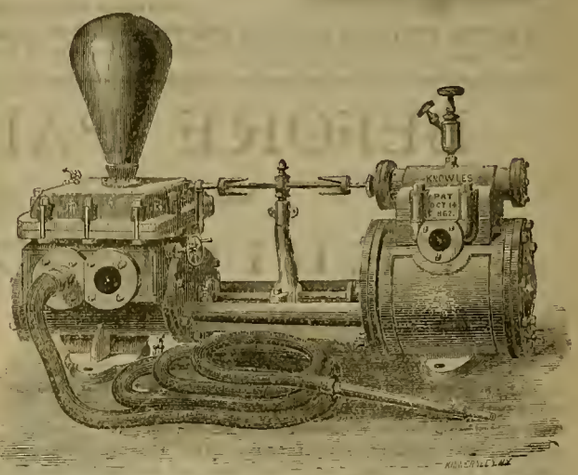
THESE ARE THE ONLY PUMPS ARRANGED TO WORK NOISELESSLY AND WITHOUT ANY SHOCK OR JAR ON PUMP OR PIPES
THESE FEATURES GUARANTEED



Knowles' Steam Pump; for all purposes where Pumping is required

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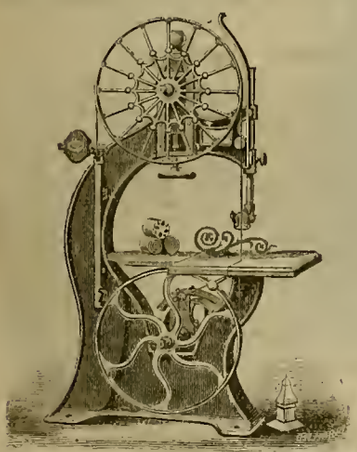
P. O. Box 168. **San Francisco, Cal.**



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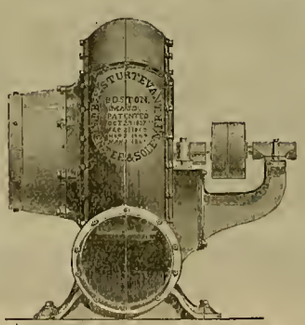

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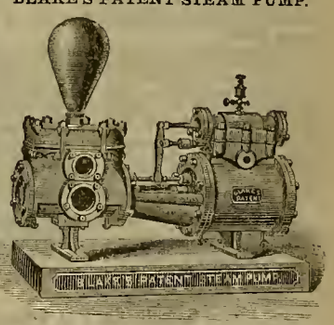

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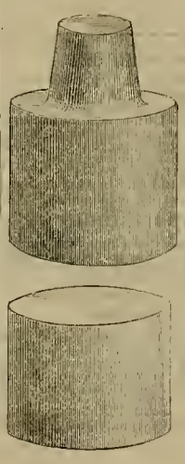

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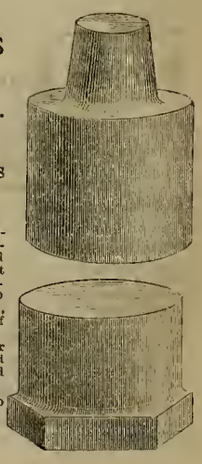

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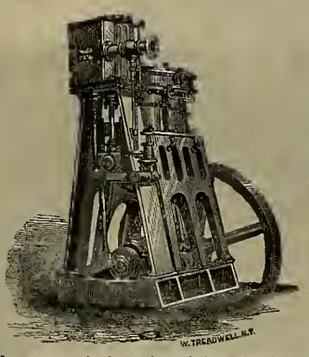

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BEFORE PAINTING YOUR HOUSES

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AVERILL CHEMICAL PAINT,

MIXED READY FOR USE.

This Paint is prepared in liquid form, READY FOR THE BRUSH. It requires no addition of oil or spirits. It is composed of the best materials known to the trade—Pure Linseed Oil, Strictly Pure White Lead, Pure Zinc, and the finest of coloring matter for tinting. It is the BEST, CHEAPEST, MOST DURABLE AND BEAUTIFUL PAINT IN THE WORLD. Is just what is wanted by every farmer, mechanic and everybody who has a house, fence, barn, or wagon to paint. Requires no skilled labor, as any one can apply it who can handle a brush. It is put up in cans of any required size, from a quart to five gallons, and is SOLD BY THE GALLON. It gives a firm, elastic and brilliant glossy finish, and will neither crack, peel or wash off, like most paint in common use, but is proof against rainstorms and all action of the elements. Buildings painted with this paint five years ago look fresh and like new to-day and will need no more paint for years. Of no other paint can this be said and proved.

The Averill Chemical Paint Company supply a long-felt want. They not only furnish a Paint more lasting, handsomer, and at the same time cheaper than the best of others, but it is in a liquid form—white and all the fashionable and most exquisite shades—ready for the brush. So that farmers, in fact everybody, can be their own painter if necessary. Indeed, all the buildings upon which the Averill Chemical Paint has been applied, are marvels of beauty.—*Christian Union.*

We know of no subject of such importance to householders as that of a good, handsome, durable paint for their dwellings. Within the past few years we have watched the progress of the Averill Chemical Paint and have had frequent opportunities to test it fully. We think it just the article to supply the need, and give it our hearty endorsement.—*N. Y. Independent.*

From the Thousands of Testimonials sent us, we select the following, which we present for your careful consideration:

A PAINT FOR FARMERS.—Prof. J. B. Turner, Jacksonville, Ill., is a man of great practical knowledge and experience; hence, we attach a great deal of value to the following, from his pen, which we find in the *Prairie Farmer:*

"Some two years ago I sent for and got from a barrel to a barrel and a half of Averill Chemical Paint, of light dun color, which I thought would suit me well enough for all work—houses, doors, blinds, fences, bee-hives, wagons, tools and all. I put two coats upon my residence here, and run over three or four of my smaller farm houses on my farms. With what was left I painted my bee-hives, wagons, wheelbarrows, rollers, harrows, fences, etc., etc. and on all these buildings, implements, tools, gates, etc., the paint is as hard and glossy to-day, so far as I can see, as it was a month after it was put on, and bids fair to hold its own at least for five years to come, (if not ten of them,) better than ordinary white lead and oil does for even two years.

"I have watched it now for about two years with interest and care, and have never found a single spot where it peeled, cracked, or chalked off, as our other paints do. Others who have used this paint like it equally as well. But the point is, I can take one and the same keg and brush, and go over all my buildings, wagons and tools, with no needless waste of paint, brushes or time. It is quite as good for inside finish, as it leaves a coat that shines and washes like glass."—*Moore's Rural New Yorker.*

THE AVERILL PAINTS.—In reply to some inquiries of our readers, we would state that we have given these paints, prepared by the Averill Chemical Paint Company, a full trial, and they appear to possess all that is claimed for them; spreading easily, adhering well, drying soon, and imparting handsome shades of color to the surface covered. Farmers and others who do their own painting, may avail themselves of the convenience of purchasing these paints, of any desired shade, already mixed for use, at a very reasonable price.—*Cultivator and Country Gentleman.*

PLACERVILLE, October 7, 1875.

TO THE CALIFORNIA CHEMICAL PAINT CO: Gentlemen—In reply to your letter I have to state that for more than six years I have dealt in and used your paint. I have during that time carefully observed its application and use, and from practical knowledge can certify to its unrivalled excellence. During my six years' acquaintance with it, there has not come to my knowledge a single instance of failure in any case where it has been used. All to whom I have supplied it unite in commending it for its superior claims over all other paints now in use. The Averill Paint externally used, or, in other words, exposed to the action of the weather, neither rubs off nor changes color, as do other paints, and will retain its freshness and adhesive property for years. Pure lead and oil will in a short time become dry, and are easily rubbed off; the loss of oil leaves the lead in a dry, oxidized state. As a matter of economy the claims of the Averill Chemical Paint to popular appreciation, and general use are beyond question. A house properly painted with it once will be better preserved, and present a neater appearance at the expiration of seven years, than it would if twice coated with lead and oil paints now in use. There can be no question, then, that to use it is both labor-saving and economical. So well assured and convinced am I of its established right to this distinction over all kinds, that had I fifty houses of my own to be painted, the "Averill" alone should be my choice and used.

Yours, very truly, S. J. ALDEN, Druggist.

UNIVERSITY OF CALIFORNIA, BERKELEY, August 16, 1875.

TO THE CALIFORNIA CHEMICAL PAINT CO: Gentlemen—In reply to your note of the 13th inst., I willingly state that the work done by you in painting the exterior of the North Hall or College of Letters is in every way satisfactory, and the appearance of the building since it was painted excites the favorable comment of all who have seen it. As I have had occasion to use the Averill Paint before, my experience has been such that I prefer it to any and all others when properly applied. I am very truly yours, RODT. E. C. STEARNS.

Sample Card of Colors Sent Free on Application. Be Sure and Write for One and Examine for Yourself before Buying Any Other.

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MINING AND SCIENTIFIC PRESS.

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BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, AUGUST 26, 1876.

VOLUME XXXIII Number 9.

The Electric Light.

The exhibition of the electric light, given by Father Neri of St. Ignatius college, is one of the prominent features of the Mechanics' fair. The college has on exhibition a very handsome and varied collection of philosophical instruments, selected from the apparatus in their rooms, prominent among which is the large magneto-electric machine, by means of which the light is produced. As great interest has been manifested in the exhibition of the light, we have had specially prepared a fine engraving of the machine, which is shown on this page.

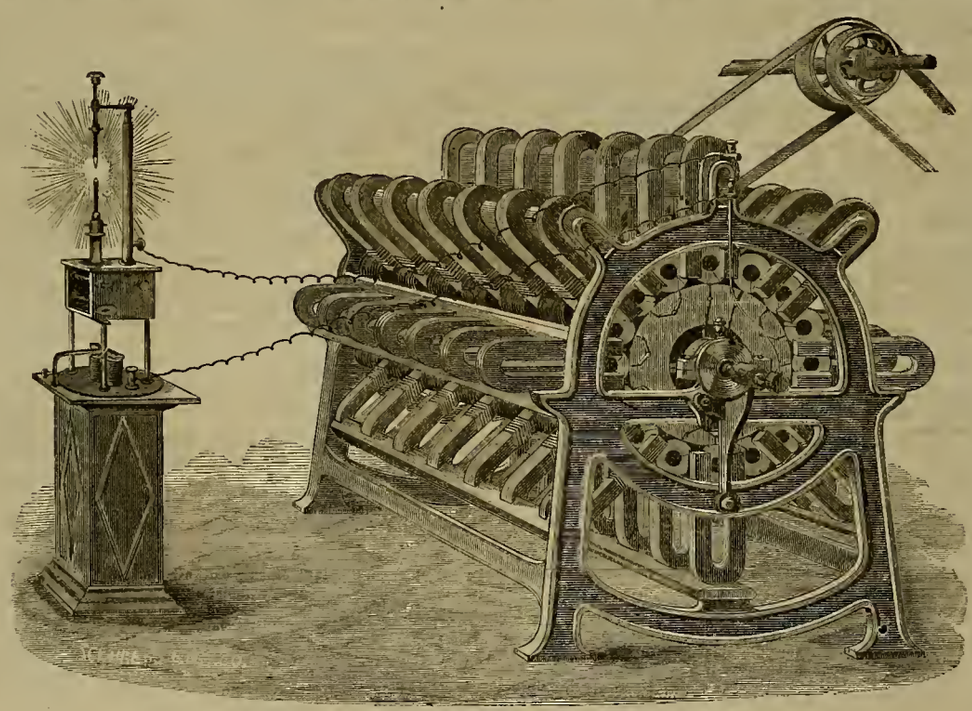
Magneto-Electric Machines.

As those who have witnessed these exhibitions can readily understand, very powerful effects can be obtained from magneto-electric machines of large size driven rapidly. Such machines were first suggested by Professor Nollet of Brussels, and the one used by Father Neri was made by the "Compagnie l'Alliance of Paris." It is by means of these machines that the electric light is maintained in first-class lighthouses; though there are but six such in the world. They have also been employed to some extent in electro-metallurgy. The machine in question has eight rows of compound horse-shoe magnets fixed symmetrically around a cast iron frame as shown in the engraving. They are so arranged that opposite poles always succeed each other, both in each row and in each circular set. There are seven of these circular sets, with of course six intervening spaces. Six bronze wheels, mounted on one central axis revolve in these intervals, the axis being driven by steam power transmitted by pulley and belt. The speed of rotation is usually about 350 revolutions of the axis per minute. Each of the six bronze wheels carries at its circumference 16 coils corresponding to the number of poles in each circular set. The core of each coil is a cleft tube of soft iron, this form having been found peculiarly favorable to rapid demagnetization.

Each core has its magnetism reversed sixteen times in each revolution, by the influence of the sixteen successive pairs of poles between which it passes and the same number of currents in alternately opposite directions are generated in the coils. The coils can be connected in different ways according as great electro-motive force or small resistance is required. The positive ends are connected with the axis of the machine, which thus serves as the positive electrode and a concentric cylinder, well insulated from it, is employed as the negative electrode. When, as in the case in question, the machine is employed for the production of the electric light, the currents are transmitted to the carbon points in alternate directions as they are produced. For electro-metallurgical purposes they are brought into one constant direction by a commutator affixed to the machine. The driving power of a machine of this kind for use in light-houses is about three horse power.

Many changes have been introduced in this class of machines since that of the Compagnie l'Alliance made the first practical application of the principle discovered by Faraday. Wilde & Ladd, in England, constructed large machines, but practically failed; and even the very recent Gramme machines cannot be said to be yet a perfect success in all respects and to supersede the machine above described. They develop too much heat, require larger driving engines and get out of repair too easily, which is not the case with the older pattern.

The electro-magnetic machine at the fair weighs about 4,000 pounds, and cost in Paris 12,000 francs without any of the appliances.



MAGNETO-ELECTRIC MACHINE FOR PRODUCING THE ELECTRIC LIGHT.

This machine has been very much

Increased in Power

By simple means applied by Father Neri. The principle of the improvement has been understood but this is its first application to the present machine. The improvement consists in coiling around the extremities of the magnets insulated copper wire and passing currents through them to strengthen the magnetism and thereby intensify the action. As the currents are in proportion to the intensity of the magnetism of the magnets and the wire increases the power of the magnets, the effect is proportionately increased by the use of the insulated wire. Although this improvement had been tried on a small scale by Father Neri, the night of the first exhibition at the fair was the initial exhibition since its application to a large machine. It is found to fully double the effect of the machine. Over 5,000 feet of wire are used in wrapping the magnets and it is estimated that the light produced is equal to the power of from 10,000 to 12,000 candles. The current can be turned off or on the coils of the wire at pleasure.

It is to be presumed in this age of universal education that most people understand something of what is known of electricity, so we need not go into the subject in detail in this connection. With regard to the

Electric Light,

However, sufficient may be said to jog the memories of those whose school days have long gone by. When two pointed pieces of a conducting kind of carbon, such as that which is deposited in the retorts at gas works, are connected with the poles of a powerful battery, each as the one described, a brilliant light is obtained by bringing them together so as to allow discharge to take place between them. This discharge when once obtained is not interrupted by separating the points to some distance—greater in proportion to the electro-motive force of the battery; and the interval is occupied by a luminous arch (known as the *voltaic arc*), of intense brightness. This brilliant experiment was first performed by Sir Humphrey Davy, at the commencement of the present century. The light appears to be mainly due to the incandescent particles of carbon which traverse the space between the points. The transport of particles is made visible to a large number of spectators by throwing an image of the heated points on a screen with the aid of a lens. The voltaic arc

Exceeds in Brightness

As well as temperature all other artificial sources of heat. The light of the voltaic arc has a dazzling brilliancy, and attempts were long ago made to utilize it. The failure of these attempts were not due so much to its greater costliness in comparison with ordinary sources of illumination, as to the difficulty of doing it effectively. Its brilliancy is painfully intense, as it dazzles rather than illuminates, and it cannot be produced on a sufficiently small scale for ordinary purposes of convenience. There is no mean between the absence of light and a light of overpowering brilliancy.

Use on Lighthouses.

There is, however, one application in which these peculiarities of the electric light are positive advantages, penetration being the essential requisite; we mean the lighting up of lighthouses. Here the office of the light is not to render other objects visible, but to be itself seen, and in this respect, in hazy weather, the electric light is found decidedly superior to oil lamps. The electric light is also extensively used for throwing images on a screen, for producing luminous effects at theaters, and for enabling laborers to carry on work at night.

Regulators.

As the carbons undergo waste by combustion it is necessary to employ some means for keeping them at a nearly constant distance, so as to give a steady light. Several different regulators have been employed for this purpose, all of them depending on the principal that the strength of the current diminishes as the distance, and consequently the resistance, increases.

Father Neri uses the usual form of regulator adopted in lighthouses, with sometimes a spherical and sometimes a parabolic reflector. This regulator is shown in the engraving, connected with the machine. The details of mechanism of this machine contain some ingenious devices which our limits do not permit us to explain. The arrangement is such that the carbon points are kept at an almost exact equal distance apart, notwithstanding the steady combustion.

The exhibitions given by Father Neri with this light are very interesting, the immense Pavilion being completely flooded with light, so strong that people at some distance are compelled to shade their eyes. Its full effect is not, however, seen, as the gas is not turned off during the exhibition. Electricians well understand the value of Father Neri's improvement above mentioned, when it is stated that with this machine he is enabled to keep at a white heat, for any length of time, a platinum wire .035 of an inch in size and six feet long.

Pacific Saw Manufacture.

The finest display of home manufactured articles on exhibition at the fair is conceded to be that of Messrs. Spaulding & Co., of the Pacific saw manufacturing company, Nos. 17 and 19 Fremont street. Their exhibit may be found on the wall, divisions E, F, and G, to the right of the glass works display, and for value, taste and variety is not outdone by any in the Pavilion.

In value it runs up into the thousands, for there are several saws in it that are worth from $200 to $400 each. The exceeding taste with which it is put up proves that some member of the firm is possessed of artistic talent as well as mechanical skill, and might turn his attention that way with possibilities of success. Wheels of large magnitude are formed out of minute saws of different lengths. Some containing over a hundred each, others a smaller number. The Centennial year, 1876, is seen neatly constructed of saws not old by any means stars and crosses abound; vines of hand-saws are artistically turned around and through the whole; the whole is surmounted with the company's name in letters of steel saws and paper sections. The whole is beautiful, interesting, instructive, valuable and indicative of the success of the enterprise embarked in only ten years ago. Mr. Spaulding is the inventor of the patent movable teeth bearing his name, which are now in general use in nearly all the large mills on this coast.

The art of forging and tempering large circular and long muley saws, is one possessed by but few workmen, and it is only by securing the most skillful of these and the use of improved machinery that this company have been enabled to command and retain the patronage of the mill owners of this coast. The strong competition and low prices ruling the lumber business has compelled the mills to adopt the best machinery and saws the world afforded and this trade has flowed into Mr. Spaulding's hands. The immense size of the logs produced by our redwood forests, renders very large circulars and long muley saws necessary for economically working them into lumber. One mill on the Mendocino coast has a muley saw 16 feet long, though 12 feet is the common length in most mills for splitting the logs into slabs for the circular, which is usually five feet in diameter. Such a circular costs about $400.

This company also manufacture and exhibit reaper and mower sections, carriers' knives, saw mandrils, saw swedges, crosscut saws of every length, butcher, keyhole, hand and wood saws of every description, of the best quality and lowest price. They deservedly have the patronage of our mill men and mechanics.

The third and most destructive of the crop caterpillars have made their appearance in great numbers throughout Georgia, and farmers are apprehensive of almost a total destruction of the cotton crop through the prairie belt.

"Wild Bill," a notorious frontier character, was killed in the Black hills, the other day, by a pistol shot.

List of Exhibits at the Eleventh Industrial Exhibition of the Mechanics' Institute.

From Entry Book No. 1—1 to 200.

1. A S Hallidie, wire work, etc.
2. Mrs H Kozminsky: 1 quilt, "Job's Patience."
3. Thomas McKibben: 4 iron (patent) wheelbarrows.
4. Mrs M V Kendall: 1 frame of hair work.
5. Mrs P V Merrill: 1 worsted quilt.
6. Miss M Dunlap, Mission and 22d streets: 1 water color painting; 1 painting on china.
7. Mrs Esrl Bartlett: 1 quilt, knitted by an old lady 74 years old.
8. Miss E J Wilcox: 1 case of zephyr flowers.
9. John D Godeus: 1 oil psinting.
10. Miss Annette Jones; 1 basket of wax verbenas.
11. J Hendrickson: 1 inlaid ladies' dressing case.
12. Miss Annie Doble: 1 worsted wreath.
13. Mrs Barbara Smith: 1 knitted bedspread
14. Miss Jessie Redden: 1 patchwork quilt (double Irish chain).
15. Mrs H Forster: 1 case lacteous farina.
16. Mrs A F Smith: ornamental toilet sets made from oiloloth.
17. Walter Phelps: 2 pine cone frames.
18. Mrs Mary Carrigao: 1 patchwork quilt, red, white and blue.
19. Mrs E I Brown: 1 old fashioned log cabin quilt, 2,220 pieces.
20. Sanborn & Duval: 1 set buggy wheels; 1 set lumber wagon wheels; 1 set truck wheels; Duval's patent.
21. Mlle Celine Lemoine: 1 crochet bedspread.
22. Golden Gate Academy: 7 frames of ornamental penmanship.
23. E B Smith & Co: Litton Springs seltzer water in jugs, bottles and kegs.
24. A Kruger: specimens of wood engraving.
25. Mrs N J Healey: 1 vase wax flowers; wax cross, wax basket, worsted wreath and wax wreath.
26. C T Peters: 1 model of full rigged ship.
27. C. Leonard: specimens of machine rope and spiral molding.
28. Mrs Annette Jones, Alameda: 1 wreath (in frame) of preserved ferns, 1 wreath (in frame) of wax flowers.
29. Mrs A C Flood: 1 basket wax flowers, 1 bouquet wax flowers, 1 pond lily (wax), 1 cross (wax).
30. Mrs H Butler: 2 embroidered baby's shawl.
31. Mrs F S Regensberger: 3 pieces needle work.

From Entry Book No. 2—200 to 400.

201. Linforth, Kellogg & Co: 1 Pitt threshing machine, 1 wood beam sulky plow, 1 cultivator, 1 corn sower, 1 sulky rake, 1 harrow, 5 small plows, 1 fan mill, 1 Wood mower, 1 seed drill.
202. M C Hawley: 1 Buckeye self raker, 1 trade engine.
203. Samuel Gray: model twin stairease and elevator.
204. H. Palmer: 35 cases red mountain wine
205. S P Taylor & Co: 33 bundles and rolls book, news, blank langing and blue paper.
206. E M Benjamin: 3 West Coast safety ladders.
207. John Bergstrom, S F.: 1 large church organ, 24 stops.
208. James H Gates: 7 soda water and other fountains.
209. Cal Fertilizing Co: 6 barrels fertilizing materials, guano fluids, etc.
210. E Hook: 4 Townsend's patent tables, called the "household treasures."
211. R W Brehm: turned work from California woods and samples of California woods.
212. F Ogden: 1 Tulloch's automatic ore feeder.
213. Cal Spring Bed and Mattress Manufacturing Co: 4 Crandall beds, 4 curled wool mattresses, 2 bedsteads, 2 cribs and mattresses.
214. Alex Mackay, domestic carpet manufacturing Co: 13 pieces carpet; 66 bundles colored twine for carpet warp.
215. W Paulson: 3 rustic fern cases, 1 rustic bench, 1 rustic chair and 1 turning lathe.
217. Robert A Mortin: 3 crayons framed.
218. A D Hatch, agent: Wendell's patent doorstop and fastener.
219. E K Howes & Co: display of woodenware.
220. Smith Bros: display of borax in all forms.
221. Linforth, Kellogg & Co: 1 Russell's self-raking reaper.
222. F Altman: 1 Lotman's feed mill.
223. F Altman: 1 pony power.
224. Sanborn & Byrne: 4 stair newells and balusters
225. Jas E Gordon: 2 lawn mowers; 1 file show card.
226. Jas E Gordon: 1 chain forge and tools.
227. J Gray & Co: 8 spring beds, 3 bedsteads 1 crib.
228. Jos Browell: a large collection of patent chimneys and chimney tips.
229. H O Reichardt: display of hardware.
230. Linforth, Kellogg & Co: 1 Maosfield threshing engine.
231. D M Osborn & Co: 2 No. 6 Wheeler combined reaper and mower, 1 No 6 mower (Wheeler), 1 No. 5 mower (Wheeler), 1 Kirby mower No 1, quantity of sections and knives.
232. D S Dow: specimen of penmanship.
233. W S Moses: pastry bureau.
234. O R Coe: 1 lifting machine, 1 Fairbank's platform scale, 1 lounge, 2 chairs. Mason's reactionary lift.
235. S C Gray: 6 sides "Union Crop" sole leather.
236. Geo F Atkinson: articles of California wood (turned).
237. Geo F Atkinson: 1 J A Fay wood turning lathe.
238. H Palmer: samples of California wine.
239. John V Hoffman: case contained cylinder writing desk.
240. H N Cook: 1 coil double leather belting, 2 doz leather fire buckets, 1 doz bullion leather bags, 4 leather mail bags, 8 canvass express bags, 3 press packings, 7 hides of lacing leather.
241. R A Martin: 17 frames of photographs and crayons.
242. Cal Bellows Co: 1 smith's bellows.
243. Thompson Bros: 3 vault covers for pavements, etc, 1 ring, 6 illuminating titles.
244. Hutchings & Co: samples of refined and crude whale oils.
245. Hueter Bros & Co: case of samples of varnish, 26 cans, show-case containing 86 fancy jars of colors, frame containing brushes, frame containing bronze and other metal powders.
246. A L Bancroft & Co: 11 frames with samples of printing and lithography, 1 case illustrating the process of zincography, 5 mounted maps.
247. Rubber Paint Co: samples of rubber paint, various colors.
248. Linforth, Kellogg & Co: 1 Fish Bros 4-spring wagon, 1 Meyer's gang plow.
249. Newmao Beonett: 2 soda fountains, 1 case Rimmel's perfumeries, miscellaneous assortment valentines, bon bons, etc.
250. Locke & Montague: marbleized iron mantles, nickle-plated grates, fancy coal vases, polished fire irons.
251. R Russly: miscellaneous collection of Chinese and Japanese fancy goods.
252. Joseph Bros: 33 boys' clothing stands, with clothing attached.
253. F A Huntington: 1 shingle machine and jointer.
254. John E Perkinson: flexible Harrow "Inverted Diamond."
255. Howard & Morse: 10 rolls wire cloth.
256. H Williams & Co: display of Yerba Buena bitters.
257. Frank Bros & Co: agricultural implements, viz: separator, steam stacker, farm wagon, harvester. binder. reaper, mower, gang plows, cider mill, grain drill, seed sower and Hoadley's engine.
258. W E Garratt & Co: steam pumps, brass goods, church bells, and general assortment of engineers' findings.
259. E O Hunt: 2 Centennial windmills.
260. S F Journal of Commerce: products of California, wool, seeds, etc.
261. John W Quick: 33 perforated screens. various sizes.
262. Geo Hayes & Co: 2 patent skylights, design for metal window, specimens of galvanized iron work, specimens of zinc work.
263. J Hendy & Co: 2 concentrators, 1 ore feeder, 1 lathe, 1 planer
264. Hakes & Carroll: 1½ doz Ellis' patent burners and regulators, ½ doz globes and holders, 1 toy table (Francis patent), 1 doz Stockwell self-lighting gas burners, 1 patent test metre.
265. Seward Cole: asbestos material.
266. Mrs Westwater: picture "Magdalen."
267. Peter Burns: display of ammonia soap.
268. Gray & Winslow: zinc monuments.
269. H Fishbeck. display of toilet, bleaching and common soaps.
270. Chas Otto: 1 show case contained cutlery and mechanics' tools; lot of hinges and sample board.
271. Linforth, Kellogg & Co: Fish Bros' platform wagon.
272. M C Hawley & Co: 1 gold medal separator, 1 portable steam engine, 2 French burr stone mills, 1 challenge feed mill, 1 Buckeye drill, 1 Deere gang plow, 2 Deere single plows.
273. M C Hawley: 1 Regulator windmill, 2 Rumsey pumps, 1 corn and cob crusher, 1 Schuttler's spring wagon.
274. S F Gaslight Co: Preparation of ammonia.
275. M C Hawley: 11 Enterprise coffee mills, miscellaneous collection of hardware, sample card of fancy butts.
276. J C Bidwell: Agricultural steels and iron ware, cast steel castings, carbon bronze for journal bearings.
277. Dr W S Beebe: Case of dental goods.
278. Snook Bros: Artificial stone for floor and pavements.
279. M G Griffin, agent: 3 Bickford's family knitting machines.
280. Linforth, Kellogg & Co: 1 Enterprise coffee mill.
281. Hartshorn & McPhun: Window shades, rollers, and opaque shade cloth.
282. M C Hawley: Perpetual hay press.
283. Savage & Son: Ranges, vase, and fountain, mantels, grates, dumb-bells, swedge blocks, tire upsetter. radiator.
284. W C Quimby: Six statues.

From Entry Book No. 3—400 to 600

401. J E Firman: pen drawing, ornamented with water colors.
402. H C Langrehr: 2 drawings, 1 heading machine and 1 burring machine.
403. Ventura Rock Soap Co: 40 boxes rock-soap.
404. P D Paul: 11 patented chimney tops.
405. J J Agnew: 1 cabinet of lava specimens.
406. Moody & Farrish: 1 glass case of wool.
407. S G Hanzsche: 1 child's play house.
408. G A Raymond: 23 cases scales.
409. Redington & Co: 1 stand flavoring extracts.
410. Yates & Co: 5 barrels, 2 baskets and 8 boxes of lamp goods
411. Tubbs & Co: 33 coils of rope, 1 package of hemp.
412. E A Hubbard: 5 desks, 6 chairs.
413. Gladding, McBean & Co: 39 pieces iron-stone sewer pipe.
414. Alta Soap Co: 43 sample boxes of soap, 1 show case sample.
415. I Ash: 1 ornamented fur, 1 show case, samples of dyed furs.
416. C Allison: 3 drill sockets, 4 drills.
417. John A Guffigao: 1 specimen of penmanship.
418. C J Williams: 1 lap board, ladies' sewing table, 1 child's folding toy table.
419. G A Raymond: 9 boxes of scales, 1 combination beam.
420. Cal Bleaching Soap Co: 9 boxes of soap 1 show-case samples soap, 1 show-case samples wool.
421. Pacific Corrugated Stovepipe Co: 25 pieces corrugated elbows.
422. A Romao & Co: a general assortment of desks, blank books, stationery and fine hooks.
423. C J Kiog of William & Co: a general assortment of hermetically sealed goods. pickles, jellies, etc.
424. W K Vaoderslice & Co: a general assortment of silverware.
425. Main & Winchester: 1 fine silver-mounted geot's saddle, 1 fine side saddle, 6 doz fine buggy whips, 3 doz fine lap robes, 20 sets fine buggy harness, 3 doz fine stage lashes, 2 doz fine stage stock, 3 doz interfering boots, 1 doz fine horse blankets, etc.
426. W S Townsend: 2 silver-plated show-cases of caodies.
427. Weed & Kingwell: a general assortment of bells and brass work.
428. Wm Rowland: 1 quilt that was made 96 years ago.
429. Kohler & Ritter: 3 show-cases California make sterling silverware.
430. F Marriott: three fancy rugs.
431. Ed Newmano: 1 pencil drawing, title "The Germao Poultry Dealer."
432. Herman Glanch, 1 frame fancy penmanship.
433. Lancaster & Northon: 24 pieces of cloth.
434. Hammam Baths: 2 Turkish bedsteads, 2 Turkish stools, 2 Turkish mattrasses, 2 Turkish pillows, 1 Turkish table, 3 Turkish towels, 3 Turkish sheets, 2 Turkish brushes, 2 Turkish gloves, 2 Turkish scrapers.
435. Hoey & Taylor: 3 patent sofa beds
436. Mrs N F Forsman: 1 rug.
437. Mme H Cantel, lace meuder: 1 show-case containing a general assortment of laces and curtains done up.
438. Mrs G F Haustorf: 1 hair wreath; 1 bouquet
439. Albert G Nye: 4 oil paintings in gold frames, 2 pieces sea mosses in frames, 2 pieces sea mosses under glass shades, 1 sign in frame.
440. J Renz: a general assortment of herb bitters, blackberry brandy and bonanza bourbon whiskey.
441. R W Jackson: 2 show-cases abalone shell jewelry.
442. Low & Chartoey: 14 pieces cast iron work.
443. Mrs J H Nevins: a hat made of 2,500 pine leaves.
444. Jas S Cosgro & Co: a model of a life boat.
445. J R Gates & Co: a show-case containing a general assortment of drugs, etc.
446. W I Tustin: 1 model of an economy windmill, 1 eagle horse power windmill. 1 economy horse power windmill, 1 dairy queen horse power windmill.
447. Miss Anoette Jones, 1 wax wreath.
448. Hall Treadle Manufacturing Co: 6 Home sewing machines, 5 shuttle home sewing machines, 1 Hall treadle jig-saw, 1 Hall treadle grinding machines, 2 models, 1 large and 1 small.
449. T Duffy: 2 rustic vases, 5 rustic stands, different sizes, 1 rustic large double jardeniere, 1 rustic whatnot, 1 rustic table inlaid, 2 rustic sofas, 1 rustic glass fern case, 3 rustic ornamented boxes.
450. Elizabeth Garton: 1 bedspread woven in the year 1786.
351. George McIntyre: 1 kitchen accomodation chest.
452. D S Hutchinson: 1 glass shade specimens of mechanical dentistry.
453. W Hyde: 2 child swings, 2 adult's swings, 1 swinging hobby horse.
454. Mrs Albert G Nye: prepared sea mosses, 3 moss albums.
455. Mrs. J P Murray: 1 Afghan.
456. Mme Mourgeaoon: 1 Turkish fancy spread, 1 fancy rug, 1 embossed picture, toilet articles.
457. Miss A W Baker: a general assortment of Boston dress reform undergarments and combination shoulder brace corsets for ladies and children.
458. Mrs Davison: 1 bouquet hair flowers.
459. Figer Bros: a general assortment of brushes and patent brooms.
460. Mrs R Eppler: an assortment of hair work.
461 Hill & Beebee: samples of the chemical wonder.
462. Mrs D W Rich: 1 frame worsted wreath, 1 glass shade worsted birds.
463. Polheim & Lancaster: a general assortment of cloth and custom made clothes.
464. Flint & Peabody, paper barrels, paper buckets, ¼ barrels, ½ barrels.
465. Mrs Annette Clark: 4 specimens of needle work.
466. John West: 1 Centennial palace squirrel cage, 25 ladies' favorite sewing, cutting, and toy tables.
467. Mrs Sullivan: 1 show case stamps and stamped goods, 1 show case embroidered goods.
468. Woodward's Gardens: 3 cases animals, birds, and specimens of natural history.
469. Mrs Martin Scott: 5 pieces tatting.
470. Chas W Deares: Specimens of poster engraving.
471. J M Brown: 1 piece tappa cloth, 2 pieces coral.
472. E T Buckham: 8 pair side lights, 2 binocle lamps, 1 masthead lamp, 1 bulkhead lamp, 4 bracket lamps, 1 swinging lamp, 2 police lamps, 2 hurricane lamps.
473. B H Freeman & Co: stair builder.
474. Mrs Mollenbush; 2 worsted pictures in frames.
475. Mme Celine Lemorine: 1 crochet bedspread.
476. Mrs H Enright: 2 patchwork quilts.
477. R Alexander: 1 glass shade wax fruit.
478. Hiram Yaw: 8 cow and sheep bells.
479. B C Vontall: 24 Bishop's Directories.
480. W G Halsey & Co: 3 Kendall's hydrostatic safety lamps.
481. Lachman & Jacobi: A general assortment of wines and brandy.
482. Conklin & Co: 1 frame stereoscopic pictures.
483. Wm Stokes: 1 architectural design.
484. Mrs Moore: 2 patchwork quilts.
485. J R Walton: 1 milk wagon and cans.
486. Mrs M Kickeos: 1 crochet bedspread, 1 crochet tidy.
487. Mrs G W Tuthill: 1 embroidered quilt.
488. C Boeroer: 1 square piano, 1 upright piano.
489. Madame Balcear: 1 frame testimonials, 1 frame photographs, 1 case hair restoratives.
490. Bergman Bros: A general assortment of Sacramento pottery, Rockingham stone, yellow earthenware, and terra cotta.
491. N Clark: A general assortment of Pacific pottery, iron stone, sewer pipe, fire brick, etc.
492. Palmer, Knox & Co: 2 patent suction and pressure blowers.
493. Jas E Gordon: 1 show card handles, 1 show card tacks. 1 show case locks.
494. McCue: 1 platform hatcher wagon.
495. Ernest Raosom: 1 straw burning machine.
496. Pierre Dutripon, 1 carved woodeo table.
497. Mrs S Wilson: 1 Centennial quilt.
498. Mrs Cole: 1 patchwork quilt.
499. Domestic S M Co: 7 sewing machines, 1 sewing machine table, 2 cases of fashions, 1 lambequin, 6 trimmed suits.
500. Frances J Ware: 2 lace tidies.
501. Edward G Decolstoo: 2 show cases of silver ware (plated), 1 amalgamating plate (silver plated).
502. Edward Levy: 1 show case Centennial erasive soap.
503. Miss Frankie Williams: 4 framed pencil sketches.
504. Mrs. Heyman: Samples of lace and insertion, hand made.
505. C J Williams: 1 ladies' lap sewing table, walnut.
506. Stockton & Edwards: 4 patent stepladders, 1 ladies' invalid chair, 1 section of ornamental fence.
507 W H Wing & Co: Lasts, finished and unfinished, boot trees, shoe trees, crimps, clamps, and stretchers.
508. Miss E Leotall: 2 crochet tidies, 2 bead pin-cushions
509. Mrs B S Harrison: 1 silk bed quilt, 4,114 pieces.
510. Holbrook, Merrill & Co: A general assortment of stoves and ranges.
512. C Donner & C Suhl: 1 hay cutter and grain sheller.
513. C F Marwedel: 1 case of machinists' tools, 2 sample boards of molder's tools and set screws, 2 wire screens.
514. E H Marwedel: 1 sample board of stair rods. 1 sample case of dog collars, pictures, knobs, and nails.
515. Standard Soap Co: 1 glass case toilet soap, sample of soaps and washing powder.
516. Theodore Hermann & Co: 1 Theo Hermann aquarium, 2 show cases shells, selections from the reserve cabinet of T Hermann, 1 show case specimens of bird skins.
517. D B James, Visalia: model of one-track railway and track.

CLEOPATRA'S NEEDLE.—The proposal to bring over this famous monolith and re-erect it in London having apparently met with no response, some of the good people of Glasgow are bestirring themselves with a view of appropriating the obelisk as an ornament to the "western" metropolis. Glasgow possesses many good sites, and has at present few monuments of any sort, and probably government would interpose no obstacles in the way. It is not generally known that besides the obelisk standing in Alexandria, close to the terminus of the Ramle railway, there is another in much better condition lying prone at its base. Both were originally erected in Thebes, then in the hight of its glory, and at a much later period removed by the Greeks to Heliopolis, near Cairo. The Romans still later brought them on to Alexandria, placing them where they now are, subsequently to which that which is now prostrate was thrown down, and buried in drifting sand. To this is doubtless owing its better preservation. It was discovered by Mehemet Ali about 60 years ago, while engaged in restoring the fortifications of the city, and by him offered to this country. It is said to be in very good condition; and if the Glasgow people have public spirit enough to raise the moderate sum necessary for its transport to the banks of the Clyde, nobody will begrudge them its possession.—*Iron.*

MECHANICAL PROGRESS.

The Cornell Measuring Machines.

The mechenicel engineering department nf Cornell nniversity seems tn be alive and eccomplishing eome orlginal and valuable work. The latest achievement is a measuring machine of which the following description appears in onr Eastern exchanges.

The measuring machine thoogh useful for other purposes, wes specially designed for the mannfactore of standard gaoges, and measure from 0° to 12″ to 1-10,000th of an inch, which is as fine as it is practicable to work in ordinary machine shop ose. The machine, although resembling a lathe, is only about 18 inches in length, and has the three legs cast with the bed and is made to set upon a table or bench. Tho measuring screw has 16 threads to the inch, and the gradoated wheel is divided into 625 equal parts, so that the movement of the wheel, one of those divisions, changes the distance between the measuring points of feelere the 1-10,000th of an inch.

The screw has a travel of a little more than one inch and the length of the thread on the screw and the thread in the nut are eqoal, so thet the wear will remein equal. The handle for turniog the wheel is not fixed in the wheel itself, bot to a friction bar, which by the central nut is set so as to give friction enough to just turn the screw, yet not so mnch but thet it will slip when the two measuring pointe or feelers come in contact.

The arm or index from which the reading of the machine is made is not fixed firmly to the body of the machine, but it is threaded opon the projecting boss and is moveble back and forth, so that in adjnsting the machine it is not necessary to set the beck feeler with great accoracy; for when it ie set nearly correct aod the two feelers brooght in contect, the iodex can be torned beck or forwards until it coincides with the zero mark on the wheel.

It was the aim to make the screw 16 threads to the inch, and if it had been perfect then, the index from which the reeding is taken shonld exactly coincide with the axis of the screw; bnt the finished screw proved to vary about one in 5,000, and hy cutting the index to the proper angle this imperfection was corrected to the greatest accuraoy.

To nse the machine for measuring pieces longer than one inch, and less than two inches, the foot-stock is set back about one inch, a standard inch piece is set between the two feelers, and the handle turned until the friction ber again slips; the index is then moved until it coincides with the zero mark; and so by using a set of staudards varying by inchee from one to eleven, all sizes up to a foot can be measured, and the machine is elways adjusted at the time of taking the measnrement.

Sheffield Comino to Americe.—It is reported, says the Boston *Advertiser*, and apparently it is to be believed by those who should be most interested in knowing whether the report is trne or not, that there is to be an exodns of British steel manufecturers to this country. All that is positively known, however, is that one large Sheffield firm has been buying property in the vicinity of Syracuse, with the intention of going largely into the manufactore of steel for tne American merket. It is said further that there has been some sort of a hitch in the arrangements, and that the enterprise is not yet wholly certain to be undertaken. There ie, of oourse, no sort of objection to the coming of Britieh makere of steel, if they think they can make any money by so doing. We ehould encourage them to come and bring their capital with them. The field ie open to them. If they come it will be a new triel for the system of protection. Moreover, the threetened invaeion of the United States by the Britieh manufactnrers is n good symptom in another aspect. The iron nnd eteel trades are in a condition by no meens preeperous et present, either in this country or in England. This fact is ae well known to the Sheffield manufacturers ns it is to oe. If, therefore, they see fit to transfer their hueiness to this country in the present season of depreesion, it ie an indication thet they thiok the day of great prosperity for the trade in England has passed, and that they believe the United States will become the best field for the exeroise of their trade.

A Large Belt.—One of the largest leather belts in the world was recently made in England for a large cotton epinning mill in Bolton This helt, mede of the best English leather, is three feet eight inches in width, and 90 feet in length; donble or two tbickneeses without a single oross joint from end to end, and of equal thioKness throughout. The belt is for driving direct from the fly wheel of the engine, and to transmit 350 indicated horse power. The same establishment recently manufactured two other double belts, each 29 inches wide, driving direct from the fly wheel of the engine. The driving pulley is 28 feet in diameter, and five feet on the face, oromed or turned up for the two belts, which travel throngh 4,500 feet per mioute, transmitting 600 indicated horse power. Such belting ie claimed to be particularly adapted for driving, and has the advantage of running perfectly straight.

Retuaning Steam to the Boilen.—Our London exchange, *Iron*, says that a novel experiment was oommenced nn Friday with the 80 horse-power engine in Portemonth dockyard, ft was with a new pnmping process, hy which the inveotor, Mr. R. M. Marchant, of Hatton Garden, nndertakes to return satorated steam to the boiler of any engine, inetead of coudensing steam from the cnndensors. In other words, after the steam has exerted its power in the cylinder, the manufactured article itself is to be taken up and re-pnmped into the boiler so as to he used afresh. Mr. Marchant claims for his invention that he is ablo to re-pump steam into the boiler withont any expenditure of foel beyond that which is required to overcome the mere friction of the pumps, and without subjectiug them to pressure. The inventor contends that hy the law of geses the pressure exerted by steam on one side of the pistou represents hy its elastic power, as in the case of the resistance of a spiral spring, the same expression of power in pressure on the other side of the pistoo; so that the elastic charge is always ready to give back the exect power expended to the purpose of its expressiou. Consequently, if Mr. Marchant's reasoning be correct, he expects to he able to retnrn in volume and pressnre to the boiler the equivalent of the power expended on the pomps, and eo to apply the steam again to power. It therefore follows that, inasmnch as returning boiliug water into the boiler saves the cost of reboiling it, to return steam into the boilers, as steam will save the far greater cost which is expending in msnofscturing it. As steem coste 75 in the the 100 of the fuel which is consumed in its production, the saving which will he effected by the eucessful application of the principle will be great.

Great Belts.—The correspondent of the *American Manufacturer* tells how the large helts in the machinery hall ot the Centenuial are made: There are three very large belts, the smallest a double one, 30 inches wide, the next 36 inches wide, and the largest, three feet wide and 148 feet long; this lest weighing 1,130 poonds. One belt, 15 inches wide, wes used at the Franklin institute exhibition in 1874, when it trsnsmitted 90-horse power to the different machinery there exhibited. This style of belting is made by cementing between a given nnmber of thicknesses of leather—according to the strength desired—a certain nomber of layers of heavy cotton oanves, and riveting or stitching throughoot its length. The canvas is taken from a roll without a break in the entire length. One party having tested this belting shows one two and a half inches wide that broke at 3,100 pounds tension, while another of same width, with two ply of csnvas, broke at 5,100 pounds tensiou. There are various ways shown of splicing leather belting; some have steel bands passing through, others sewed with raw hide and waxed thread, others egain are riveted with copper or iron rivets, and many are sewed with raw hide and pegged. We are told that in making the wide belting of dooble thickness the hides are ent along the middle, the back edges turned outwerd and side edges inwnrd, inserting a center piece to joints widthwise, thus stretching the center of the belt more then the edges, causing it to take a firmer hold on the pulleys.

A Great Army Cook Shop.—The Germau government hes just completed en immeoee establishment at Mayence for preparing provisions for the army in time of war. The main building is more than a thousand feet long, with four exteusive wings. A railway branch rons directly into the grounds. Two engines of 1,800 horse power are used to run tho mahinery. The water ie drawn from welle fed hy the Rhine, and ie pumped up hy steam into a reservoir whioh will hold about 500,000 gallons. When the manufactory is in foll work it will be capable of boiling down and condensing 170 oxen per diem, grinding 350 tone of flour, and of making 300,000 loaves of bread. It will also be ahle to supply enough preserved oats for a day's feeding of the horses helonging to an army corps of 280,000 men. To guard as much as poesible against fire, the whole of the buildings, including the roof, are of etone aud iron.

Parallel Rules.—For linee parallel to the sides of the drawing boerd, the T-equere is the best poesible parallel ruler, end may be used in conjunction with set square of 45 deg. for miter aud similar linee. The set square of 60 deg. by 30 deg. will give inoreased faoilitiee in setting ont many ornamental geometrical forms. A T-square with ehifting head is also very useful; bot as ordinarily made it is clumsy. For parallel lines not falling within the range of the T aud set squares, the best tool, in the opinion of many, is the rolling parallel ruler. Thie is more quickly set to any two points, and more cleanly in uee than any otber form. A plain black ebouy one is beet for general use. A set square and straight edge are used hy many, but they more easily get out of place and soil the paper. Set squeres and T-squares shonld be Frenoh polished, and then they can easily be cleaned.—*Technologist.*

American Machinee in Holland.—The first American eteam-engine in Holland wae eent there some six months ago. The firm whioh received it has since ordered seven more; and, says the *Moniteur Industriel Belge*, American engineo are competing with English ones not only in Holland, but all over Europe, and not with Euglish engines only, but with all European makes, so that it seeme as if American engineo would soon be found in all European markets, while no European engines will be found in any Americen market.

SCIENTIFIC PROGRESS.

Watering With Chloride of Lime.

Galignani's Messenger, of July 15th, esys tbat in a paper read tn the Academy of Sciences, M. Houzeao states tbat for several years he has been calling the attention of the public in his lectnres on the important application the chloride of lime thrown away as waste by the manufactnrers of pyroligneous acid around Rouen might receive in watering streets. Experience, he says, has confirmed his opiuion. During the last few years this kind of irroration has been introduced into that city with excellent effects, and M. Houzeau thinks it ought to be extended to Paris, at least on the larger public walks, such as the Loxembourg, the Garden of Plsnts, etc. He remarks upon the insofficieney of tbe watering observahle on a Snnday in one of those freqnented places. The ground gets dry very rapidly under the feet of the crowd, and all this populatiou of pleasure-seekers is soon immersed in a dusty atmosphere, which is as disagreeable as it is detimental to health. The fine particles of siliceous matter floating in the air penetrate into the respiratory organe, and causes irritation capable of eggrevating pulmonary complaints already in existence, especielly among children, or retarding oonvalescence. The same may bo seid of certain diseases of the eye. Now, watering with chloride ot lime causes these drawbacks to disappear. It impregnates the soil with matter attracting moisture, which retains a wholesome moisture for a week. Consequently, there is no more duet; the wind can exercise no action on a soil dampened with chloride of lime. This system of irrigation is both saluhrioos and economical. The chloride of the pyroligneous acid manufactories alwaye contain some iron and tarry particles, the diepersion of which in the air cen only he conducive to health. This irrigation is also more economical by 30 per cent. than watering with pure water. On a surfece one kilometre in length and five metres hroad 16 cnbic metree of water are poured in a day at a cost of 10 francs. Tho same surface will only reqnire four cubic meters of the solntion of chloride, at a cost of only seven francs and fifty centimes a day.

Instinct.

Professor Hammond, of New York, relates many instances of instinct in animals: If the entire brain he removed from a frog, the aoimal will continue to perform those fnnctions which are immediately connected with the maintenence of lite. If the web between the toes is pinched, the limb is immediately withdrawn. If the shonlder be scratched with a needle, the hind foot of the same side is raised to remove the instrument. If the animal is held up by one leg, it struggles. If it is placed on its back, a position to which frogs object, it at once turns over on its belly. If one foot is held firmly with e pair of forceps, the frog endeavors to draw it away. If unsoocessful, it places the other foot against the instrument and pushes convulsively to remove it. Not succeeding it writhes the whole body from side, and always in a forwnrd direction. All these, end even more complicated motions, nre performed by the decapitated alligator. I have frequently seen the headless body of the rattlesnake coil itself into a threatening attitnde, and, when irritated, strike its bleeding trunk against the offending body. On one occesion e teamster on the Western plains had decapitated one of these reptiles with his whip, and, when bending down to exsmine it more oarefally, he was struck full in the forehead. So powerfnl was the shock to his nervoos system that he fainted, and remained unconscious for three minutes. A natural historian relates that a viper whose head had been cut off moved determinedly toward its hole in the wall.

Experimente on American Coals.—The National Academy of Sciences hae prepared a memorial to Congress, asking for a continuation of Prof. W. R. Johnston's extremely veloable experiments on American coale (made eome 25 or 30 yeers ago); the intention of the intention of the memorialists being to have the investigation extended to the coals of the Mississippi, and those of the coontry beyond, to the Paoific coast. The principle plea of thie memorial is in behalf of the national protection and the demande of the U. S. army and navy; bnt the seoondary one, in the interest of manufactures and commerce, would present n mnch stronger claim upon the government. Fuel is the primary necessity of modern civilization—the hasis of modern industry, and the development of the resources of the coontry by iovestigation, under national direction end authority, is an unquestionable duty of Congress. No one of the numeroue statistical publications, ever mede by the authority of the United States, has had a larger quotation, or been more practically useful in the arts and eciences than this report of Prof. Johnson, and an equally thorough document embracing the fuel and full resources of thie country would be appreciated in ell lande.—*Jour. Franklin Institute.*

A Russian scientific congress is appointed to meet at Warsaw next September, at which the question of adopting the Gregorian calendar will be cousidered.

Classification of Clouds.

Whenever, on account of some topographio circomstances, the snn beats any locality on the enrface of the earth more than the sorrooniing region, a gentle cnrrent or colnmn of heated eir rises, and its invisible moisture is condensed into small masses of clonds called *cumuli*, which spread and produce the mottle appearance commouly known as "mackerel sky."

But when, as is frequently the oase in summer, a valley, or plain, or island, or any other place, is much more highly heated by the sun than the snrrounding region, the heated air over soch locality rises more rapidly and with more ascensional momentum; and, as it reaches the higher and coolsr regione of the atmosphere, its moistore is condensed into large rounded volumes, or mountain-like masses of *cumulus* cloods. Suoh *cumulus* clouds always precede and charecterize a local sommer etorm or shower.

When the warm horizontel corrent from the south, as in winter, mests with the cold corrent from the north, it slopes upward over the cooler onrreut, and forms stripes or bands of *stratus* clouds along the horizon.

These *stratus* clonds indicate to the observer the fact that a werm current is northward.

When in summer a oool current is moving southwerd, it encounters the werm equatorial or tropical current, whioh again glides upwards and over it, and forms horizontal bands of *stratus* cloods along the opper line of oontact, es in winter storms; hut, in addition, the denser oold air from the north, moving with more momentnm, will lift up the warm end satureted air from the tropics, and its moisture will be condensed into masses of *cumulus* clouds banked up egainst the top of the old current, and arranged over the horizontal *stratus* clouds. Thus is produced the oombination of *cumulo stratus* cloud, whioh is characteristio of progressive sommer storms.

To the tornado clood produoed by a whirl of air, and resembling en inverted cone, Prof. Blasius gives the name of *conus*, which is both distinctive and appropriate.

These four typical clesses of clouds—viz, *cumulus*, *stratus*, *cumulo-stratus*, and *conus*—indioete and characterize the four different olasses of storms.—*Popular Science Monthly.*

Water in Coals.

At the last meeting of the Americen institote of mining engineers, a paper was read by J. B. Britton, giving the following as the result of meny experiments:

1. That water exists in several classes of ooal in two conditions, i. e., combined end uncombined, but in these conditione not constent in relative proportion.

2. That some coals will and some will not, irrespective of the class to which they belong, when finely pulverized and left open to the air gain in weight by taking oxygen, while et the same time they lose in weight by losing water and hydrocerbons, at temperatures varying between that of boiling weter and one that is sofficient for destroctive distillation.

3. That all coals when deprived by heet of any portion of their normal weter, will, upon exposure to the open air at common temperature, immediately begin to regain their loss. It therefore follows that oorrect weighing ceunot be doue with the material uninotosed.

4. That the metbod of determining the water by merely finding the loss which the ooal sustains by drying for one hour at 212° Fah., or for any length of time or at any temperature, whether over eulphuric acid or not, gives falteioue results.

How to Burn a Diamond.—In the ordinary experiment of borning a diamond in oxygen the diamond hae to be raised to its firing temperature by meane of the oxyhydrogen blowpipe. The procese ie eomewhat troublesome and not wholly without danger. Besides, the employment of very small fragments is prevented, as these cnnnot be easily handled io the blowpipe jet; and they readily go out again on heing introduced into the vessel of oxygen. These difficulties, eaye M. Blinder, of the German chemical eociety, may be evoided hy employing magnesium. The diamond ia pot on a emall piece of magnesium ribbon, and thie in en earthenware capsule, whioh ie then throet into a combnetion-tnbe about 200 mm. in length, and which is connected with a gaeometer. From the letter a current of oxygen is passed throngh the tube into a veeeel of lime water ontil the air is driven out. The part of the tube where the diamond is is then heated with the flame of a Bunsen burner. Soon the magnesium kindles aud inflames the diamond, which, with moderate admission of oxygen, slowly burns, while a precipitate is formed in the lime water. Whenever the magnesiom takes fire the Bunsen burner ie removed. Foliated graphite (from Ceylon), treated by this method, does not burn; thus confirming Roee's observation that this suhetance is less combostible than the diamond.

Purification of Oils.—A procese said to be employed with succees in Englaud, consists, instead of agitating the oils by mechanical meane, in agitating it by foroing a stream of air throngh it hy means of a syetem of perforated pipes at the bottom of the containing vessel. Sulphuric acid is cautiously added to the oil during the operation, and the remainder of the process follows the usual oourse.—*Polyt. Notizblatt.*

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 Wk to Aug 5.		1 Wk to Aug. 10.		1 Wk to Aug. 17.		1 Wk to Aug. 25.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	....	....
Advance	....	....	....	....	....	....	....	....
Alpha	40	43½	44¾	41¾	49	41¾	63	47½
Alta	4⅜	3	4	3⅜	3½	3	3	2¾
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	....	....	1¾	1	1	1	1	....
Andes	2¾	2½	2⅝	2½	2½	2	2½	2¼
Alps	1¾	1½	1⅞	87½c	50c	....	51c	....
Amazon	55c	....	50c	....	....	....	....	....
Balt'm'e Cou	2½	2	2½	2⅛	2⅛	1½	2⅜	2⅛
Belcher	19¾	17¾	22	19¼	23	20¼	23¾	22½
Belmont	3	2¾	2¾	2	2⅝	2½	3	2¾
Best & Bel	49	46	50¾	48¾	49½	46	50¾	48¾
Buckeye	....	....	....	....	....	....	....	....
Bullion	43⅜	42	49	43	47	44½	55	49
Caledonia	10⅜	10	10½	9	8¾	7½	8½	7½
California	67¾	61¼	66	61½	61½	58¾	60	58¾
Challenge	4½	4	4¾	4½	4¾	4¼	4½	4
Chollar-P'tsi	101	84	96¾	92	94	87	97½	94
Confidence	17¾	16¾	19¾	18	19	17½	19¾	18¾
Con Imperial	5¾	4¾	5¾	5	5½	5	5⅝	5¾
Con Virginia	60¾	51½	59	54	61¾	54¾	62	52¾
Crown Point	12¼	10¼	14½	12¼	13¾	11½	12⅝	11
Coso Cou	35c	30c	39c	....	35c	25c	70c	30c
Dancy	....	....	....	....	....	....	....	....
Dayton	....	....	....	....	....	....	5½	5
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka(G V)	....	....	....	....	....	....	....	....
Eureka Con	13½	12	12½	11¾	12	11	11¾	10¾
Exchequer	16½	15¾	17¾	16	17¼	16½	21	17¼
Enropa	....	....	....	....	....	....	....	....
Gila	62½c	55c	75c	60c	1	75c	1	75c
Globe Cou	10c	10c	20c	12c	16c	10c	15c	....
Golden City	50c	40c	45c	10c	1	87½	1	1
Gould & Car	17	16¾	17½	16	15¾	14	15	14½
Hale & Nor	12¼	10¼	12¼	10	11	9¼	11	10¼
Ida Ellmore	....	....	....	....	....	....	....	....
Jefferson	....	....	1	75c	1	75c	1	87½
Julia	9¾	8½	9½	8½	9¼	8	9	7¾
Justice	26¾	24	25	24	24	22¾	28	24½
Jackson	3⅝	3½	3¾	3½	3½	3	3½	....
K K Con	....	....	1¾	....	....	....	2¼	1½
Kentuck	13	11½	13¾	12½	13½	12	13⅜	12
Knicker'r'r	50c	30c	80	62½	62½c	....	....	75c
Kossuth	1⅜	1½	1⅜	1¼	1⅜	1	80	75
Lady Bryan	1½	1	1¾	1	1½	80c	1.25	72½c
Lady Wash	2½	2¼	2⅜	2½	3	2½	3	2⅜
Leo	1⅜	....	....	....	....	....	....	....
Leopard	12¼	10½	12	10¼	12	10½	12¼	10⅞
Leviathan	87½c	75c	1¼	1	87½c	75c	1	87½
Mahogany	....	....	....	....	....	....	....	....
Mansfield	....	....	....	....	....	....	22½	....
Meadow Y	35c	32c	50c	....	50c	37½c	....	25c
Mexican	40	35½	36¾	33⅜	35½	31½	36¾	34⅜
Mides	....	....	....	....	....	....	....	....
Miut	50c	....	25c	....	25c	....	25c	15c
Mouitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	2	75c	1	95c	1	75c	81½	....
Niagara	20c	....	23c	....	....	....	....	....
Northn Belle	21	17	23¾	21	25½	20	23½	18¾
New Coso	2¾	2½	2¾	2½	2⅝	2	3⅛	2¾
Occidental	4¾	3¾	4¼	3½	3¾	....	3¾	3⅜
Ophir	53	46¾	53⅞	51½	52¾	47⅜	56⅞	51⅜
Or Gold Hill	....	....	....	....	....	....	....	....
Overman	83½	74	83½	77½	79	74¾	77½	74¾
Pacific	....	....	....	....	....	....	....	....
Phil Sheridu	1¼	....	1¼	....	75c	....	50	....
Pioche	....	....	....	....	....	....	....	....
Poorman	....	....	....	55c	....	20c	6c	30
Prospect	6½	6	7½	6½	6½	5½	6	6
Pioneer	....	....	....	....	....	....	....	....
Ray & Ely	9	8½	9½	8	8½	8	8¾	6½
Rock Island	3⅜	1⅝	2	2	2	1¾	2	1¾
Rye Patch	....	....	....	....	....	....	....	....
Savage	23½	19½	21¾	20	21	18	20½	19
Seg Belcher	80	70	87	79	88	78	....	80c
Sierra Nev'da	17½	15½	16¾	14¼	15¾	14⅜	14¾	14
Silver Hill	7	6	8	7½	7¾	7½	8½	8¼
Sth Chariot	30c	....	25c	....	25c	....	2 c	20c
Soccor	25c	....	25c	20c	75c	....	....	....
Union Cou	16⅜	15½	15½	14½	14⅞	13¾	15	14½
Utah	19½	17½	19	18	23½	19½	22¼	21
Wells-Fargo	14	12¾c	30c	25c	28c	17½c	30c	....
Woodville	1⅛	1⅝	2¼	1¼	2	1½	1¾	1¼
Yel'w Jacket	30	26	32½	30½	31⅝	29½	24½	22

Sales at S. F. Stock Exchange.

FRIDAY, A. M., AUG. 18.

375 Alpha.....47½@48
100 Andes.....2¼@2⅜
10 Alta.....3
20 Belmont.....49@50
385 Best & Belcher.....49@50½
110 Belcher.....22½
410 Baltimore Cou...2¼@2⅜
925 C Point.....11@11¾
1170 California.....60@59¾
25 Confidence.....18¾
385 Caledonia.....8@7¾
304 Cromer.....2
75 Challenge.....4½@4
5165 Con Virginia.....58@59
490 Con Imperial...5¼@5½
60 Cosmopolitan.....14c
20 Dayton.....5½
50 Exchequer.....22
225 Gould & Curry.14¾@14¾
210 Hale & Nor.....10¾
340 Justice.....23¾@23¾
130 Julia.....8½
140 Kossuth.....7½
150 Kentuck.....13
1250 Lady Bryan.....80c
160 Leviathan.....50c
50 Lady Wash.....2¾
40 Mexican.....34½
480 Mint.....15c
150 Maryland.....62½c
30 New York.....57½c
185 Con Va.....51¾@51½
470 Ophir.....51¾@51½
140 Overman.....14¾@15½
20 Occidental.....3¾
410 Savage.....19¼@19½
200 Sierra Nevada...14½@14¾
230 Succor.....47½c
300 Trojan.....90@85c
1055 Utah.....22¼@22½
375 Union.....14¾@15
50 Woodville.....1½@1¾
245 Ward.....8
835 Yellow Jacket.....32½@33

AFTERNOON SESSION.

10 Alpha.....47¾
1220 Belmont.....3@2¾
160 Best & Belcher.....49½
80 Belcher.....22½
565 Cou Virginia...58¾@59¼
580 Con Imperial.....5¾@5½
50 Chollar.....34@35
1755 Coso Cou.....39@38¾
150 California.....59¾@59½
50 Crown Point...11¾@11½
85 Eureka Con.....11½
150 Gold Chariot.....1.05@1
50 Gen Thomas.....1⅞@1¾
40 Gila.....75c
80 Gould & Curry.....14¾
100 Hussey.....75c
105 Hale & Nor.....10½
500 Jackson.....10¾
100 Jefferson.....80c
140 K K Cou.....1¾
175 Leopard.....10⅞@11
1225 Manhattan.....15¾@16
375 Mexican.....35½@35¾
100 Meadow Valley.37½@40c
1170 New Coso.....3
430 Northern Belle.23½@23¾
160 Ophir.....52½@53
200 Poorman.....60c
100 Panther.....1¾
70 Raymond & Ely...8¾@8
50 Union.....14½
30 Yellow Jacket.....32¾

SATURDAY, A. M., AUG. 19.

250 Alpha.....48@48¾
145 Best & Belcher.48¾@49
120 Belcher.....22½
160 Bullion.....50
130 Baltimore Cou.....2¼
1725 Cou Virginia...57½@58
25 Chollar.....84

250 Crown Point...11½@11¾
1030 Con Imperial.....5¾@6
730 California.....59¼@59¾
10 Confidence.....19
275 Caledonia.....7½@7¾
250 Eureka Cou.....11
585 Exchequer.....17¾@17½
170 Gould & Curry...13@14¾
310 Hale & Nor.....10¾@10½
280 Justice.....23¾@24
25 Julia.....8½
100 Kniekerbocker.....75c
1000 Lady Bryan.....70@75c
2240 Mexican.....35¾@34¼
470 Meadow Valley.....25c
1045 Ophir.....53@53½
160 Overman.....14¾@15
595 Raymond & Ely..7¾@8
16 Savage.....19
230 Succor.....62½c
45 Sierra Nevada.....14½
24 Utah.....21¾@22
480 Yellow Jacket.32½@32¾

MONDAY, A. M., AUG. 21.

1130 Alpha.....50@53¾
50 American Flat.....1
260 Andes.....2¼@2⅜
260 Best & Bel.....49¼@49½
126 Belcher.....22¼@21
90 Seg Belcher.....18
400 Baltimore Con...2¼ 2⅜
20 Confidence.....18¾
330 Caledonia.....7½@8
330 Crown Point...11¾@11½
1750 Cal'fornia.....59¼@59½
988 California.....59¾@59½
1265 Cou Virginia ...54@53¾
65 Chollar.....55
50 Challenge.....4¾@4½
100 Cosmopolitan.....14c
350 Cromer.....2½
120 Dardauelles.....1
70 Exchequer.....18@18¾
515 Gould & Curry...14¾@15
360 Hale & Nor.....10¾@10½
250 Justice.....23¾
125 Julia.....8½@9
55 Kentuck.....13
150 Kossuth.....7½
200 Lady Bryan.....1¾
250 Leviathan.....70c
2605 Mexican.....36¾@36
1000 Maryland.....62½c
150 Mint.....22½@23c
300 Monumental.....8c
4090 N Cou Vir.....75c
50 New York.....57½c
1425 Ophir.....54¾@55¼
140 Overman.....16⅞@16
1 0 Prospect.....5¾@6
470 Rock Island.....2@1¾
160 o Hill.....5¾
120 Sierra Nevada..14½@14¾
470 Savage.....19¾@19¾
200 Succor.....80c
70 Trojan.....85@80c
210 Utah.....21¾@22
241 Union.....14¾@14¾
300 West Belcher.....2¾
50 Woodville.....1½
175 Ward.....1¾
995 Yellow Jacket.....33

AFTERNOON SESSION.

185 Alpha.....51½@52½
30 Alps.....50c
85 Best & Belcher.49¾@49¾
20 Be mont.....3
255 California.....59¾@59¾
3800 Ooso Cou.....60@30c
765 Cou Virginia...53¾@54
800 Con Imperial...5¾@6¾
210 Eureka Con.....11
120 Gen Thomas.....1⅞
40 Golden Chariot.....1 05
650 Hussey.....90c@1
10 Hale & Nor.....10¾
100 Julia.....8½

90 Jefferson.....1@87½c
320 Justice.....24@23¾
100 K K Con.....2
1335 Leopard.....11¾@11¾
420 Mexican.....36¾@36¾
750 Meadow Valley 10@7½c
1270 Manhattan.....15½@16
710 Northern Belle..20½@20
112 New Coso.....3@3¼
6 5 Ophir.....56¾@56¾
470 Prospect.....6¾@6¾
900 Panther.....1½@1¾
50 Ray & Ely.....7¾
200 South Charlot.....20c
60 Utah.....22¾
910 Union.....15¾@14¾
190 Yellow Jacket.....33¾

TUESDAY, A. M., AUG. 22.

1230 Alpha.....54½@57
100 Alta.....2¾
60 Andes.....2¼
600 Best & Belcher.49¾@49¾
475 Belcher.....22½@23
70 Bullion.....52@53
1 0 Baltimore Cou.....2¾
555 Caledonia.....8
20 Chollar.....9 @95
300 Cromer.....2¼
825 Con Virginia...53¾@54¾
165 Crown Point.....12¾@12
935 California.....59½@58¾
2385 Con Imperial...5½@5¾
50 Dayton.....3
925 Exchequer.....20¾@19¾
680 Gould & Curry...14¾@15
255 Hale & Nor.....11¾
380 Justice.....24½@24
784 Julia.....8½@9
175 Kentuck.....13½@13
100 Kossuth.....7½@8c
630 Knicker.....75c
570 Leviathan.....1@75c
800 Lady Bryan.....80@85c
2922 Mexican.....33½@35¼
1000 Monumental.....9c
455 Maryland.....75@62½c
70 Mint.....25c
130 Northern Cou Vir.....25c
150 New York.....57½c
50 Occidental.....3¾
2782 Ophir.....55¾@51
240 Overman.....77½@76
320 Prospect.....6¾
385 Savage.....19¾@19¾
520 Sierra Nevada.14¾@14½
50 Silver Hill.....8
5 Soo Belcher.....80
250 Succor.....60c
490 Trojan.....95c
725 Union.....15
59 Utah.....20½
200 Yellow Jacket.....32½
195 Woodville.....1¾
970 Yellow Jacket..33½@33¾

AFTERNOON SESSION.

270 Alpha.....54
790 Belmont.....3@2¾
85 Belcher.....22¾@22½
70 Bullion.....52
345 Baltimore Cou.....2¾
85 Caledonia.....8
2850 Coso Cou.....40@45c
345 Cou Virginia...53¾@52¾
80 Crown Point.....11¾@12
480 Eureka Con.....10¾@11
170 Gen Thomas.....17
200 Gila.....90c
1450 Golden Char...1.05@1.15
1729 Hussey.....1@1.05
50 Hale & Nor.....10¾
150 Justice.....24¾
80 Julia.....7¾@8¾
1050 K K Cou.....2
1360 Leopard.....11¾@11¾
345 Manhattan.....15¼@15¾
40 Mexican.....34¾@34¾
50 Modoc.....8
510 Meadow Valley...87½@1
1550 New Coso.....3@2¾

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., AUG. 17.

100 Alta.....2¾
850 Andes.....2¼
185 Alpha.....47¾@47¾
150 Amazon.....40c
120 Best & Belcher.48½@48¾
250 Belcher.....22½@23
125 Chollar.....93
380 Con Imperial...5¾@5¾
360 Crown Point.....11½
2155 Con Virginia.....53¾@52½
1425 California.....59¼@59¾
270 Cromer.....2¾
170 Dayton.....5
20 Exchequer.....16¾@16½
510 Gould & Curry.14¾@14½
170 Globe.....11c
20 Hale & Nor.....10¾
510 Julia.....8¾@9
320 Justice.....23½@23½
10 Kentuck.....13
1000 Knickerbocker.....62½c
150 Kossuth.....75c
2885 Lady B.....80 &85c
10 Lady Wash.....2½
160 Leviathan.....70c
585 Mexican.....34¾@34¾
50 Mint.....15c
800 Monumental.....9c
45 Maryland.....62½c
140 New York.....57½@58c
100 N Monumental.....25c
100 N Con Vir.....75c
220 Overman.....13¾@13¾
355 Ophir.....51¾@52½
10 Occidental.....3¾
200 Rock Island.....1¾@1¾
425 Savage.....18½@19¼
170 Succor.....55@62½
90 Seg Belcher.....18
545 Sierra Nevada...14½@15
130 Silver Hill.....8@7¾
750 Trojan.....1
20 Utah.....22½
415 Union.....14¾@14¾
25 Woodville.....1½
250 Wells-Fargo.....25c
230 Ward.....1½
20 W Belcher.....2¾
870 Yellow Jacket.....31¾@31

AFTERNOON SESSION.

10 Best & Bel.....19
150 Caledonia.....8
45 Chollar.....80
240 California.....59¾ 60
340 Con Virginia.....53
15 Crown Point.....11¾
10 Con Imperial.....5½
10 Eureka Con.....11½
25 Exchequer.....18¾
180 Golden Chariot.....1
200 Gould & Curry.....14½
370 Gila.....75c
150 Gen Thomas.....1¾
600 Hussey.....62½@60c
550 Jackson.....3½@3
55 Jefferson.....1
3 K K Con.....1¾
660 Lady Bryan.....80c
635 Leopard.....10¾@10¾
1570 Manhattan.....12¾@13½
90 Meadow Valley.....31½c
15 Mexican.....34¼@34½
50 Metallic.....50c
980 New Coso.....2¾@2¾
345 Northern Belle...22@23
20 Ophir.....50½
50 Ophir.....8
250 Trojan.....85c
515 Union Con.....14¾@14¾
45 Yellow Jacket.....31

THURSDAY A. M., AUG. 24.

505 Alpha.....59¼@59¾
150 Andes.....2¼
110 Alta.....3@2¾
100 Baltimore Con.....2½
320 Best & Bel.....49@50¾
445 Belcher.....23¼@23¾
160 Bullion.....52
150 Challenge.....4¾
30 Chollar.....97@97½
1205 California.....58¾@59
295 Crown Point...12¼@12½
295 Con Virginia.....53½
3285 Con Imperial...5½@5¾
140 Confidence.....19@19¼
370 Cromer.....2¾@2¾
700 Exchequer.....20¼@21
700 Dayton.....5
310 Gould & Curry.....15
70 Hale & Norcross.....11
200 Julia.....8¾@8
530 Justice.....27¾@28
300 Kentuck.....13¾@13¾
425 Kossuth.....75@87½c
300 Knicker.....90c@1
600 L dy Bryan.....72½@75c
1040 Lady Wash.....2¾@3
50 Leviathan.....51½c@1
1090 Mexican.....35¾@35¾
600 Mint.....25c
200 New York.....57½c
100 North Con Va.....75c
566 Ophir.....52½@54¾
40 Overman.....76
50 Occidental.....3¾
50 Phil Sheridan.....50c
335 Rock Island.....2
180 Savage.....20½@20½
405 Sierra Nevada...14¼@14½
140 Silver Hill.....9c@8½
200 Succor.....47½c
100 Trojan.....87½c
170 Utah.....21
380 Union Con.....14¾@15
110 Woodville.....1½@1¾
100 Wells-Fargo.....30c
365 Y Jacket.....34

Pacific Board—Latest Sales.

WEDN'SDAY, A. M., AUG. 23.

95 Alpha.....48¾@48¾
10 Alta.....2½
50 Best & Bel.....48¾@48¾
100 Con Virginia.....52¾
20 Caledonia.....8
200 Columbia.....67½c
125 California.....59¼@59
250 Crown Point...11¾@11¾
100 Julia.....8½

1440 Con Imperial.....5¾@5¾
10 0 Confidence.....19¾
1015 Exchequer.....19¾@19¾
230 Globe.....17c
150 Gould & Curry...14¾@15
100 Hale & Nor.....10¾
100 Julia.....8¾
500 K K Cou.....3@3¾
255 Leopard.....11¾
530 Meadow Valley...16@85c
400 Leviathan.....1
1230 Mexican.....34¾@34¾
565 Maryland.....75c
305 North Con Vir...55@57½
935 Ophir.....54½@53¾
50 Occidental.....3¾@3¾
150 Overman.....76@76½
1188 Knickerbocker.....1 c
280 Kossuth.....75c
2675 Lady Bryan.....80c
400 Leviathan.....1
1230 Mexican.....34¾@34¾
565 Maryland.....75c
305 North Con Vir...55@57½
935 Ophir.....54½@53¾
50 Occidental.....3¾@3¾
150 Overman.....76@76½
415 Justice.....24@24¾
90 Kentuck.....13

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE.

The Advance.—Alpine *Chronicle*, Aug. 12: The new hoisting machinery at the Advance works has been put up under the supervision of Wm. Mercer, and is now running very satisfactorily. The new works are sufficient to work the shaft at a depth of 1,200 feet; the new building is roomy and substantially built, and everything is now in good trim for pushing the work of sinking.

The I X L.—The new pump is freeing the shaft of water at the rate of 18 feet during the night, the daytime being occupied in lowering the pump and placing it in position. The depth of water in the shaft is now about 75 feet. The lower tunnel is being cleaned out, and stoping is going on in the upper tunnel, from which very rich ore is being taken. Next week the water will be out of the shaft, the new cage will be put in and drifting for the ora chute will be prosecuted with energy.

AMADOR.

Large Mill.—Amador *Dispatch*, Aug. 19: The Phœnix quartz mill, at Plymouth, is now running 80 stamps—the last 20 having been put on some two or three weeks ago. This is now the largest mill in the county, and we understand that the rock crushed from the mine continues of a good quality.

Pennsylvania Mine.—The mine, situated near Drytown, is soon to be started up. It is on the same lead, and adjoining the Gover mine, which is now one of the best mines in the county, and there is every hope to helisve the Pennsylvania will be equally fortunate.

BUTTE.

First Run.—Oroville *Mercury*, Aug. 10: Some weeks agn we gave nntice that a 10-stamp mill was being put up on the Deadwood quartz mine, near Forbestown. The principal part of the claim is owned by Mr. Roberts. On Saturday the gentleman was in town with the gold that he had taken out. He had run nine days and cleaned up 63 ounces, seven and a half pennyweights. This gold is worth $16.50 per ounce, which would make the whole come to $1,050. The mill crushed between 70 and 75 tons of rock in the time. This, it will be recollected, was done by new machinery. There was no hurry about working the mill, neither was the rock picked. The test that was made was a very fair one in every respect. Mr. Roberts is now desirous of sinking deeper on the ledge, and for this purpose will need a pump. He feels confident that he has a paying ledge and one that will last.

CALAVERAS.

Mill at the Duryea Claim.—Calaveras *Chronicle*, Aug. 19: The work of putting up a mill at the Duryea gravel mine, in Chile gulch, has been commenced and is progressing rapidly. The battery is to consist of five stamps, to be run by water power. All the gravel taken from the mine is to be put under the stampe before it is washed, an operation that it is thought will largely augment the yield. Heretofore considerable difficulty has been experienced in separating the gold from the gravel by the ordinary method of washing, owing to the quantity of cement contained in it, and undoubtedly a good deal of the glittering ore has been lost in the tailings. When the battery is put in motion that trouble will be obviated and all the gold saved. The mill is being erected under the supervision of Mr. John Rider.

Pump Broke.—Just as everything had been got in tip-top condition for sinking the shaft in the Lamphear mine the pump broke. Operations will have to be suspended until a new pump can be obtained and put in.

Contract Let.—Messrs. Rigney, Kelly & Co. have taken a contract for "breasting out" 5,000 car loads of gravel from the Duryea claim, in Chile gulch. The drifts are already run and the breasts opened, so there is nothing to interfere with the mining of the gravel. We understand that the contractors are to receive 40 cents per car load.

Upper Country Mining Items.—We have the most flattering intelligence from the Josephine mine at West Point. Splendid rock—ore that will mill $100 per ton—is being taken out, and the ledge is fully three feet in width. The rock comes from the stopes of the 100-ft level. The prospects of the mine were never before so favorable, and work is being energetically pushed. The mill is in readiness to commence crushing and the stamps will be set in motion next Monday morning. A new superintendent—Mr. Fulton, an old and experienced miner—has recently taken charge of the mine. Reports from the Champion are altogether favorable. A crushing of first grade ore is on the dumps, and hauling to the mill is to be commenced immediately. Good rock is being mined. The Mina Rica continues to produce rich quartz. No diminution in the quantity or quality of ore extracted. Work has been commenced on the Glencoe Consolidated, at Mosquito. Sinking a shaft is the first thing in order, and we understand that a force of hands have been employed for that purpose.

FRESNO.

The New Diggings.—Cor. Visalia *Delta*, August 19: Having arrived at Mill creek we began prospecting for a claim, but we saw notices on all the ground for miles up and down the creek, so we took the privilege to pan out dirt on other people's claims, but did not dig over a foot deep, but even at that depth seldom failed to find gold. The top dirt is nothing but loose sand amongst the bonders, which are large and numerous. Having traveled up and down the creek for, I should think, five or six miles without finding any vacant ground, and being informed that it was located for fifteen miles higher up, we returned and panned out ground from a side ravine, and got forty-three "colors" to a pan; another had thirty-eight; both were from the top. We panned out several more, and traced it up to the top of a red hill north of the creek. We then went and tried another creek, and found gold; and that creek looks quite as favorable for diggings as Mill creek, and I think will be easier worked. As we were washing a pan of earth Mr. William Works passed us and told us about his claim (which is the discovery claim) and showed us his gold, about fourteen dollars, which he took out before breakfast, as he has but little water and cannot wash over two hours at a time, and has but one sluice. One piece, he said, weighed nearly ten dollars; it seemed to have been rolled a long way, and had red dirt in its cavities, showing that it came from those red hills. We went to see his claim, and were surprised to see so small a hole. A good miner could dig as large a hole in favorable ground, in two hours; yet I was told that he had taken about one hundred dollars out of it, some of the nuggets weighing about twenty dollars. The ground on the bedrock, in his hole, looks first rate; the hole is three or four feet deep.

INYO.

Lee District.—Coso *Mining News*, Aug. 12: The Twilight mine, 200 feet west of the Cactus, shows a body of ore 10 feet wide. The Laguna mine is 250 feet from the Valentine. A shaft 38 feet deep has been sunk upon it. The wall is clear 30 feet and the ore body was struck showing the same kind of ore as that in the Valentine. The Cactus mine is looking better every day, and the mill is kept steadily at work on good ore. We understand that the Emigrant company are about putting up a 15-stamp mill at the mine without delay, which will warrant an immediate shipment of bullion to San Francisco and enhance the value of the stock. This is one of the mines in Inyo county that we have implicit confidence in, and we are willing to stand or fall by its developments.

Coso Con.—This company, having made arrangements with the Defiance company, are now at work smelting its ores in the Defiance company's furnaces. The contract, as we understand it, is to smelt 300 tons of ore, in such quantities as the Defiance can reasonably afford to smelt, not interfering with the working of their own ore. The working, so far, of the Coso Con. company's ore is a perfect success.

MARIPOSA.

Confidence Quartz Mine.—Mariposa *Gazette*, Aug. 19: This valuable mine, situated on Fresno river, about four miles below Crooks' ranch, has again been heard from. Mr. Floyd Dodds, one of the proprietors, was in town on Monday last, purchasing powder, fuse, etc. He presented us with a rich specimen of rock, taken from the bottom of the shaft, which is 100 feet deep, and shows a well defined vein of good pay rock four and a half feet thick. The specimen given us shows considerable free gold and galena sulphurets. The company have grinding select rock, taken from the dump, in an arastra, which pulverizes about five tons a week, which has yielded $1,000 per month for several months past. They are likewise running a tunnel, which is already in 150 feet, with 100 feet further to go before the vein is reached. This will give a lift of 200 feet on the vein. The company is conducting the work and the management of the mine in a judicious manner—compelling the proceeds of the mine to pay the expenses of developing and extracting the ore therefrom. This is the correct principle. If a quartz vein is valuable, as many are supposed to be, it will, by proper management, sustain itself by commencing with the simple process of an arastra. The celebrated Hite mine, which is now running 40 stamps, first commenced operations with an arastra.

NEVADA.

Lone Jack.—*Foothill Tidings*, Aug. 19: Rumor has it that this mine, lying between the Omaha and Homeward Bound, adjoining each, which turned out $600,000 when last worked, and was laid by, temporarily it was then supposed, because the machinery failed in its capacity to drain it any deeper, is soon to be started up and systematically worked.

Homeward Bound.—This mine, which is situated between the Omaha and Franklin, Allison ranch, and from early since working, shone as well as either of these now prominent mines, is steadily advancing with the work of development and in the estimation of the public. A double handful of decomposed quartz and dirt grabbed up at the foot of the new winze, now completed to the main drift, was taken up and panned out this week, and the result is before us in the shape of scores of fine "colors." The pay chute at this point, shallow as it is, is over 20 feet in length, and several other chutes are known to exist. Taking into consideration the fact that the Omaha, on the same ledge, the stock of which not many months ago sold for assessments, but now commands readily $75 per share, had no percentage of preference over the Homeward Bound in the estimation of old residents in the vicinity, who knew both when lying idle and undeveloped, coupled with the further fact that the machinery on the mine is capable of draining and hoisting to a depth of 1,000 feet if need be, and we have a pretty good lookout for H. B. No wonder a prominent stockholder, an old owner therein and not given to blowing, offered this week to lay a thousand shares against any other man's thousand, that when the mine is opened by shaft to the depth of 500 feet, and drifts run a hundred feet each way, stock in the Homeward Bound will be worth intrinsically $20 per share. A more sanguine man, standing by, put it at $50. There are scores of mines, all about Grass Valley district, which only require opening up to make them pay largely.

The Yuba mine, above Washington, is soon to receive an addition to its mill capacity. The company have lately overhauled the old 10-stamp mill, putting it in complete order and built a large overshot wheel. They now propose putting in 15 additional stamps, with amalgamating facilities in proportion. Mr. Lord, the superintendent, tells us that the timber and lumber for the new work is now being delivered, the carpenters are engaged and all will be finished at an early day. When this is done and the Yuba has 25 stamps pounding away on vast bodies of ore at command, it will, in our opinion, soon show itself, what the best posted ones have all along claimed it would be, second only to the Idaho as a regular dividend paying mine.

Franklin, Allison Ranch.—This enterprise is jumping ahead rapidly, and though only a few months since it began to attract attention it is destined soon to stand among the dividend payers of the district. The main shaft will soon be down to the 150-level, from which drifts will be run, and from prospecting already done above it is known that a large amount of splendid ore will be then ready for extraction. A 20-stamp mill formerly belonging to the Hope mine, near Forest Hill, Placer county, is being put up in this mine.

PLACER.

Gold Run.—Placer *Herald*, August 19: We learn from parties from this place that six hydraulic claims are yet running in that district and most of them, it is thought, will continue washing for at least a month yet. The Indiana Hill blue gravel claim, which for several years has been a good paying mine, we are pleased to learn keeps up its lick. The last clean-up gave a return of about $1,000 for each week's run.

Cement Claim.—The parties who are opening an old cement claim on Lowell's ranch, not far from Georgia Hill, on the Forest Hill divide, as mentioned by us some time ago, have their hoisting works completed and the water pumped out, and find the prospect very encouraging. They are going ahead at once to put up a crushing mill, on the completion of which they expect to take out big money.

A New Quartz Mine.—The Seaton mining company, which incorporated only a short time ago, are at work on the Scaton quartz mine, at Bath, under the superintendency of P. Powell, and encouraged by very favorable indications, are performing their initial labor with a view to large works. This claim is supposed to be an extension of the Hancock ledge, now worked successfully by Dewey & Burt. Some work was done on the Seaton about twelve years ago, and the top rock crushed at that time yielded $15 per ton. This, in connection with the fact that the rock shows better as they descend encourages the company to believe they have a good mine. The ledge is a good size and well defined.

The Divine.—Our latest information from the divide, is to the effect that the Weake claim, near Michigan Bluff, which lay so long dormant owing to legal controversies, is now being worked systematically, and is turning out the gold as in the days of old at a rate that is altogether encouraging. The Tickell boys, we also learn, have struck gravel, and will soon have their mine in shape for working profitably. At the Hidden Treasure everything is being prepared for extensive operations.

Mining Items.—Dutch Flat *Forum*, August 17: The Polar Star, Franklin and Lekamp claims continue washing a few hours each day. The Elmore Hill claim has finished cleaning bedrock, and is shut down for the season. The Yankee tunnel is still being pushed ahead with vigor. The tunnelers last week worked twelve shifts, fired ten face shots and advanced 45 feet. The Baker shaft is still going down. It was sunk ten feet last week. At Gold Run the Indiana Hill and Cedar claims continue washing.

New Reservoir.—The South Yuba Canal Co. intend to construct a distributing reservoir, in a small valley above Alta, on what has been known as the Godiug ranch. Bids for constructing the dam were opened at that company's office in Nevada City last Saturday, and the contract was awarded to Thoe. Hughes, of that place, who has been recently engaged on the Nevada narrow gauge railroad. We are informed that the price for the whole is $5,333. The work to be completed in ninety days.

The Bisbee Mine.—This mine is located about one mile from Colfax, and is undoubtedly the best paying quartz mine in Placer county. This conclusion is arrived at because it is the only one that pays regular dividends; the eighteenth will be declared for the present month. One of the greatest reasons for its good showing is because it is run strictly in the interests of the stockholders, and not for stock jobbers. Through the politeness of Hon. J. H. Neff, the Superintendent, we had the pleasure of taking a look at the mill, the mine and the surroundings, on Friday last. The mill is complete in every particular, no money having been spared to make it so. It contains three fine engines, which are driven by steam power, and are used for the hoisting works, pumping, for the stamps, and for other machinery in use in the mill. Forty-five men are in the employ of the company constantly; two shifts of men are worked in the mine, but the mill is run only in the daytime. The shaft is down now 640 feet and the quality of rock taken out is equal to the best yet taken out of it, and the indications are that the value of the rock in the ledge is increasing rather than decreasing; and from the prospecting which has already been done it is believed that the ledge is very extensive and will last a great many years.

PLUMAS.

Providence Hill.—Plumas *National*, August 19: Mr. John Smith, Superintendent of the Providence Hill Co.'s works, was in town the other day, and informs us that the mine is looking first-rate, and what is better, is paying well. A small clean-up of 100 feet of flume last week panned out ninety ounces, and as they have two long flumes and four undercurrents to go through, it looks as though they would make a good season's run. They have an abundance of good ground, and the claim is well fitted up for work.

The Bell Ledge.—The tunnel which is being run to open this ledge is showing some fine looking rock, and what is more important, it is paying rock. A cross-cut is now being run at the head of the tunnel and some six or eight feet of good rock shows. The header is about 80 feet from the surface, and the gold is coarse. The company will probably put up their crushing machinery this fall, and commence operations in earnest.

Franklin.—We are credibly informed that a San Francisco firm have made arrangements with the Franklin company, whose claims are located on the blue gravel range on Willow creek, to put up hoisting machinery and flush prospecting the mine, for an interest in the ground. The shaft sunk by the company last summer and fall is, in all probability, nearly down to gravel, and we think it safe to say that a few days' work after the new machinery is up, will develop as fine a mine of blue gravel as can be found in the State. We are glad to see this work go ahead, for we consider this section a very important one, and look for a big mining camp on Willow creek at no distant day.

Novel Mining Operation.—It has always been well known by many old miners that the bed of Feather river, above Oroville, was very rich in gold, but the cost of drying the river bottom has always been in the way of a successful working. A company composed of many of the best citizens of Oroville have organized, and propose to try an experiment in the mining line. The bed of the river is filled up with sediment to the depth of twenty or thirty feet. A large working shaft is to be sunk on the bank of the river, deep enough to go below the bed of the stream. From this shaft a tunnel will be run, slightly inclining upward, to tap the river bottom, and then the bed is to be worked by a system of tunnels. It is thought that the sediment will be sufficiently hard to hold the water out, and what gets through will drain into the shaft and be pumped out by a large engine. If it works, as there is reason to suppose that it will, the company have got a wonderfully rich claim. The expense of the venture is estimated at $30,000. We hope it will succeed, as there are many places which might be made profitable by this new system of mining.

SIERRA.

Nuggets.—*Mountain Messenger*, August 19: There are several fine specimens of gold dust in Scamman's bank, which came from the diggings of Philo Haven, at Gold lake. The largest one weighs 53 ounces and is worth over $900. A number of others weigh from 8 to 15 ounces. He has taken out between two and three hundred ounces this season. It is beginning to be apparent that the fellow who told such wonderful stories about Gold lake was not such a lunatic as supposed, after all.

SISKIYOU.

Opening.—Yreka *Union*, August 19; Bean & Co. are getting along with the work of opening their claim in the Klamath river, near Scott bar, and will soon be down to the gravel. They have got their dam in, and the work of pumping out the claim has commenced. There is very rich pay in this claim if they can only find the channel. Last year they were quite late, owing to one mishap and another, getting in, and they did not find the pay channel until about a day or two before the water rose and drove them out. As they know where they struck it last year, they will be apt to find the pay very soon after getting in this year.

Opening.—Kittlewood & Co. completed their dam in Klamath river, near Scott bar, last week, and got their wheels and pumps in good shape. Their claim is doubtless pumped out by this time and so that they are now looking for the pay channel. This claim has paid largely during the past two seasons, and there is hardly a doubt but that it will pay equally as well this year.

TUOLUMNE.

Lucky Miner.—Tuolumne *Independent*, Aug. 19: Bias L. Radonich, one of the best and luckiest pocket miners in this county, has taken out of his claim the past two days three pounds of beautiful gold. The claim is situated on Bald mountain, near Brown's flat, and is the same lead owned by "old man Patterson" in '57, and about 150 feet from the place where the old gentleman took out a $30,000 pocket; and afterwards Antone Violich took out at three different times the snug little sum of $8,000. Bias being on this vein, and in close proximity to this almost fabulous wealth, is likely to take out several more pounds the coming week, as he has a right in the door for a bigger "take" than before.

The Melonsa Mine, at Robinson's ferry, is about to be adorned with a 10-stamp mill and hoisting works, to be erected by J. K. Owens. The vein, which runs into Carson hill, and has been lying still for 10 years, is very rich. Since last January, Harvey Woode, the superintendent, has picked out and shipped by express rich pieces enough to amount to about $2,000. There are 400 tons of good milling ore on the dump.

The Jones & Woodman.—This mine at American camp is looking splendid. The company (incorporated) are putting up a mill on the claim and will work the mine on an extensive scale. From their vein, three tons of rock, sent below recently, yielded $1,233, or $411 per ton. The vein improves as they go down on it, and is now from three to four feet thick. Parties who have just located an extension are in ecstacies over their prospect of a fortune.

The claim of Messrs. Daniel Hennesey & Co., on the west side of Wood's creek, at Saw Mill flat, is proving exceedingly rich. They have gone down on the chute 25 feet below their tunnel, and gold can be seen in every piece of rock they take out. The chute has been worked six feet in width, but how much wider it is has not been proved, as they have been sinking instead of driving ahead to find out the full extent. All the rock in sight, and from the tunnel down (25 feet) is thickly mixed with gold, and the chute from the top of the tunnel to the surface—100 feet or more—is undoubtedly fully as rich. They have been working the claim over four years, and have found many rich places in the vein, but the present working is developing a chute which promises to be permanent as well as of fabulous richness. The vein varies from two to 10 inches thick. The owners give no figures of the yield, but rumor places it all the way from $1,000 to $10,000 within a week. Parties who have been in the mine examined the vein, showing gold sticking out on all sides not yet broken down, and estimated the amount of rock removed, say that it would take a very large sum to exceed their belief.

Idaho.

Owyhee County Prospects.—Cor. Idaho *Statesman*, Aug. 19: The aspect is gloomy indeed, but there is still a gleam of hope that business will yet revive before hoary winter comes upon us. If not, we are wretched indeed. There is a fair prospect that the Golden Chariot, South Chariot and Mahogany mines will resume work ere long, and a possibility that the Oro Fino will also resume. Should these probabilities become realities, a material chance for the better will be marked for War Eagle mountain. South mountain will doubtless be revived after the sale of the property of the S. M. C. M. Co. takes place, it being advertised for sale on the 4th of September. There are valuable mines there, as well as on War Eagle mountain, and all that either will require to become paying camps is honest and economical management in future. But the most reliable hope for this county is unquestionably in what is called the Wagontown district. This new camp has been laboring under the depressing effects of an incorporated company without money, or if it possessing money they were also endowed with an unwillingness to spend it, as they, after a short run, ceased paying cash, resorting to the expedient of 30 day drafts, that were finally dishonored, and the works stopped. Had there been no Maggie mine, the reputation of the district would have been better to-day than it is. The great want of the camp has been mills. That want is about to be partially supplied, as Adams & Jones are about to remove a quartz mill to the camp. This will enable the place to support about 150 men from this time forward. The population of Wagontown camp is now only about 60. If Owyhee county ever rises to respectability again, it will be on its own merits, and will have a permanent standing as a good mining district. For the days of wildcat skulduggery are past, and honesty must come to the front.

Nevada.

CORNUCOPIA DISTRICT.

Dull.—Cor. Eureka *Sentinel*, Aug. 16: In regard to the camp, I can tell you that it is very dull; still every man who is on the work is at work, and even last week they were looking for men and could not get them. The Leopard will ship more bullion this month than it ever did before for any one month. This week it will ship over $40,000. There is a good deal of talk of a mill being put up at Tuscarora. I hear of two new stores going to start here within a week or two. After another pay day we expect times to get better here, but up to the present business has been very dull.

HUMBOLDT DISTRICT.

Specimens.—*Silver State*, Aug. 15: We were shown some specimens of ore yesterday from the Byron ledge, in Humboldt district, owned by Messrs. Knnkel & Buck, which excel anything we have ever seen from a mine in this county. One of the specimens, of which there were three, which would weigh over a pound, was spangled on all sides with gold. The ore contains considerable silver, which gives it a bluish tinge, and the solid character of the quartz peculiarly adapts it to the purposes of the lapidary. It would make the finest kind of jewelry, with gold, silver and quartz in about equal proportions.

EUREKA DISTRICT.

The Hoosac.—Eureka *Sentinel*, Aug. 15: There is good reason for believing that Billy Wermuth will succeed in getting the affairs of the Hoosac once more in practical working shape. Mr. Wermuth has spent much time and money on negotiations looking to this end, and the whole community will join heartily with us in wishing that his efforts may prove successful.

Jackson Ore.—There is some talk that one of the Eureka Consolidated furnaces will shortly start up on Jackson ore. We hear much talk on the street, but have not had an opportunity to interview either Superintendent Donnelly or Shaw to ascertain its correctness. It would be a good lick all around if the report should turn out to be true.

ELY DISTRICT.

Local Review.—Piocha *Record*, Aug 13: There is nothing new to chronicle in the way of mining operations during the past week. The prospect work in the Raymond & Ely continues with no improvement worth mentioning. The pumping machinery for the Meadow Valley continues to arrive almost daily. The hoisting works are approaching completion and will be ready to start about the 20th inst. or thereabouts. No work has been done in the American Flag for the past week. The Hubn & Huot and Washington & Creole still continue the work of extracting ore with good success. There has been no change in the Piochc. The work of sinking the main shaft still continues, the formation being the same as last week. The Alps mill will start to work to-day, the hands being employed yesterday in rigging the suction pump to save water. Prospect work continues in the mine with very fair prospects. The tailings of the Raymond & Ely mill at Bullionville have been purchased, but it is as yet undecided whether a furnace to work them will be built there or in Piocha, as ore will have to be purchased in Piocha to work the tailings.

Raymond & Ely.—The 8th, 10th and 11th levels are the principal field of operations, although in the upper levels chlorides are at work doing some little for themselves. The pump, as a matter of course, is not in operation, and not likely to be for a couple of months.

Meadow Valley.—A large amount of the pumping machinery for this mine arrived during the week and will now be brought in almost daily. The hoisting works are approaching completion and will probably be started up for trial about the 20th or a few days thereafter.

American Flag.—No work has been done on this mine during the past week. Awaiting the return of the superintendent, John R. James.

Huhn & Hunt.—Three men continue work on the Huhn & Hunt taking out ore, in which they meet with fair success.

Alps Mill.—This mill will start up to-day. Workmen were busily engaged yesterday rigging a suction pump to take the waste water from the reservoir back to the settlers, thereby saving about one-half of the water that would otherwise go to waste.

Nevada.

WASHOE DISTRICT.

Bullion.—Gold Hill *News*, Aug. 17: The long expected and much desired air connection between the 1400 and 1700-foot levels was accomplished last Sunday night. This connection was one of the most momentous importance to not only the Bullion but also to the Imperial Consolidated. It was a most difficult undertaking, and was carried through to complete success under very adverse circumstances. Two hundred feet north of the 1400-ft station of the main incline, a winze was started downward toward the 1700-ft level. At the 1700-ft level the Imperial sent a drift was started north and run a distance of 1700 feet to reach a point directly under this winze. This drift, although known as the 1700-ft level drift, actually cute the vein under the winze at a depth of 1850 feet, there being a difference of 150 feet in the altitude of the two shafts. To connect the 1400 and 1700-ft levels at that point it was necessary to construct an incline shaft 825 feet in length. Throughout the length of the 1700-ft drift and upraise from that level the thermometer ranged from 130 to 140 degrees, making it a most difficult thing for

men to accomplish even a very small amount of labor on a shift. Work was driven from both above and below, the winze from above and the upraise from below, meeting at a half way point. As soon as the opening was completed a strong current of air set down the Bullion shaft, and passing out through the drift on the 1700-ft level, ascended the Imperial shaft. At the time of the connection the thermometer stood in the drift at 138 degrees, and this morning it is down to 100 degrees, and is yet steadily falling. The connecting shafts are being enlarged and thoroughly timbered. Work was again resumed in the face of the north drift on the 2000-ft level this morning. Sinking the main incline is making good progress. As soon as the connecting winze is well secured end the 1700-ft drift has cooled a little more, prospecting the 1700-ft level and the ground intervening between the 1400 and the 1700-ft levels will be commenced in good earnest. A station has already been opened at the 1800-ft level, and men have been set to work again in the face of the north drift on the 1400-ft level. Prospecting and opening out on the lower levels is to be prosecuted with all the vigor possible from this time on. There is but little doubt that the Bullion will in a very short time begin to give a good account of itself. Superintendent E. A. Schultz deserves great credit for so successful a prosecution of the work, under such great difficulties.

Imperial Con.—Daily yield, 30 tons of ore. The ore is being crushed as fast as it is extracted and is giving good returns. The ore stopes on the 2000-ft level continue both to look well and yield a good quality of ore. The east cross-cut from the bottom of the north winze, below the 2000-ft level, is showing streaks of ore and quartz of a very favorable character. A drift has been started south from the winze. The south drift from the bottom of the south winze on the 2000-ft level, running to connect with the Yellow Jacket, is making steady progress. The new and powerful blowers have arrived and will be placed in position ready for service at the earliest day possible. The use of these blowers will expedite prospecting operations at the bottom of the winze, below the 2000-ft level, as well as benefit the ventilation of all the lower levels of the mine. The air in the main incline is being greatly cooled and benefited by the air connection recently made in the Bullion mine between the 1400 and 1700 ft levels.

Ophir.—Daily yield, 300 tons of ore, keeping the mills all running up to their full crushing capacities. The ore bresats throughout the 1600-ft level are yielding the usual quantity of good ore, with every promise of keeping up the same amount for many months yet to come. The east ore vein recently struck, and which we have heretofore described, is showing a steady and favorable improvement on the 1650-ft level. There seems but little doubt now that when the east drifts are extended a sufficient distance on the 1700-ft level they will cut the same vein. The course of this body of ore will carry it nearly 200 feet east of any point yet prospected on the 1700-ft level. The north drift on the 1600-ft level is steadily advancing, the face in porphyry. The west cross-cut, 200 feet south of the Mexican line, is also steadily advancing. The mine is steadily assuming a much better shape for working than it has been in before for yeare past.

Amazon Con.—The shaft is thoroughly timbered and in the best possible working condition to a depth of 331 feet. As soon as the depth of 400 feet is attained a station will be opened and a drift started to cut and prospect the ledge.

Twin Peaks.—The road to the mine, for the transportation of miners, wood and other requisite supplies, is nearly completed.

South End.—This is one of the most promising of the Silver City mines. It contains 1,500 feet of ground, adjoining the Goodman mine on the south. The title is a United States patent. The company own a portion of two valuable ledges, the Goodman and the Herald. The shaft is situated on a steep point of the mountain, just below the line of the Virginie and Truckee railroad. An incline has been sunk on the Herald ledge to a depth of 60 feet, the entire distance in quartz, rich in gold and silver. The location of this incline was such as to cause its abandonment for working purposes. A site for a new shaft was then selected by Mr. J. M. Walker. A comfortable hoisting works building, 22 by 40 feet in size, and a donkey engine, wes then erected, capable of sinking the shaft to a depth of 600 feet or more. The shaft is a two compartment, each division being four by five and a half feet in the clear, well timbered throughout, and has been sunk during the past two months to a depth of 170 feet, a rate of progress equal to the best work that has ever been done on the lode. W. T. Robinson is superintendent, and J. M. Walker & Co., the well-known stock men of San Francisco, are the principal owners.

Con. Virginia.—Bnt e emell amount of ors is yet being extracted. The shaft, however, is about completed to the 1550-ft level. The drifts and stopes on the 1550-ft level are ell being pnt in first-class condition for extracting ore whenever it ie desirable to do so. The prospecting of the ore vein further to the southward on the 1500-ft level ie going steadily forward. On the 1700-ft level the breakege of the diamond drills proved to be much more serious than was at first supposed. The damage will, however, be repaired and everything he put in good running order in a few days more. The C. & C. shaft is down 75 feet below the 1500 ft level, the hottom etill in hard blasting rock. The flow of water continues at the rate of 40 inches per day, end ie easily handled by the pumps, although it greatly impedes the sinking. It ie the intention, when a depth of 75 feet more is attained, to again open a station and stert a drift to cut the ledge. This drift will cut the ledge at about the 1700-ft level in the old shaft. The erection of the new amalgamating mill is steadily approaching completion, a large portion of the pans and machinery is already in place, the building is nearly completed and the engine and the rest of the machinery is already on the ground.

Gould & Curry.—The foundations for the new pumping machinery are being laid rapidly. Cutting out for the new pump station and repairing the shaft at the 1500-ft level is still going steadily though slowly forward. The cley wall at that point is of immense thickness and weight, and is constantly flaking off and giving way in such a mauner as to greatly impede the progress of the repairs and the erection of the pump tanks.

Savage.—The new machinery is not yet reedy to start up and probably will not he much before the 1st of September.

Sierra Nevada.—The new station at the 1700-ft level is almost completed, ready to start the main east cross-cut toward the ledge.

Yellow Jacket.—Almost the entire week has been occupied in timbering the drifts connecting the north and east winzes, and the south drift from the hottom of the east winze on the 2040-ft level. The timbering ie about completed.

Mexican.—This northeast cross-cut on the 1465-ft level is steadily advancing, the face in qnartz end ore.

Hale & Norcross.—The attaching of the pipes and finishing of the huge pumping machinery on the surface has taken e longer time than was expected, and everything will probably not he ready to steam up much before the 15th inst. The pumps are all in place ready to etart up.

Prospect.—The station at the 400-ft level is about completed ready to start the diamond drill to prospect the ledge. The drills will he steadily at work prospecting the ledge at thet point in a day or two more.

Cosmopolitan.—The prospecting and development work is going ahead lively at the various points, and considerable good pay ore is coming from the upraise near the northern end of the main adit tnnnel.

Utah.—Sinking the shaft ie meking steady and favorable progress. The rock in the hottom is not quite so hard and the work is being pushed ahead with great vigor.

Chollar-Potosi.—Daily yield, 110 tons of ore. Sinking the combination shaft is making excellent headway.

North Carson.—Work going ehead as usnel, with no new features of interest to report.

California.—Daily yield, 700 tons of ore, keeping the mills all steadily running. The ore breasts ere showing magnificently at all points; in fact, the mine never in the past put on the splendid appearance that it does now. At no point where the ore breasts have commenced does the ore fall helow the most sanguine expectations in richnese, and at no point is there any trouble whatever in separating or assorting the ores, the whole heing of such uniform richness as to justify its extraction. On the 1650-ft level the south drift has heen extended a distance of 125 feet, running through the center of the ore vein in ore of the same character as that found on the levels above. On the 1400-ft level cross-cut No. 2 is steadily advancing in a much better description of ore than has yet been found in that portion of the mine. The new battery mill is steadily approaching completion, everything heing in place, and the batteries heing almost ready to fill in with broken quartz, preperatory to commence crueb-ing.

Lady Washington.—The hottom of the shaft continues in very favorable quartz. It is very firm, with good streake and hunches of low grade ore, and is liable at any moment to develop into a good body of pay ore.

Justice.—Daily yield, 110 tons of ore. The ore breaste look well and are yielding good ore. The Douglas mill is added to the crushing capacities of the mine. On the 900 ft level both cross-cuts Nos. 1 and 2 are showing evident indications of a near approach to the ore vein, and there is now but little doubt that both drifts will strike the same rich ore body found on the levels above.

Belcher.—Daily yield, 350 tons of ore, keeping the mills steadily running. The prospecting drifts south and east on the 1600-ft level are steadily advancing with favorable ore indications.

Overman.—Sinking the main ebaft is going steadily forward without interruption or hindrance. The flow of water is still strong at the hottom of the shaft. The preparation for the erection of the large and powerful pumping engine is going rapidly ahead.

Herald.—The incline shaft down 85 feet, a drift north from this point has been run a distance of 20 feet presenting well defined clay casings and a vein of good ore. At a depth of 65 feet, another drift south has heen run a distance of 10 feet disclosing a vein 2½ feet wide of very rich ore. An average milling test of twenty tons yielded $52 per ton, enough to nearly defray the expenses of the development thus far.

Superior.—Getting in new hoilers at present. Ae soon as thie ie done the station for a drift or cross-cut at the lower level, through the vein, will be opened.

Niagara.—The main incline is down 430 feet, the material in the bottom being much softer and the sinking making excellent progress.

Trojan.—The mine has passed into entirely new hands. The old debts have all heen liquidated, and everything put in the best possible working condition. Work will be commenced and prosecuted at all points in a day or two more, with all possible energy.

Silver Hill.—Sinking the main incline is going steadily forward without interruptiou, the flow of water is not quite so strong, hut the rock is very hard.

Buckeye.—The north and south drifts on the 550-ft. level are still advancing, the face of each being in fine quartz and low grade ore.

Baltimore and American Flat.—A new station at the 1,450-ft. level is being opened preparatory to drifting toward the main ledge at that point.

West Belcher.—Both the up-raises in the west and northwest drifts have reached the ore, which is of a good milling quality. Shutes and other conveniences ere being arranged for extracting the ore for milling.

Alta.—Sinking the main shaft ie going ahead at a very rapid rate. During the past week the shaft has heen sunk and timhered a depth of 25 feet. The new pumping engine appeare to be all that its most senguine friends claimed.

Julia.—Nothing bas heen done in the mine for the past week. The time has heen entirely taken up with necessary repairs to the machinery. The repairs ere, however, completed, and work wae resumed at all points in the mine yesterday.

Ward.—The shaft has heen enuk and timhered during the past seven daye a distance of 40 feet, making a total depth attained of 465 feet.

Union Consolidated.—The north drift on the 1300-ft. level is still advancing, the face in clay, qnartz and porphyry mixed.

Sutro Tunnel.—Total length of tunnel, 13,980 feet. The material at the face of the header is porphyry and limestone, rather hard, hut blasting well, allowing of excellent progress heiug made.

North Consolidated Virginia.—The drain tunnel has nearly reached the shaft and will hs completed in a day or two more.

Best and Belcher.—Taking out the old pumps in the main shaft, and retimhering and repairing the same. Nothing doing of any interest on ths 1700-ft. level.

Crown Point.—The main south drift on the 1700-ft. level is steadily advancing in the Belcher ground to connect with the new air ebaft.

Centennial.—Excellent progrees is heing made, and sinking the main shaft ie soon to he resumed.

Caledonia.—A station is heing opened and pumpe put in at the 1150 ft. level. The flow of watsr is still just as strong as ever and gives much tronhle.

Nevada.—The face of the west crosscut from the main north drift is still in qnartz, with very good hunches or ore coming in. No west wall yet.

East Justice.—Work is heing steadily prosecnted in the mine, every thing is heing put in excellent order.

Lady Bryan.—The old hoisting-works building has been moved back to make room for the new.

Mint.—Cutting out and putting in the new station at the 1100-ft. level is nearly completed.

Succor.—The foundations for the new pumping machinery, are about completed, ready for its reception.

(Continued on Page 148.)

Home Industry.—Ths story is told of an Americon iu Paris, who, hsing ahont to lsave for Nsw York, honght a half-dozen pecnliar looking psncil casss, at 95 cents sach, for presents to frisnds at home. In Rsgsnt street, London, hs saw some more at only 70 csnts each, and bought anothsr half dozen, thinking tbat Paris pencils at that prics wers a hargain. In Livsrpool hs purchased anothsr half dozen of thsse articles, at 35 csnts each. "Singnlar," hs ohserved, somewhat surprised, "bnt it sesms ths further ons gets from Paris ths cheaper articles of Parisiau mannfaotnrs become. At this rnte I should havs done hstter hy waiting until I,reached Nsw York. "You ars about right, sir," said ths shopman, who by this time had his money safs in ths till. "Yon ars abont right, sir, for them pencils is all mads in the Statss." In the mattsr of shops and their contents, Paris, London, and New York ars well-nigh ons, and it reqnires a sharp eye and ampls sxpsriencs to discovsr anything in sithsr of thsm that is not for sals in both ths others.—*Trade Journal.*

Detection of Fuchsin Adulteration in Wine.—According to M. Jacquemin, natnrnl rsd wins doee not stain wool, ths material regaining its whits color aftsr washing. If fuchsin be nssd to color the wine, however, ths wool rsmains tinged with red.

The Engineer

The 300-Mile Oil Pipe.

Ws lately mentioned tbe enterprise to carry petroleum from ths oil regione of Pennsylvania to ths seaboard through a pipe 300 miles long. We find in the Boston *Traveler* soms detaile of ths project which will hs of general intsrsst

Ths plan proposed is to run the oil tbrough a four inch pipe laid on ths surfacs; the forcing power will be 900 pounds to ths sqnare inch; thers are to bs stations at distances of 15 miles, at each of which au engins of a hnndred horse-power will hs erscted to work a pnmp to continne the flow from point to point. The company having decided npon ths oonstrnction of ths work, ths prssidsnt sought ths ssrvices of Gsnsral Harman Haupt, of Hoosac tnnnsl fams, and who, duriug the wsr, was chisf of the hnreau of militsry railroads, and a hydrographical engineer of grsat skill and experience. Hs pronounced ths schems, after a thorough sxamination, to be sntirely prscticable, and he is now acting as engineer-in-chief.

As a proof of how valuabls this traffio has been to the several railroads ovsr which ths oil has besn borns, it is only necessary to say that up to ths present time the railroad chsrges aggregate $79,000,000. The minimnm cost of trsnsporting oil hy rail is 50 cents per barrel, and ths minimnm cost hy ths pips process is 16 csnts. The averags obargs hy rail is one doller snd a qnarter.

The estimated cost of ths sntire work, including fixtures, stc.; is one and a qnarter million dollars, and considering the difference in cost hetweeu tbis method and tbat by rail, upon the hypothssis that the company will discount at least 25 csnts a harrel on rail ratss, it will readily hs seeu that with all the expeuses of operating, the first years earnings will pay ths first cost of ths work.

Ths Pennsylvania company is ths parsnt company, but thers is also ths Baltimore transportation company, chartersd by ths state of Maryland, and some fivs other companies ars expecting to nnite. The first objeotivs point or terminus will he Baltimore, as being the most feasible and direot routs for tbe pipes. Following which othsr tsrmini will hs sstablishsd, in Philadslphia, New York, etc.

The pipes bsing laid on ths snrfacs and there heing no obstacle in the way of forciug ths oil to any hight, the line will litsrnlly be an air line and ths distance from the oil rsgions to Baltimors is 300 miles. The oil will he distributed from ths pipes into immense reservoirs with refining sstsblishmsnts adjscsnt.

The fsssihility of this enterprise, eo far as the passage of the oil throngb pipes is oucerned, has bsen fnlly estsblishsd by ths present system in operation in ths oil regions, where ths aggregats lengtb of the pipes conveying the oil from ths eeveral wells to ths resrvoirs is nearly 250 miles.

The East River Bridge.

Ws have noted from tims to tims the progress of the East river hridgs, hetween Nsw York and Brooklyn. They ars now ready to strstch the cables. The plau of opsrations, as given by the sngineer, is as follows: A steel rope, three-fonrths of an inch in diameter, will bs temporarily fsstsnsd to ths Nsw York anchorags, thencs convsyed over ths top of the towsr and the coil conveysd to Brooklyn by means of a soow. Ths rope will thsn hs passed ovsr tbs Brooklyn tower and to ths anchorags, but will he left slack and nndsr water until late at night or early in ths morning, whsn fsw vesssls ais passing, wbsn it will hs pullsd tant. This stesl rops will also bs temporarily secnred to ths Brooklyn anchorage and ths ooil borns back to New York by the scow, and ths snds connected, thus forming an endless rops, working on pulleys at each anchorage and on sach towsr, and worksd hy machinery on the Brooklyn sids. By msans of this sndless rops othsr similar onee will hs put np as rsquirsd for ths farther oonstruction of the hridgs. First, two stesl wirs ropss, two nnd five-sighth inches in diamster, will hs carried across and made ssoors to temporary fastsninge at sach anchorage. Thess will he tbree and ons-half feet apart, and placed a littls to ths south of ths middls of the towsr, running ovsr ths top. They will be nssd for ths coustrnction of a temporary bridgs tor the uss of ths workmen. Oak planks, one and ons-half inches in thickness, will bs laid npon the ropss, with spacss of abont half an inch, hoth for ths pnrposs of economizing material and to lessen tbs effeot of ths wind npon it. They will hs fastened by strips running lsngthwiss across the ends, which will bs holted to tbs ropes hy U-shaped olamps.

The hridgs will bs complsted by stretching small ropss on each side ahont thrs s fest ahove the flooring and secnrsd to svsry ten fest. It will hs rsndsred firm hy guys.

Thrss other stesl ropes, of ths sems magnitude as thoss nsed in the construction of ths foot hridgs, will hs stretchsd across the river over ths tops of ths towsrs—one 27 feet south of ths foot bridge at ths edgee of the pisre, ons over the nortb edges, and ons midway bstwesn ths north rops and ths foot bridgs, with a spacs hetween ths north and south ropes of 81 feet. Tbs ohject of thsss last mentionsd ropss is to snpport small cross bridges, technically called cradles, and necssary for ths conetruction of the other portione of the bridgs.

Thsre will bs five of these cradles, ons in each land span hstween each tower and its anchorags, and three at squal distances in ths river span. Thsy will projeot 10 fest beyond ths ontside cahle, and will snpport pulleys for ths endless ropes. The whols temporary structurs will bs 200 fsst abovs high water at its oenter and lowest point, so that no water craft will he interrnpted hy it. After this work is completed, tbe construction of ths bridge propor will hs procseded witb, and ths first step will be ths etrstching of ths main cahlss, which will he put np at tbe same slevation as tbs tsmporary bridgs and lowsred. Thees cahles will be composed of 19 strands, each strand being made np of 330 wires, No. 7 gage—that is a littls more tban onseighth of an inch in diamster. Ths matsrial used will be of ths best qnality of stsel wire. The ropes of ths temporary hridge will not hs taken down, hut finally incorporated into ths superstrnctnrs of ths hridgs.

Stone for the Mississippi Jetties.

Ws have recently noted ths continned indications of success in Captain Esds' work in the mouth of ths Mississippi. We learn from an Eastern exchsnge that measnres are complsted for ths dslivery of ths stons which is to anchor in the immsnse wooden crates. The following is intsresting: Ths endless snccession and strata of willow "mattrassss" have hesn sunk into tbs sea fer ont from Port Eads, and ars ready for their armor of stone. The amount of stone necesoary seems almost beyond compntation. The terms of the contract ars such that ths stone is not deliverable nntil thsre sxists 20 feet of watsr on ths bar at South pass. The depth of water at this point has already increased, since ths mattrasses were placed in position, from eix to 17½ feet and the cnrrent is stesdily cntting deeper. The partiss are gstting out the material at limestone quarries located at Ross Clairs, Illinoie, soms 40 miles helow Padncah, Ksntncky, nnd at Golconda, Illinois, 12 milss further down. Abont 5,000 yards ars now quarried and ready to ship at short notice. The stons is of irregular form aud in pieces varying from five to 150 pounds in wsight. For ths ses snds of the jettiss, stons weighing from 2,000 to 4,000 pounds is reqnired. This stons is loaded into bargss sud towed to Port Esds, whers it is measnred by government officials snd taksn alongside ths sunksn mattrasses. Thsse, it will he recollected, ars soms 60 feet wids at the top, and extend thonsands of feet into the sea. Ths stons is dnmped into the water on either sids of the jetties, and the process continued nntil ths exterior surface of ths jetties is covered, snd preseuts ths appearsnce of "rip-rap" work. Ths top of this hsap is to bs paved with flnt stones, sst edgewiss, and ths entirs structurs is to he made as suhstantial as monsy and skill cau make it. It is to be hoped that ths remaining two and oue-half feet will soon bs scooped off ths bar, but Mssrs. Dippold & McDonald do not cars to begin dslivsring stone till aftsr ths first of Ssptembsr, when ths grsnt heat will he over and the work he safer for thoss employed. Eade is to get $500,000 when the channsl is 20 fset dsep, and a liks sum for every additional foot up to thirty feet, the maximum desired.

Tunnels.—Letest advices ooncerning progress in two great hores is as follows: Ths last brick in the Hoosac tunnel is laid. Stsel rails are ordered for the whols distance betwsen Grsenfield & Bradwell's Fsrry.

In ths St. Gothard tunnel, the monthly progress is 380 fset at the northern snd, 200 fest at ths eouthsrn. Ahont 10,000 feet ars completed at ench end; 50,000 fset rsmain. The work shonld he completed in 1883, at the present rate.

Hell Gate.—The Hell Gats blasting will taks plaos on the 15th of Ssptsmber. Fifty thousaud ponnds ot dynamits, glyosrine and rend-rock will hs used, but no grsat svidsnce of ths blast will hs ssen ahovs ths snrfaos of the watsr. Yst it is expected the work will hs done so effectively that ths channsl will bs despsnsd thirty fest, nnd ths passage of the largest stsamshi ps will bs allowed.

The First American Canal.—Ths first American canal was from Middletown, on tbs Snsquehanns, to Reading, on the Schuylkill, heing 79 miles in length, with a navigabls fesdsr of ssven miles. It was snrveysd in 1762 hy David Rittenhouss and Dr. Wm. Smitb, although said to have heen suggsstsd by Psnn in 1690; was commencsd in 1764, and completed in 1837.

The largest hridgs in ths world is ths Chsnat railroad bridgs, British India, complsted last Decsmber, aftsr four years' work. It bas 64 spans, each of 132 feet, making its sntirs length 9,300 fset. Ths masonry is all of brick, 5,000,000 cubic fest in quantity. Ths girdsre weigh 9,000 tons.

A commission of engineers is at pressnt engaged in preparing plans for an undsrgronnd railway in Paris, to connect several of ths prominent points in the city.

To harden plaster objects, it is recommsnded to add to it some thrse or fonr per cent. of powdsred althea root (marsh mallow). Ths resultant mass, in ahont an honr after setting, will he fonnd to hnvs acqnired such n degrss of hardnsss that it may bs turned, sawed, etc. Buttons, dics, dominoes, etc. are made from it.

[From the Mechanics' Fair Daily.]

Chips from Cold Chisel.

EDS. FAIR DAILY: I think "Worker" struck pretty close to the mark in his letter in your first paper for this fair. I wanted to sit down right away and tell you what I thought of the words he wrote, but my constant engagement between hammer and iron made it impossible for me to chip into anything else. I have been ground up pretty close, and while I am waiting at the forge to be drawn out and fixed up with a new straw color, I will use my blunt end to strike on the heads which "Worker" struck up in his letter.

He speaks of the advantage of showing things. Now I am an obscure sort of a tool, and I have no doubt that the aristocratic lathe and planer will say that my work ought never be seen. Never mind, the pattern maker will sometimes make too much allowance for the shrinkage, or the moulder will wrap the pattern too heavily, and I have to be called in to fix up a fit, and then I always have to lie around to smooth over every one's blunders, and consequently have some right to a showing, and I say that if a man expects to do anything he has got to make a show; I don't care whether he wants to be President or wants to sell a patent wash-stand, he has got to show some good either in himself or in the wash-stand, before he can accomplish it. Just look at the two men who are now running for President; each with something called his record to parade before the people. And they are right, too. A man without a record is like a cow-catcher without a locomotive, there is nothing to push him. So it is with a man making an show of his work. The public is a hard thing to gobble up, and there's nothing like getting it into a little disposition beforehand; for this it is a good thing to make a show. I believe a good thing well known is half sold or hired, as the case may be. Getting an introduction is the hardest part of many a courtship. There's nothing like smoothing away the roughness. I always like to have a casting vitrioled before I tackle it.

Another thing which "Worker" hints at is, that workmen should support everything which leads them to get together and think together. That is good. I like the mooning more than a little. A good pipe and a good talk do a great deal to keep us posted on the things which are going on, and enable us to understand each other. The coming together at the fair is much better, because there is so much that is suggestive, and may not only be talked about, but also worked over in a hundred ways.

But another way in which it seems to me that fairs and institutes are valuable to us all is this. They lead us to take a higher view of our calling, to be more satisfied with it and more energetic to advance in it. Since I have read that noble speech of Henry Edward's on iron, and its relation to civilization, which you printed a few days ago, I have felt like hurrahing for the shining metal which yields so readily to my stroke, and takes on so many useful forms. I tell you it does us workmen good to read something which gives us sound reason to think our business noble and useful. We know well enough that we make machines and men buy them, consequently they must be useful; but it is rather a new idea to some of us to have our work called noble, and the thing all reasoned out, so that we can see just what has been accomplished. We do not lack for flattery, especially about election times, but for a genuine and honest estimate of the relations of our work to civilization—why it really makes a fellow feel that he is doing something after all.

It does me good especially to see our old friend iron set up so high as Mr. Edwards puts it in his eloquent words. I look upon its grey crystals as they turn up under my tools with a sort of reverence now that I know better what it has done for mankind. We are tired of praise of yellow gold. It is handsome and I sometimes stand a few minutes looking through the windows of the brokers to see the shining yellow piles or to watch the clerks tossing it about. But think of the men it has tempted and ruined. Not so with iron; it is a true, glorious friend of mankind. I am tempted to strike it gently with my hammer when I think of it; but then it is only by hard knocks that iron comes to serve us, and it rather welcomes the blow which elevates it into position and usefulness.

We need to think more of these things and to discover all the noble, elevating, thoughts which can be drawn from our work. If we but heard it aright, every hammer stroke would be a note of music, and all our work would come easier to us, because we would be filled with the spirit of progress and improvement there is in it. Success, I say to every enterprize which cultivates this spirit among us. Let us look and listen, and march onward in our enjoyment of our life and in a belief in the nobility of our work. COLD CHISEL.

A GREEN varnish for metallic objects may be prepared by dissolving as much sandarach or mastic as will be taken up in strong caustic potash, then diluting the solution with water, and adding a solution of a copper salt (either sulphate or acetate). The green precipitate is then to be washed, dried and dissolved in turpentine.

Useful Information.

A Handy Table.

We are indebted to Mr. J. H. Main, says the Albany *Democrat*, carpenter and contractor, for the following valuable table to those who desire to make their own estimate for building. It is worth pasting in your scrap book:

One thousand feet of flooring or ceiling will lay 800 feet of solid superficial measure. One thousand feet of siding, 750 feet. One thousand feet rustic siding, 10 inches wide, 900 feet. All lumber is measured before planing, and is so calculated in all bills.

Five gallons of oil is sufficient for 100 pounds of lead—boiled oil or raw; also, turpentine weighs seven pounds to the gallon. Eight pounds of properly mixed paint will cover three squares, one good coat.

It takes from five to six pounds of shingle nails to the 1,000 shingles. Twenty-five pounds flooring brads will lay 1,000 feet flooring. Sixteen pounds flooring brads, three penny, will lay 1,000 feet ceiling.

Nails will weigh as follows: Seven inch spikes, five will weigh a pound; sixty penny nails, nine to the pound; forty penny, 13 to the pound; thirty penny, 23 to the pound; twenty penny, 34 to the pound; twelve penny, 48 to the pound; ten penny, 58 to the pound; eight penny, 89 to the pound; six penny, 153 to the pound; four penny, or shingle, three hundred and four to the pound.

Average green fir lumber weighs 4½ pounds to the foot; seasoned, 4 pounds; green cedar, about the same as fir; seasoned, 3 pounds. Five hundred feet of either green cedar or fir is equal to one ton. Green cedar shingles weigh about 400 pounds to the 1,000; dry, 250 to 300. Shingles baled, in what are called one-half bunches, should overrun, or, in other words, should contain 504 shingles; one quarter bunches fall short four to the bale, or 16 to the thousand.

CRYSTALLIZED WOOD AND PAPER.—According to Prof. Bottger, the simplest method of giving paper and wood surfaces a crystalline coating is as follows: Mix a very concentrated cold solution of salt with dextrine, and lay the thinnest possible coating of the finid on the surface to be covered, by means of a broad soft brush. After drying, the surface has a beautiful mother-of-pearl coating, which, in consequence of the dextrine, adheres firmly to paper and wood. The coating may be made adhesive to glass by doing it over with an alcoholic shellac solution. Prof. Bottger mentions the following salts as adapted to produce the most beautiful crystalline coatiag, sulphate of magnesia, acetate of soda, and sulphate of tin. Paper must first be sized, otherwise it will absorb the finid and prevent the formation of crystal on its surface. Visiting cards, with a mother-of-pearl coating, have for some time been in use. Colored glass is well adapted for such a coating, which has a good effect when the light shines through.

STEEL BELTING.—Dr. William Fields, of Wilmington, Del., has applied for a patent for steel belting. The Wilmington *Republican* says: "Any good, tough steel will answer the purpose. The great superiority of steel belting over that of leather is first its cheapness, not costing by one-third as much as that of leather; second, it will not stretch or get out of shape; third, it is quickly made, as there is an inexhaustible supply of the crude material in this country. Steel can be made at two and a half cents per pound, and rolled into belting for two and a half cents more. It don't require to be more than one sixteenth of an inch thick for most of the belting, consequently it will not weigh much per foot. The Doctor's process for slackening and tightening the belts in a few seconds, without disturbing the joinings, is also a great advantage over the strings and lacings now in use.

A NEW USE FOR IRON.—One of the most incomprehensible discoveries—if it be true, which is questionable—that we have ever encountered is announced in a recent French journal by M. Massie. He says that the mere introduction of iron bar in the box in which barley, rice, bran, biscuit, and like farinaceous materials are stored, is sufficient to prevent either the ravages of decay or the attacks of insects. Full details of the experimental investigation are given. An iron bar three pounds in weight is reputed to have protected 40 gallons of grain; and certain biscuits were preserved for seven months in excellent condition, while others, under like circumstances but without the iron, were totally destroyed by weevils.

POISONS.—On April 21st the Austrian government published a decree in regard to the traffic in poisons, declaring the following substances to be included under the term poison: 1. Arsenic and all its compounds. 2. Chlorides and oxides of antimony. 3. Oxides and salts, including the chlorides, iodides and bromides of mercury. 4. Ordinary phosphorus. 5. Bromine. 6. Prussic acid, and preparations containing it, as also all cyanides, with the exception of those containing iron. 7. All violently active preparations made from poisonous plants and animals, and manufactured artificially, such as the alkaloids, curare, cantharides, etc.

A GOOD bell metal consists of copper 100, tin 20 parts.

RAISING AND LOWERING TRUCKS IN SHAFTS.—The invention of Mr. George Hondaille, of Paris, relates to a apparatus whereby rods vertically reciprocating in a mine shaft are applied to raise or lower trucks stage by stage. Vertical spindles are arranged to have an intermittent and reciprocating partial rotary motion, and on these spindles are fixed arms or hooks, which by the movement of the spindles are alternately protruded, so as to catch handles projecting from the trucks, and withdrawn so as to clear of these handles. One set of the spindles having no vertical movement their hooks or arms serve as rests for the trucks, whilst the other set descend with the reciprocating rods, and these in their turn catch the truck in their ascent, and so lift it a stage. A like arrangement with different timing of the movement serves for lowering. Instead of one set of moving and one set of stationary spindles with their hooks or arms both sets may reciprocate in opposite directions.

CURE FOR BUCKEYE POISON.—An Ohio farmer wrote to ask if there is any cure for a cow which has been poisoned by eating buckeyes. He had lately lost a valuable milch cow from this cause. A member present had been told that a pint of lard melted and poured down the cow's throat will prevent all serious effects from eating this growth. Another member remembered to have seen this same remedy in print.—*N. Y. Farmers' Club Proceedings.*

The area of a safety valve should be 006. times the area of the fire grate.

Good Health.

Rattlesnakes and Their Bites.

In the course of some notes on the rattlesnake, published in *Forest and Stream*, Dr. J. W. Bailey, of Albany, asserts that this serpent is the most sluggish of the snake family. It never strikes unless in self-defense, excepting just before and after its winter sleep. Of course, the rattlesnakes idea of self-defense is rather broad. Thus, if a person step upon it by the purest accident, the snake will make no allowance, but strikes the intruder on the spot. To strike, however, it must be in close coil, with its head erect. It is capable of springing only a little more than half its length, unless it be lying on an inclined plane; then, by supporting itself entirely on its tail, it can spring much farther. Hogs attack the rattlesnake with impunity, the effect of the poison being probably neutralized by a thick layer of adipose tissue. Dr. Bailey is able to contradict, from his own experience, the statement that serpents do not move about at night; he has often when riding by moonlight seen them gliding through the grass. The author says that when the venom of a serpent has entered the circulation all remedies are unavailing. He has seen a freshly killed chicken split open and applied to the wound, with good results. In such cases the flesh of the chicken turns green and putrid when it comes in contact with the virus. The most certain remedy, however, is whisky or brandy used in large quantities—say a quart—immediately. Intoxication is not exhibited until the poison has been counteracted. Sweet-oil, taken in doses of several ounces, is also effectual. Sportsmen camping in Texas are accustomed, after pitching their tent, to stretch around it a hair lariat. The short hairs irritate the snake's belly as he attempts to cross the lariat, and he retreats.

Sleep for Mothers.

It is all very nice for men folks to write proverbs about "the morning hour having gold in its mouth," and "he that would thrive must rise by five," and

"Plow deep, while sluggards sleep,
And you will have corn both to sell and keep."

But let them be up and down all night with whooping-cough babies, and earache lads, or toothache girls, as nine women out of ten find their rest broken, and they would sing quite another tune. The theory may be beautiful, but the practice is the difficulty. Early rising is an excellent thing if you sleep well, but rank suicide if you do not. Make some provision to have the breakfast got by others, if the morning hour is the first good refreshing sleep you can get. It is this terrible sleeplessness, which so few think an evil of any great moment, that drives such scores of mothers to the insane retreats; that robs life of all cheer, and vigor, and hopefulness, and makes many a young mother look old and broken in her very prime. Some one has truly said, that the cry for sleep the world over, was far more urgent than the cry for bread. You would consider it a cruel oppression which robbed a working woman of a third of her needful food, but she could better live on one meal a day than on a third of her natural rest.—*Esther in Western Rural.*

CHANGE FOR SICKNESS.—Dr. Reginald Southey has recently been delivering a course of valuable lectures on "Individual Hygiene" in London, and in one he introduced a table of "Expectation of Sickness," which he had prepared, and which is as follows: At 20 years of age, calculate on four sick days yearly; at 20 to 30, five or six days; at 45, seven days; at 50, nine or 10 days; at 55, 12 or 13 days; at 60, 16 days; at 65, 31 days; at 70, 74 days. Of course this refers to people of average good health, and not to those who may be afflicted with any ineradicable or chronic ailment.

Eating Bread and Milk with Lime Water.

Milk and lime water, says the *Scientific American*, are now frequently prescribed by physicians in cases of dyspepsia and weakness of the stomach, and in some cases, to our knowledge, the diet has proved very beneficial. Many persons who think good bread and milk a great luxury, frequently hesitate to use it for the reason that the milk will not digest readily. Sourness of the stomach will often follow. But the experience of many will testify that lime water and milk is not only food and medicine at an early period of life, but also at a later, when, as in the case of infants, the functions of digestion and assimilation have been seriously impaired. A stomach taxed by glattony, irritated by improper food, inflamed by alcohol, enfeebled by disease or otherwise unfitted for its duties, as is shown by various symptoms attendant upon indigestion, dyspepsia, diarrhœa, dysentery and fever, will resume its work and do it energetically on an exclusive diet of bread and milk and lime water. A goblet of cow's milk to which four teaspoonfuls of lime water have been added, will agree with almost any person, will be agreeable to the stomach when other food is oppressive, and will be digested when all else fails to afford nourishment.

The way to make lime water is to procure a few lumps of unslacked lime, put the lime in a stone jar, add water until the lime is slacked and is about the consistence of thin cream. The lime will soon settle and leave a clear and pure liquid at the top, which is lime water. As the water is taken out more should be added, and the lime should be frequently stirred up and allowed to settle.

CURE FOR SMALL POX AND SCARLET FEVER.—A writer in one of the city dailies gives the following, which we print for what it may be worth: In looking over my scrap book I find the following recipe, which may prove of service to the general public at the present time. The writer says: "I herewith append a recipe which has been used to my certain knowledge in hundreds of cases. It will prevent or cure the small pox, though the pittings are filling. When Jenner discovered cow pox in England, the world of science hurled an avalanche of fame upon his head, but when the most scientific school of medicine in the world, that of Paris, published this recipe as a panacea for small pox, it passed unheeded. It is, nevertheless, as unfailing as fate, and conquers in every instance. It is perfectly harmless when taken by a well person. It will also cure scarlet fever. Here is the recipe, as I have used it, and cured my children of scarlet fever; here it is, as I have used it to cure small pox; when learned physicians said the patient must die, it cured: Sulphate of zinc, one grain; foxglove (digitalis), one grain; half a teaspoonful of sugar; mix with two tablespoonfuls of water. When thoroughly mixed add four ounces of water. Take a tablespoonful every hour. Either disease will disappear in 12 hours. For a child, smaller doses according to age. If counties would compel their physicians to use this, there would be no need of pest houses."

BURNS AND SCALDS.—The recent fearful explosion on board the British ironclad *Thunderer* has called out the publication of many recipes and remedies. Among them all, the following, contributed by an old and experienced physician, has the merit of convenience and readiness. The remedy is simply this: The common whiting of commerce (found in nearly every kitchen), reduced by cold water to the consistence of thick cream is to be spread on a light linen rag, and the whole burnt surface instantly covered, and thus excluded from the action of the air. The ease it affords is instantaneous, and it only requires to be kept moist by subsequent occasional sprinklings of cold water.

DANGEROUS VEILS.—Ladies in traveling at this season of the year frequently wear veils of gauze most commonly light green in color. It appears that the use of these is not wholly safe; as a case has lately been published of a child, in Troy, N. Y., whose face while asleep was covered with a green veil to protect it from flies. The infant managed to get the fabric in its mouth, sucked it, and died shortly afterward, with all the symptoms of poisoning.

HOISTING BY ENDLESS CHAIN.—The monthly meeting of the South Staffordshire and East Worcestershire institute of mining engineers was held on Monday, last week, at the colliery of Messrs. Wright, North and North, Rowley Regis. The *Colliery Guardian* says: The colliery consists of 90 acres of the celebrated thick coal of South Staffordshire, 65 acres of which are still in the maiden state. The most interesting part of the plant is the adoption by the firm of the endless rope and endless chain systems. The coal is brought to the pit edge in tubs along the main gate-road by the endless chain attached to a 16-horse power engine, and brought down the sides of the down cast shaft. When the coal arrives at the surface, it is conveyed to the wharf, near Oldbury, by an endless chain, 1,800 yards in length, connected with the aforesaid 16-horse power engine, and 500 tons per day can be delivered. Although not new in the district, the visitors looked on with considerable interest, whilst the heavily loaded tubs ran down the incline, and by their momentum brought up to the pit's mouth the empty ones. These unhooked themselves from the endless chain in a regular manner, and went to be refilled for a downward journey.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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THE ORIGINAL ARTICLES in this paper are mostly set in solid type, giving in our columns one-third more reading than is contained in ordinary leaded matter.

Our latest forms go to press on Thursday evening.

San Francisco:

Saturday Morning, Aug. 26, 1876.

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WYOMING MINES.—A correspondent sends us some items from a district which is 45 miles north of Rawlins, in Wyoming Territory, but fails to tell us the name of the district. He informs us that they are opening up some very good mines there. The Vulcan company have already spent some $30,000, and are now incurring an outlay for machinery of $20,000. The tunnel to strike the lead is 400 feet in length; depth from surface, 200 feet; width of lead, 19 feet in vein matter, or 29 feet between walls. No excitement has been made about the matter, for the reason that no assistance is needed from capitalists, although at the same time they would like to see good men come in and develop some of the mines in the district, of which there are hundreds that would pay. In the "Matilda Jane" pockets of peculiar ore are being met with, assaying gold, $38; silver, $34 per ton. Works are being erected, consisting of furnaces, battery pans, etc, the process being similar to the Washoe process.

IN reviewing the Southern manufactures, the Chattanooga, Tenn., *Times* says: The South has to-day more furnaces in blast in proportion to her number than the North has, and very few of ours are losing any money, while constant loss at the North is the rule. We believe the only mill in the United States running exclusively on railroad iron which declared a legitimate dividend for 1875, was the Roane iron company's mill in this city.

THERE is a great anxiety among leading coal and iron firms in South Staffordshire, in consequence of the hills of another great iron-making concern in the Cleveland district having been returned. The circumstances leave little hope of the failure being avoided.

Combustion of Coal.

It has been stated that with the best appliances yet discovered for converting one ton of coal into the most useful effect in what we term horse-power, the result is only ordinarily ten per cent. to twenty per cent. The utmost that has ever been claimed is from twenty-five to thirty per cent of what has been calculated as the theoretical amount. It is difficult, however, to verify these statements in a satisfactory manner. The various classes and grades of coal require different fire grates, different speeds of burning, different means of admitting the air to form proper combinations of gases, and failure in these conditions alone would allow a loss of calorific value up the chimney. The usual way in which coals have been tested is crude—the same boiler, the same grate space, the same means of admitting air with every class of coal. In reality such tests only prove which kind of coal is best adapted to a particular class of boiler, not which coal will give the most useful effect.

It is well understood that few coals burn in the same manner, but this fact is often lost sight of. To accomplish a true test of their value the heat of the escaping gases must be taken into consideration with a pyrometer, and it must be ascertained by analysis that the whole of the combustible products have been consumed. Accurate tests of the respective working effects of the coals must be made under different conditions before any fair conclusion can be arrived at. It is stated that if the number of units of evaporation of steam from water at 212° produced by the combustion of one pound of a given kind of fuel, be multiplied by 966 (the latent heat of evaporation at 212°), and again by 772 (the number taken as the mechanical equivalent of heat), the result will be the number of units of heat of evaporation, of that particular kind of fuel, expressed in foot pounds of work.

It seems impossible to raise the effective power of coal to a higher rate than that mentioned above with our present system of boilers and engines. The loss of heat and consequently of power is due to many causes which seems impracticable to remedy. In all non-condensing steam engines the expenditure of heat is accounted for as follows: in the production of actual work on the piston; in raising temperature of feed water; in discharge of steam into the air through cylinder; in loss from leakage and in radiation or conduction. As before stated the efficiency represented by actual work bears a very small proportion to the mechanical equivalent of the heat transmitted to the water in the boiler from the combustion of fuel. Although these facts are well known and a multitude of intelligent men have been making every effort to overcome them for many years, little improvement has been made and the percentage of efficiency remains about the same. Still the subject is being continually investigated, and hopes are entertained that some day boilers and engines will be devised in which the loss will not be nearly so great. Even an improvement which would raise the percentage ever so slightly would be of value as an indication of what might follow.

A Sad Suicide.

William Teal, an old and highly respected citizen of Bingham, Utah, committed suicide on the 13th inst., by swallowing poison. He was an industrious and steady miner, and lived in a cabin alone. His name is well known to readers of the MINING AND SCIENTIFIC PRESS, as he has been an occasional correspondent of ours for several years. Mr. Teal was an intelligent and close observer, and his articles to this and other journals on subjects connected with the mining interests, were always appreciated. A note found in his cabin, and addressed to the coroner, gives his reasons for desiring to die in the manner he did. It reads as follows:

"When this shall be read I will have ceased to live. I will die by my own act. I have nothing to regret in life. I have done no intentional wrong, and have done all the good I could consistently with my ability. Looking back upon life, it seems like a troubled dream that I am anxious to shake off. Bad health and declining years make life a burden to me, and as its continuance can be of no benefit to myself or society, I bid the world adieu. The fatal cup is before me, which I hail as my kind deliverer. I am ready for the burial; put me in the last resting-place as I am. There are no near relatives to mourn my loss—none, perhaps, to whom I owe any duty. I think not. Adieu, world. WILLIAM TEAL."

As he says above, he was ready for burial. The house was swept clean, everything was piled away neatly, and from the looks of things he expected visitors. He had shaved clean, dressed himself in his best clothes, with a collar and black necktie on, and when found in bed had a blanket tucked snugly around him, with his cheek resting on his fingers, as if in deep study.

ON FILE.—The crowded state of our columns this week compels us to defer publication of several articles on hand, viz.: "Comstock Papers," "Alpine County Mines," "Globe District, Arizona," "Mechanical Ore Concentration."

A Plea for Inventors.

[For the MINING AND SCIENTIFIC PRESS, by JOHN L. BOONE.]

Of all the mental efforts requiring imaginative construction none is more difficult than that which is required to develop a new mechanical movement, or originate a new plan-mode or mechanical principle. The faculty of inventing depends more upon natural endowments, or rather instinctive intelligence, than upon education and experience. Experience only figures in this connection so far as it serves to familiarize the inventor with the wants or deficiencies in any line of industry; and education assists in giving completeness to the conception; but the conception itself is a matter entirely independent of either, and is just as apt to be suggested by an illiterate and inexperienced person as by one who has spent years in studying and investigating the matter; in fact more so, because education and experience are both the result of study and long familiarity with existing devices, so that they, to a certain extent, incapacitate their possessors from looking beyond the boundary of their experience and teaching. Upon the principal that "fools rush in where angels fear to tread," the illiterate inventor will investigate methods and plans which many an experienced artisan or workman would not entertain for a moment, simply because they do not possess that imaginative construction necessary to give the new creation mental existence, and because their teaching and experience do not include the new idea. Thus many of our most important and most novel inventions have been originated and developed by persons entirely devoid of technical knowledge and experience in the field of mechanics to which their inventions belong. Accident, circumstance and necessity all contribute to the discovery of new principles. Sometimes, however, we find the skilled and educated mechanic possessed of the inventive faculty, and when this is the case he proves a "world mover." Such was Ericsson, who did more to develop the engine and strengthen the navies of the world than all other inventors combined. Such was Morse, who, with a skill and learning which was admirable in its completeness, adapted and perfected the telegraphic system; with such precision and judgment that to-day it retains the principle features that he gave it. Such were Hoe and Colt, and other inventors whose memories the civilized world hold in reverence.

All patents are not productive—neither are all farms; all men are not rich; all mines are not bonanzas; but if we were to strike a balance sheet we would find that the proportion of the profitable and unprofitable patents correspond in a like ratio with the other profitable and unprofitable enterprises which men undertake.

When we consider the vast number of patented articles in the market, many of which are covered by a number of patents, we will realize that the work of the inventor is very often profitable. There is scarcely an article of human convenience or necessity in the market to-day, that has not at sometime or other been the subject of a patent, either in whole or in part. The sale of every such article yields the inventor a profit. If we purchase a box of paper collars a portion of the price goes to the inventor; if we buy a sewing machine the chances are that we pay a royalty to as many as a dozen or 15 inventors at once. Indeed the field is so vast and the number of profitable patents so great that I would by far prefer to undertake a recapitulation of those patents which are not profitable than those that are.

The universal sentiment is that genius is its own reward, and in order to give effectiveness to the sentiment the person who possesses genius in any branch of industry, is allowed to set his own price upon the result of his labors. It is therefore but a just recognition of the services of the inventor that he be allowed to provide for his own wants from the benefits which he confers upon the public. The artist who produces a picture of unusual merit can find purchasers for it at a fabulous price. The stage actor who can draw crowded houses can demand and receive for a single performance what would be a year's salary for an ordinary workman; and the lawyer that possesses the faculty of swaying the minds of a jury by his eloquence can demand and receive whatever sum of money he desires for his services, yet the labors of the inventor yield more substantial results, and benefit mankind more than all these combined. He is the sapper and miner who prepares the way and overcomes all of our mechanical difficulties; in fact he furnishes us with the honey, while we are drones in the hive that benefit from his labors. Give credit then where credit is due. The inventor is the world's benefactor, and as such we take off our hat to him.

SINCE the inauguration of the Suez canal rain falls regularly along its line, where such a blessing was unknown before. Vegetation is quite abundant in consequence of the phenomenon.

CONNECTICUT won the championship in American skill last year, having 706 patents, or one to 761 inhabitants. Arkansas is at the foot of the class; Massachusetts next to the head.

A BLACK HILLS correspondent writes: Thousands of men are idle, and cannot find employment to make a living at.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

DIFFERENTIAL HYDRAULIC ELEVATOR.—Joseph Perkins, S. F. The object of this invention is to provide certain improvements in hydraulic elevators, and it consists in the employment of one or more main hoisting cylinders in combination with supplemental cylinders or brakes, which serve by their action and connections to modify the operations of the main piston in such a manner that a heavy load may be raised at a certain speed when all the pistons move together; but when the supplemental pistons are prevented from moving, pulley connections through their uniting cross heads and that of the main piston will so multiply the travel of the hoisting rope that the cage will be raised to its full hight by a movement of the main piston over a small portion of the length of the cylinder. By allowing the operating piston or pistons to move at a different speed from that of the supplemental pistons, the speed and power can be regulated to the load to be raised, and this may be accomplished either at starting, or at any part of the ascent of the load. The water for the supplemental cylinders may be taken from the same pipe that supplies the main cylinder, or it may come from some other source. It may also by a proper arrangement of the pipes be simply transferred from one end to the other of the cylinders, instead of being allowed to pass off. The details of this machine are too complicated to explain clearly without the aid of engravings.

ORE FURNACE.—Horatio G. Livermore, S. F. Mr. Livermore's present invention comprises improvements on the furnace previously patented by him. These improvements consist principally in the continuation of the inclined ore floors, these floors being carried alternately to the right and left down through a vertical stack, having vertical partition walls corresponding with the divisions between the channels beneath the upper inclined floor. Fire places extend through the lowest part of the stack, so that the fire will pass up between each of the partitions, and it is deflected so as to heat both the upper and lower surfaces of the ore as it passes over the floors. Passages from the waste chambers are carried up through the walls to utilize the heat and fumes, as in the former patent.

BRICK AND MORTAR HOISTING MACHINES.—Thomas Mann, Portland, Oregon. This patent covers certain improvements on a similar device previously patented by the same inventor. The present improvements relate, first, to the construction of the scaffold or frame of the machine, by which the inventor is able to obviate the necessity of cutting the scantlings or pieces of timber of which the frame or scaffold is constructed; secondly, to improvements in the construction of the carriage or cage which sustains the hod when it is being raised and lowered. The improvements noted are the result of several years' experience with the original machine, and they render the machine complete and easily adapted to any class of work.

SEED PLANTER.—William T. Easterday, Watsonville. This invention relates to a novel device for planting corn, peas, beans, or other seeds, and consists of a double alternating carrier, which takes the seed from the containing hopper and carries it to the dropping spout, being actuated from the bearing or traveling by means of a lever and connections.

The Mechanics' Institute Fair.

Interest in the Mechanics' fair continues without abatement, and although the receipts do not come up to the figures of last year, the prevalence of an epidemic is sufficient cause for that. We give on page 138 a list of the exhibits at the fair from the entry books, and will next week publish a continuation of the list, adding those articles entered since the 19th inst. The entries still continue, and a number of interesting articles have recently been placed on exhibition. We give on the first page an illustration and description of the magneto-electric machine for producing the electric light, which is on exhibition at the fair.

Those who have not done so should by all means visit the fair. They will find many things of interest to see, the details of which can nowhere else be examined so conveniently. Exhibitors are always ready to explain everything to interested visitors, and no trouble has been spared to make the Pavilion a pleasant and instructive place of resort. The social features are fully recognized by the younger portion of the community. The music is excellent, the promenades spacious and airy, the building well ventilated and the attractions many and varied. The exhibition of the Mechanics' Institute is always the best one given on this coast and deserves substantial encouragement.

Some Mines of Humboldt County, Nev.

[From our own Correspondent.]

The first mining reached after leaving Carson City was in the vicinity of Oreana, on the line of the Central Pacific, 400 miles by rail from San Francisco.

The Hurricane S. M. Co.,

Incorporated in your city, are now working three mines about five miles from the station, in the Arabia mining district.

The Vanderbilt, at the bottom of a 225-foot incline, has a vein varying from three to four feet of good smelting ore, consisting of lead, antimony, and silver.

The Belvidere, at present working, is 24 inches wide, containing ore of the same character.

The Hurricane is worked by means of tunnel, the drift extending along the ledge a distance of 240 feet, showing a vein of ore similar in all respects to that found in the other lodes, and varying in width from two to five feet.

The company are running a smelting furnace on the ores taken from their mines, and turning out from four to five tons of bullion every twenty-four hours, averaging about $150 per ton in silver. The bullion contains 60 per cent. of lead, 30 of antimony, and loss in base metal of eight or nine per cent.; the lead bringing four cents per pound at Omaha. They are putting through daily from 15 to 16 tons of ore which yields from four to five tons of bullion. When I visited the furnace, which is situated on the Humboldt river, two and a half miles from the station and three and a half from the mines, they had just turned out in a 16 days' run 70 tons of bullion, and expected to continue for 30 days more before stopping to re-line the furnace. The smelting is under the efficient management of Mr. E. P. Torrey, the original builder and owner, which is a sufficient guarrantee for the future.

There is a small custom mill connected with the furnace. Mr. H. M. Hayes is superintendent of the mines and the works, at present employing about 30 men, with expectation of soon finding room for 20 more. The future outlook for the company, so far as one could judge from present indications, is very encouraging.

The Oreana Mill, Smelting and Refining Co.

Have several mines of similar character to the above; and very large smelting works at old Oreana, on the river, about two miles from the station, where large amounts of bullion have been turned out.

The Tiger,

Is located near Limerick, seven miles northeast of Oreana, and is owned by Messrs. Hope & Bennett. It is opened by shaft 125 feet, and drift each way 75 feet, showing a 15-inch vein that works $110 in gold, by mill process, the sulphurets giving assays as high as $3,721 per ton of same. The Oro Fino, an extension, has on dump 200 tons of similar quartz assaying $80 per ton.

Ten miles above Oreana, in the neighborhood of Rye Patch station, (which derived its name from a species of wild rye that is found here,) there is what promises to be eventually a good mining district, having already one mine in successful operation, that has paid its dividends and is likely to do so again.

I allude to the claim of the

Rye Patch Mill and Mining Co.,

Three miles east of the station. It has hitherto been worked by tonnel, the greatest depth attained, about 150 feet from surface, showing a width of vein matter from 40 to 100 feet, with deposits of rich ore throughout. The ore is chiefly chloride of silver, not requiring the furnace, said to be easily reduced by mill process and working up to 85 per cent. I was informed by the superintendent that since his connection with the mine, now more than a year, no assessment had been required, and though new machinery had recently been purchased at a considerable cost, the probability is that none would be necessary, as the quantity and quality of ore in sight were such that the hoisting works could be put in place, the new shaft sunk, and all running expenses paid by means of the monthly yield from the mine. Some of the rock is very rich, but on an average goes about $70 per ton. They have a 16-stamp mill, capacity 15 tons per twenty-four hours. The tailings, a large amount now on hand, are ground and amalgamated in pans, five in number, 40 tons being reduced daily. Great hopes are entertained in this community generally, that an immense body of rich ore will be found as soon as the mine can be fully opened up by means of new shafts, and a new impulse would at once be given to the whole district, as many claims have been located, some of which give indications of developing into splendid mines. One of the most promising of these is

The Hard Cash,

Situated within 1,000 feet of the Rye Patch, the property, I believe, of Messrs. Cody & Douglass, and can be traced by the croppings nearly the whole length of the claim, 1,500 feet. It has been laid bare at several points by tunnels, showing a vein of fine milling ore from 9 to 40 feet in width, the greatest depth reached not exceeding 50 feet. Ore taken from one point in the vein without assorting, worked mill process, $43 per ton. The average assays from another point where the lode is well defined reached $60. The richest ores in this region are found in bunches. Some deposits of this kind in the Hard Cash were said to give assays as high as $900.

The Washington,

Within a short distance of the above, has an incline of 125 feet. Ten tons unassorted worked $35, some bunches giving very high assays.

The Pennsylvania

Was located as a southern extension of the Rye Patch, and a tunnel following along the hanging wall is said to lay open ore of a similar character; and the Last Chance, taken up as a northern extension, has had a drift along the ledge some 60 feet, exposing ore in a few places, claimed to reach by assay as much as $150 per ton. The North Star, at no great distance from the Rye Patch on the west, has not been prospected much, but indications were represented as good.

At Unionville, once a rather flourishing place, only one company is at work, the Manitowoo & Arizona, under charge of Mr. J. C. Fall, widely known in mining circles, and to whom I am indebted for information as well as other favors.

He expressed the belief that under ordinary circumstances the mines could be made to pay, h.towing to the heavy

Discount on Silver

The work had been partially discontinued, only sufficient being done to keep them in proper shape for future working. The two mills belonging to company are running on tailings, over 80,000 tons being at present on hands, with an assay value of $15 to $30 per ton, which will pay a profit to the company, as the mining expenses are less than on ore.

The mines had been constantly improved up to the time of cessation of work, and their future is believed to be very encouraging. The stopes on the ledge will vary from two to four feet thickness, much of low grade are but improving with depth, the greatest attained being 500 feet. The company contemplates running a tonnel to tap the lode at a depth of 1,200 feet.

The Pioneer Inakip mill and mining company have a mill and valuable mines here, but owing to litigation and an injunction have been suspended for the past six months. Some of the ore from the Henning, one of their mines, will assay from $200 to $300 per ton. There are doubtless other good mines here that are lying idle for want of capital to work them.

The Ross Mine

Has an incline down 172 feet, showing a uniform ledge all the way, pitching west at an angle of 45 deg. Work was stopped on account of having too much water to contend with. Mr. Ross informed me that he had had some of the ore worked at the Auburn mill, near Reno, that had yielded handsomely, and all that was required to make a success of the mine was either a drain tunnel of 360 feet in length, or good hoisting works. Only a few facts were gleaned in regard to the

Sheba

At Star City. The main shaft has been lowered nearly 200 feet. At the 54-foot level a drift has been run a distance of 625 feet, and at a point 200 feet from main shaft, a winze following ledge is down 45 feet. At the 160-foot level another drift has been extended from main shaft 56 feet, and to be continued 144 feet further for the purpose of connecting with the winze above mentioned. The smelting ore is said to be worth $75 per ton, to say nothing of the rich sulphurets, etc., and from all that could be learned its future is likely to be as prosperous as much of its past.

The Hygiene Copper Mine

Is located in Santa Clara canyon, eight miles south of Mill City, and opened by tunnel following along the ledge, which is about five feet in width from wall to wall. Some native copper, together with a considerable amount of black oxide of copper, is found, that will run as high as 70 per cent., and the vein is improving in both quantity and quality as the work proceeds, and is looked upon by mining men, so far as depth has been attained, as a fine prospect for a permanent mine.

The Jersey,

Situated in a district of the same name, and about 45 miles from Unionville, is at present shipping a large amount of good ore to Salt Lake for smelting, and is represented as doing well, and generally spoken of as one of the best mines in Humboldt county.

At Winnemucca a considerable amount of business is done in the way of working ores at the

Humboldt Reduction Works,

Mr. George G. Berry, President, and Mr. D. Van Lennep, Manager. The ore is first run through a rock breaker, then kiln dried; and being passed through a patent self-feeder to the stamps to be dry crushed, it is carried from the battery by elevators to the top of a large Stetefeldt furnace, where it falls into the flames. After a thorough roasting, with salt for chlorination, it is drawn from below and passed through the amalgamating pans. The flues connected with the furnace are not less than 1,000 feet in the aggregate. The works under the present management are running successfully and is a paying property.

The Badger Mine,

In which some of the prominent citizens of Winnemucca hold an interest, is about 90 miles north of this place, on Bartlett creek. It is said to have a vein of ledge matter between walls of about 20 feet, and five feet of good paying ore, a gold bearing quartz, exceedingly promising, that worke by an arastra from $40 to $75 per ton.

The Ophir,

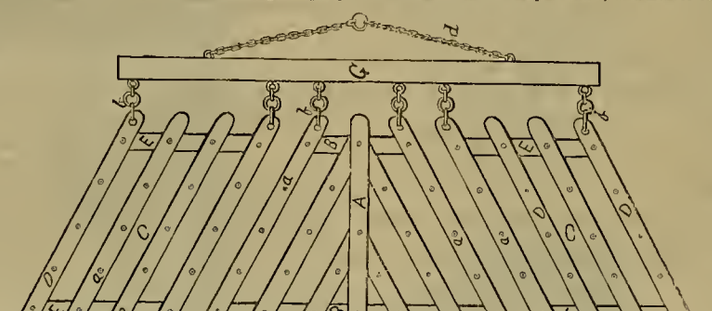
J. Robbins owner, two miles north of Winnemucca, has on surface 70 feet of vein matter and smelting ore, on which little work has been done; assays reported run as high as $1,600, and yield of silver, working process, $318, with 24 per cent. lead. A. C. K.

Facts about Peat.

[Written for the PRESS by SAMUEL PURNELL.—No. 4.]

Use for Metallurgical Purposes.

For metallurgical purposes peat often contains too much ash. If a raw peat contains 10 per cent. of ash, and affords 25 per cent. of charcoal, it is evident that the latter will contain no less than 40 per cent. of ash—a ruinous amount for many purposes. Wood charcoal contains about three per cent. of ash, and about twelve per cent. of hygroscopic water; and coke three to five per cent., and five to ten per cent. of hygroscopic water. Unless made from well condensed peat the charcoal will be friable, light, soft, and apt to fly to pieces under the blast, and so choke a furnace; neither will it bear transportation. If the cost of cutting, condensing, drying, charring and transporting peat charcoal do not render it too costly, and its ash is not in excess, the smelter need want no better fuel.



PERKINSON'S FLEXIBLE HARROW.

Peat charcoal iron furnaces require low pressure and hot blast; a lead furnace would require a cold blast doubly as heavy as for wood charcoal. For remelting foundry iron peat charcoal is excellent, also for the blacksmith's forge. In Bavaria even the ordinary air dried peat has been successfully used for iron smelting.

The charring of peat may be readily and cheaply performed by waste furnace gases. The two operations can be united—smelting iron and preparing charcoal. An objection to the use of raw peat for smelting consists in the stream of water evaporated, (free hydrogen being at the same time evolved and turning to water,) tending to oxidize the ignited iron. At an iron works in Canada blooms made with peat alone were pronounced equal to best Swedish iron. Peat is reported as having been used at Fishkill, N. Y., and at Maysville, Wis., with success in smelting iron. For the production of car wheel iron and steel rails it is claimed that peat is of special value, also for iron for bridges, and for other works subjected to great tensile strain. Official French tables show that 2,800 pounds of peat charcoal were required to produce one ton of pig iron—the same amount as with wood charcoal. For smelting refractory lead and copper ores it would seem that peat charcoal is well adapted, its ash tending to produce a fusible slag.

From the

Absence of Bituminous Coal in California,

Forests or other material from which a cheap metallorgical fuel may be obtained, it would appear wise that we seek to make useful the vast accumulations of peat throughout the State. It seems probable that iron could be produced from peat charcoal of fully as good quality as that imported, and at a less price. It might also be profitable to partially use it for making illuminating gas. The charcoal would suit for a number of industries, and for steam and domestic uses, if peat can be furnished for two-thirds the price of the coast coals it would doubtless be extensively consumed.

Gems and Precious Stones.

[Written for the PRESS by HENRY G. HANKS.]

L. Chrysolite, Olivine, Periol.

Chrysolite, of which olivine and peridot are varieties, is a silicate of magnesia and iron, sometimes containing small quantities of manganese, lime and nickel. The iron varies much in the different varieties; in 27 analyses published the extremes are 6 and 29.71.

The precious chrysolite, which is the only variety used as a gem, is of a pale, yellowish green color, transparent. It is brought to Constantinople for sale, but the exact locality is unknown. According to Dana, well formed crystals of chrysolite an inch across are very uncommon.

The following analysis of a sample of chrysolite by Stromeyer may be taken as a type, although the composition varies in different specimens: Silicia, 39.73; magnesia, 50.13; protoxide of iron, 9.19; alumina, .22; protoxide of manganese, .09; oxide of nickel, .32; total, 99.68.

This mineral is called peridot when it is of a deep olive green color. When of a yellowish green and massive it is called olivine.

Peridot generally occurs in rolled masses, in which form it finds its way to San Francisco from Arizona.

It is found also in Ceylon and Brazil. Both olivine and chrysolite occur in Egypt, Mexico, Auvergne, the Tyrol and in Scotland. Olivine is found in the lava of Vesuvius, and is common and abundant in the lava of Mauna Loa, the volcano of Hawaii, Sandwich islands.

The crystalline form of chrysolite is orthorhombic.

B. B. whitens, but does not fuse; with the fluxes gives the reaction for iron. Hyalosiderite, a variety of chrysolite, fuses with difficulty to a black magnetic globule. Decomposed by boiling muriatic or sulphuric acid, the silica forming a gelatinous residue. Chrysolite has the singular property of changing its specific gravity after ignition. Specific gravity before heating, equals 3.389; after, equals 3.378. Hardness, 6—7. Lustre, vitreous; streak, usually uncolored. Transperent, translucent. Fracture, conchoidal; double refraction, positive.

Olivine sometimes occurs in meteoric stones.

The name chrysolite signifies "golden stone."

Neither the chrysolite or peridot rank high as gems, nor do they command a high price. When chrysolite is cut, it is usual to heighten its color by placing a piece of gold foil under it.

Chrysolite is a favorite with a few connoisseurs in Europe, who enjoy its peculiar shade of color. Occasionally a fine specimen commands $15 per carat.

Perkinson's Flexible Harrow.

The attention of the farmers of this coast is invited to the illustration of a new flexible harrow, invented by J. E. Perkinson, of Santa Rosa. Merits are claimed for this harrow over all others in use. It bids fair to give good satisfaction in its work, and should be thoroughly tested by farmers. It has the build of durability. The inventor informs us that it can be made for $35 on this coast.

This harrow is made in three sections, which are connected to a draft bar by links and clevises. The bars are about four feet six inches long, and there are four bars in each of the two outside sections. The center section is filled up as seen in the engraving. The harrow is made of good Eastern oak, with 63 steel teeth, and covers about 13 feet width of swath. The inventor assigns the following reasons for the superiority of his tool: First, by the lightness of the draft, two horses, of ten hundred each, can draw it on loamy soil with ease. Second, it is the best attachment in use. The draft her is perfect. By using an equalizing chain to draw by, it keeps the harrow in its right position and makes it easy to turn at a corner, as no wide spread harrow can be turned with ease without those equalizers. Third, where other patentees have failed in setting the teeth so that each and every tooth will make a separate and distinct mark, this harrow will do it on trial. The harrow is manufactured by the inventor, J. E. Perkinson, at Santa Rosa, Cal., to whom applications for rights can be made.

FIRES.—The mill of the St. Patrick mining company, destroyed by fire on the 21st instant, was insured for $10,000. The works of the Rocky Bar mining company, Virginia, Nevada, were fired on the night of the 23d inst., by an incendiary. The three compartment shaft also caught on fire.

A WASHINGTON special says: Senator Mitchell has succeeded in getting all the Agricultural college lands in Oregon approved by the Secretary of the Interior, except 80 acres, as to which there is a conflict.

THE Emperor of Morocco has declared his inability to send his customary subsidy to the Sultan of Turkey, owing to the heavy strain on his resources, caused by the suppression of the disturbances in his own dominions.

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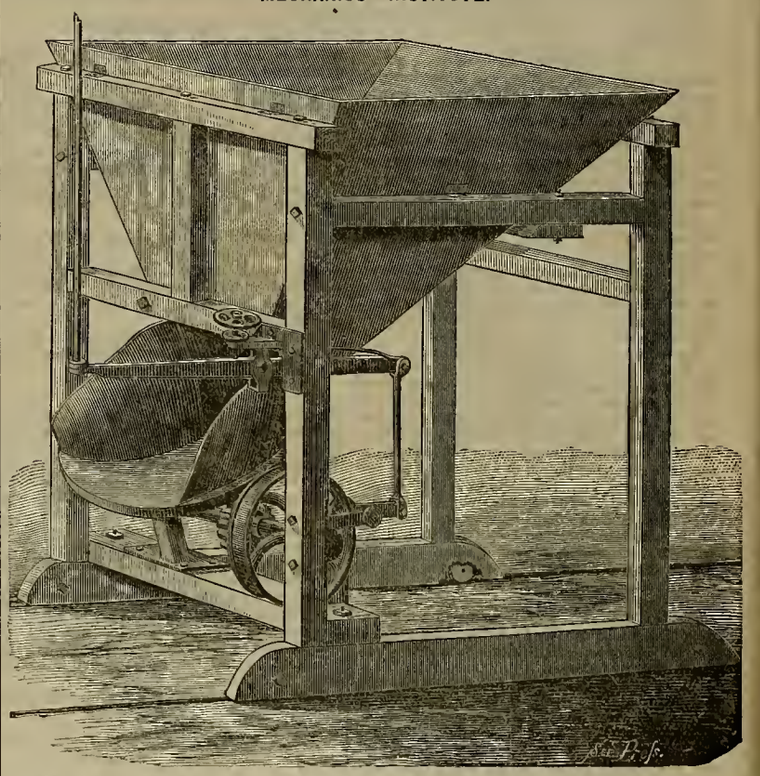

It may be considered as now fully demonstrated, by careful and long-continued experimentation, that the plan upon which a perfect ore feeder must be constructed is that of the *carrier*, and not that of the shaking table. Uniform and accurate feeding is not possible upon the latter plan. The ore must be evenly carried, upon a steadily advancing plane, or table, to the line of discharge, and there simply *dropped*. Spasmodic or jerky contrivances will not answer the purpose.

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A letter received from the Julian Mill, Newcastle, says, of the Table Feeder: "It is the most perfect Feeder we have ever seen; don't see how any mill can do without them."——A letter from Mr. C. O. Belding, of Amador County, speaks in the highest terms of them.——Two of the machines were shipped to the Bunker Hill Mill, Amador County.——Mr. Stevenson, of Boston Mill, Gold Hill, Nevada, says they are the best Feeder he has ever seen.——Mr. Lachman, of the Soulsby Mill, Tuolumne County, says they work splendid; could not do better.——Two of the machines were shipped to the California Company, Nevada City.——O. J. Garland, of Mosquito Gulch, Calaveras County, says: "I find them an excellent machine."——S. D. B. Stewart, Supt. Lincoln Gold Mining Company, says they are a perfect success.——O. C. Hewitt, Supt. Keystone Mining Company, says: "I can safely recommend them to all millmen."

We warrant the machines to give perfect satisfaction, and to be a better and more durable Feeder than any other in the market, and will sell them as cheap as any other machine of its class.

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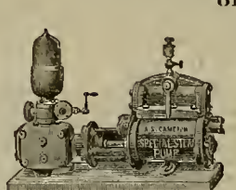

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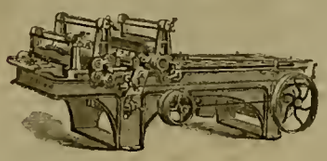

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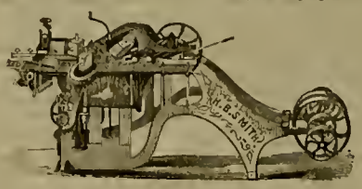

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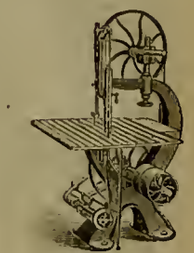

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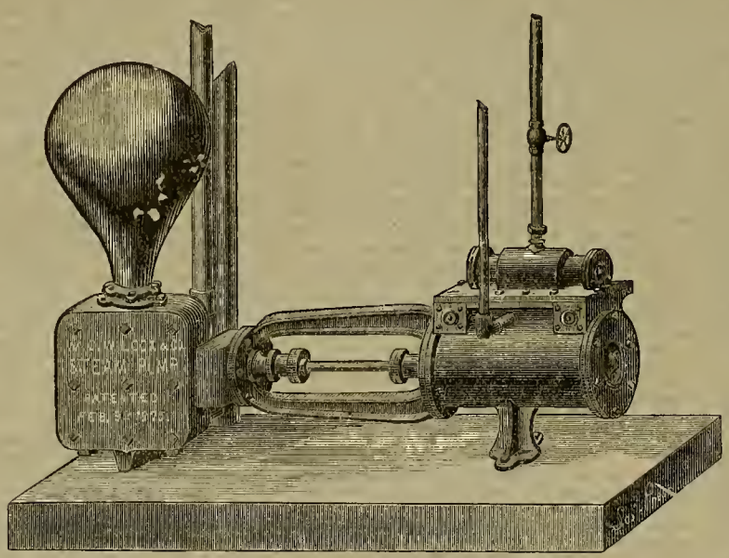

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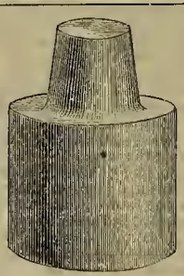

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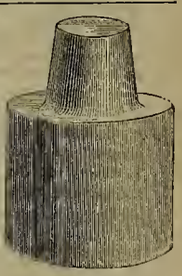

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(Continued from Page 142.)

Montana.

A RICH STRIKE.—Butte *Miner*, Aug 5: In sinking upon the last shaft of the Lats Acquisition spur lode, a rich streak of ors has been met with, at the water level, which assays $1,361 per ton, taken from pieces of unselected rock. This is a most excellent result, and is better than any ore yet taken from this mine, and at once proves the fallacy of skeptics who have asserted that at the water level the ores of this camp would grow too lean, or fail entirely.

THERE is at present a greater activity among the copper miners than ever before known in this camp, and large quantities of very rich ore are daily being brought to the surface. The steady demand for this article for shipping purposes makes a ready market for all that can be taken out.

A SILVER brick, valued at $800, was yesterday shipped from the Centennial mill. These shipments are continually being made from this mill, Mr. Howe sending them off as fast as they are manufactured.

A RICH discovery was made at Black Tail, about 12 miles from Butte, recently, of gold-bearing quartz. A small specimen shown us looked as if it contained from two to three dollars of that precious metal.

MR. OLIN having received from Salt Lake the screens necessary for the successful running of his works, has at last started up in good earnest to concentrate the large amount of copper ore which at present is lying upon the dumps at the various mines.

FIFTEEN stamps are now running continuously for the first time since the erection of the mills at Butte, and from this date the shipments of bullion will be heavily increased. At least 15 tons of quartz will be crushed daily, and as both mills are running upon ore which samples from $100 to $200 per ton, the amount of bullion produced will be up among the thousands by the end of the month.

The Averill Paint.

A walk through the works of the Averill Paint Company, corner of Fourth and Townsend streets, is highly instructive and entertaining, and we would advise persons interested visiting the city to spend a part of a day in that way. But it is not of the works that we intend to speak in this article. It is of the paint itself that we propose to discourse. A wrong impression has gone abroad regarding this valuable invention that should be corrected It is not so much the fault of the people as it is of those who first gave the paint its commercial name. From the fact that it was called chemical paint arose the mistaken idea that it was not really a paint after all, but a substitute for the paints then in use. That is not the fact. It is a paint, and manufactured of nearly the same material as the paint commonly in use, with the addition of certain chemical compounds to improve those qualities most desirable in the lead and oil paints of every day use.

The object of the inventor was to manufacture a paint that would continue to be a paint for all time to come, from the time of first mixing until its complete destruction by the elements. Common lead and oil paint separates into its constituent parts if allowed to stand a few minutes after mixing. If put upon a building the oil often penetrates and leaves the lead to be rubbed off like chalk, or beaten off by the weather.

Not so with the Averill paint. Being composed of lead, zinc and oil, all of the purest, it would be the best of paint with no additional constituents. But the addition of water glass—soluble glass—causes a chemical combination of the lead and oil so that they will not separate under any circumstances either in the can or on a wall. It is thoroughly ground together in manufacturing, is not effected by rain either when fresh or dry, and has more gloss than ordinary lead paints.

The Pavilion was painted with two coats of it eighteen months ago, after having stood one year without paint.

The Capitol building, corner of Kearny and Pine streets, and the building northeast corner of Sutter and Montgomery streets, were painted with it six years ago. The latter has since been washed, which would destroy other paint entirely. All these buildings attest its merits.

It is more economical, as it takes less of it to do the same work. We have used it, and want no better paint than the Averill.

AMERICAN INVENTIONS ABROAD.—Among the great American inventions which have been adopted all over the world, are the following: 1. The cotton gin, without which the machine spinner and the power loom would be helpless. 2. The planing machine. 3. The grass mower and grain reaper. 4. The rotary printing press. 5. Navigation by steam. 6. The hot air (caloric) engine. 7. The sewing machine. 8. The india rubber industry. 9. The machine manufacture of horse shoes. 10. The sand blast (for carving). 11. The gange lathe. 12. The grain elevator. 13. The artificial manufacture of ice on a large scale. 14. The electro-magnet, and its practical application, by Henry and Morse.

THERE is much interest and speculation in Philadelphia concerning the probable results of the dissolution of the coal combination. The decline in prices in coal seems considerable, as half a million tons will be thrown on the market.

DISPATCHES from New York indicate that the coal combination has been broken up. As a consequence there is a marked depression in the stocks of the anthracite railroads.

A NEW command has been established under General Crook, to be known as the District of the Black Hills.

The Centennial at Philadelphia.—No. 12.

Again taking a stand near the center of agricultural hall, and facing west instead of east, as we did to view the machinery exhibit, we have before us samples of all the various products of the earth and see, collected from each of the four quarters of the globe. Upon our immediate left is Spain, with her vines and fruits; just beyond is Russia, and still further to the left we have grouped together some 20 other nationalities, each with its peculiar products neatly displayed and convenient for inspection, study and comparison. Upon our right are similar products from the various portions of our own country, generally arranged by States. If we pass eastwardly a short distance along the main aisle and then turn short to the north, we come upon

The California Display,

In charge of Mr. Scupham and under the auspices of the Central Pacific Railroad Co. We have already noticed this exhibit at considerable length, but now return to it again to call attention to a few additions which have recently been made, one of the most noticeable and attractive of which is a mammoth representation of the California State seal, some three feet in diameter, and most elegantly engraved on wood by D. W. Standford, of Oakland. It is shown to good advantage and attracts much attention. Near by has been erected a pyramidal trophy of California cones, from Mr. Begg's collection. There is also a fine display of this year's crops—much that was sent, however, was destroyed by being packed too green or damp. Wheat is shown in the stalk and grain, the former six and a half feet high. Rye is shown seven and a half feet high, and corn from 18 to 22. Stalks of mustard are shown 13 feet high. There is a fine exhibit of silk in this collection, also of jute, and 56 different kinds of California ornamental woods. Messrs. Aitken, Luce & Co., of Sacramento, exhibit a beautiful monument of California marble, surmounted by a white dove. There is also a fine exhibition of silk in this collection. I am informed that the first car load of fruit intended for the Centennial was received some time since, but was not placed on exhibition on account of the imperfect condition in which it arrived. Mr. J. Earl, of the California emigrant bureau, is expecting to receive fruit regularly during the remainder of the season, which will be placed in the pomological annex for exhibition. The Pacific coast railroad exhibit may now be considered full, and is much larger than was originally intended. It should be mentioned in this connection, that California's large grapevine, after laying around for some weeks waiting for the assignment of a suitable place for its exhibit, has at length been set up near the center of the agricultural hall, where it is attracting much attention as a specimen wonder from the Golden State. In addition to the silk exhibit in agricultural hall, Mr. Neuman also makes a very fine exhibit in the silk department of the main building, and another, in which the worms are shown in all their various stages of growth, in a large case placed in the center of the California building.

The Wine Exhibit.

There are several exhibitors of California wines; but the one that attracts chief notice is that of Mr. Mahe, of San Mateo, who cultivates the Mission grape only, and manufactures from it what he styles, "Mahe's California golden wine." This exhibit is in charge of Mr. L. Ponton DeArce, who also has a restaurant near by, where, for one dollar, he dispenses a liberal lunch, accompanied with a half bottle of golden wine. This being the only wine in the building of which visitors can get a taste, and a good wine, too, it is freely praised, and, so it is said, large orders are being left for it, especially from New York. Much interest is felt, however, in regard to the opinion which the judges may pronounce on our California and other native wines, and much disappointment expressed that Gen. Nagles, the judge selected from California, cannot be present to ensure for the wines from the Pacific coast a fair and full consideration. An Eastern cotemporary says, that the large show of wines from California, Ohio and Central New York is well calculated to make foreigners think that the problem, "Will the future American drink wine?" is fairly settled in the affirmative. But be that as it may, it is certain that the extent of the industry as indicated by statistics within the reach of all, yet but little studied, supplemented by the exhibit here, must greatly surprise nine-tenths of our own people, and all foreigners. It will also arrest the attention of our temperance friends, and will, no doubt, soon cause a more earnest discussion than ever, of the relative effects on a community of the presence of high priced, strong liquors, and low grade, cheap wines. It is one of the curiosities of commercial transactions, and one of those things the reason of which is past finding out, how a foreign article bearing the imprint of importation will command a higher price and meet with a readier sale in our markets than one of equal or even superior merit made at home. Such is, however, often the case, but in no instance, perhaps, more notable than in the article of wine.

General Divisions.

In order to properly study the agricultural exhibit the visitor must first acquaint himself with the manner in which the exhibits are divided. The whole building, including the annexes is divided into ten groups, and these are again sub-divided for the conveniences of the judges, into about 100 classes. For the ordinary student the group division is all that is needed, and these are set off as follows:

1st. "Forest products," including lumber, shingles, timber, dye woods, resin, mosses, nuts, etc. This group is both interesting and instructive, forms a profitable subject for study, and largely exemplifies the beauty of nature's contributions for the happiness and welfare of man, in directions sometimes entirely unheed by human effort.

2d. "Pomology," taking in the whole range of fruit culture. This display is chiefly confined to the pomological annex, a building which until within a week or so has been conspicuous only for its emptiness. The various fruits are now coming in and will continue to the end of the exhibition, each variety being brought prominently forward in its appropriate season.

3d. "Agriculturel products." Under this head we have the grains, grasses, field and garden vegetables, tobacco, tea, coffee, seeds, etc. Next to the machinery department, this probably attracts the largest share of attention.

4th. "Land animals."—Horses, cattle, sheep, swine, poultry, etc. For want of proper accommodations within the exhibition inclosure these animals are quartered at some considerable distance from the grounds—a distance which the extreme warm weather admits of being overcome by but very few, even of those who under ordinary circumstances would have taken much pleasure in including this group within the line of their observation and study. The papers say they are some three squares away; but as the only public conveyance thither is by steam cars, and you reach them only at the second station, the squares may be set down as of unusual extent for a city plot.

5th. "Marine animals and fish culture." This group heretofore considered quite outside of agriculture may at the present well be included therein. The great national importance of "fish culture" is now fully acknowledged, and the efforts of Prof. Mather in preparing so full an exhibit of the finny tribes in their natural element is deserving of much commendation. We shall allude more fully to this interesting exhibit in its proper connection.

6th. "Animal and vegeteble products used as food or as materiels." This forms quite an extensive and interesting group, including flour, sugar, hides, leather, oil, honey, perfumes, wines, liquors, etc.

7th. "Textile substances of vegetable and animal origin," including cotton, wool, flax, silk, etc.

8th. "Agricultural machines and implements." Of these I have already spoken of at some length; but it would require a large volume to do anything like full justice to the subject. Such a volume we presume will appear in due time, under the auspices of the Centennial Commission.

9th. "Agricultural engineering," embracing machinery for draining, grading, extracting stumps, building roads, transportation apparatus, models of farm houses, barns, windmills, etc.,—a wide range of most important material.

10th. "Tillage and general management"—a subject of illimitable extent and of the highest importance to successful farming.

Of course, to study any one department, or institute comparison between similar exhibits from different States or countries, it is necessary to move about the building from one country or from one State and one exhibit to another. In the foreign exhibits each country brings into its own little territory of demarkation all which it has to contribute to each of the 10 groups. In the United States exhibits the machinery from all the States is collected and arranged in groups, so far as is consistent with allowing the different manufacturers to bring together, as nearly as possible, all the different specialties of their manufacture. In addition to, and seperate from the machinery, each State has grouped together into as compact form as possible the chief productions for which it is noted. In most instances the exhibits are arranged with a special regard to taste and attractiveness, as a merchant carefully arranges his show windows. The skill displayed in this line is, of itself, well worth a day's study. The best exhibits are not unfrequently greatly underrated by reason of the unattractive or slovenly manner in which they are placed on exhibition. Very little complaint of that character can be found in regard to any department or any building on the Centennial grounds.

Foreign Exhibits.

We have already alluded to the paucity of foreign machinery, and agricultural machinery in particular, on exhibition. England has made her chief effort in machinery hall, the main building and the art gallery. She has given up agricultural hall mainly to her Canadian dominion, which, as already stated, has done itself much credit in every direction. In the English exhibit of cereals, that upon which Englishmen evidently most prided themselves, is a lot of wheat recently produced by a retired English sea captain, and which he has characteristically styled "Mainstay wheat." The exhibitor is taking orders for it at the rate of $2.50 per bushel, for seed, and he informed me that he was selling large quantities at that rate. I begged a small handful which I took round to the Oregon and California exhibits for comparison. It was decidedly inferior, especially to the latter in every respect, as will be apparent to the most casual observer who compares the two. I asked the exhibitor to go with me and make the comparison, but he declined. Perhaps he had been there before. I did not report the result to him; concluded he would find it out himself in a less offensive manner. It is to be hoped that seekers after improved seed wheat, who may be tempted to invest in "Mainstay," will take the trouble to examine the exhibits from the Pacific coast "before purchasing elsewhere."

France.

We must give France the credit of making the most extensive exhibit in agricultural products of any foreign people save the Dominion of Canada. The display of machinery is light, but is superior to that of any other European nation. The display in this section is decidedly "Frenchy." The taste evinced in putting up the great variety of delicate preparations in glass can be equaled by no other people. Case after case is filled with long rows of glass bottles, showing fruits, cooked vegetables, sweet meats made of fruits boiled in syrups, etc. The French act upon the correct theory that the pleasures of sight greatly enhance those of taste. Hence their first endeavor is to please the eye, well knowing that that organ will be sure to telegraph its sensations to both the brain and palate, and prepare the first to direct and the latter to be in perfect readiness to receive the delicacies in store for the gratification of the appetite. Hence the great care with which they prepare their food. Among the food products in this exhibit, tastily displayed, may also be mentioned sardines, macaroni, oil, mustard, etc., also a large collection of chufa, to one bottle of which is appended an interesting account of this rare vegetable delicacy, so much prized by the French gourmand. Conspicuous here may also be seen the display of wines—those from Bordeaux, Burgundy and the champagne districts being largely in the ascendent. Of the latter, there are no less than twenty exhibitors.

Spain.

Perhaps next in interest to the French exhibit is that of Spain. The Spaniards, although not as tasty, are quite as showy as the French. Their space is enclosed with a handsome stained wood structure, with a very ornamental gothic entrance. The walls upon each side are pierced with windows, or what appear to be such, in which are displayed preserved fruits, cereals, etc. The interior is a perfect museum of wines, oil, textiles, ornamental woods, tobacco, in its various forms, gums, etc. Huge logs of mahogany and rosewood, end other bulky products rest upon the floor; while festoons of the broad leaves of its favorite weed, and sheaves of golden grain surround the pillers that support the long array of shelves upon shelves covered with orderly rows of bottles, jars, etc., that rise high toward the pointed roof arches above. Her colonies in the West Indies and Phillipine islands are also there, with their tropical productions of spices, nuts, etc. Tobacco, of course, forms a conspicuous feature in her exhibit, and cigars are shown in almost endless variety and in elegant cases, with prices ranging from $90 to $300 per thousand. The show of wines is scarcely inferior to that of France, and among them are many quits unknown outside of this Iberien Peninsula. Judging from the variety, usefulness and quality of most of her exhibits the visitor is naturally inclined to exclaim: "What a marvellously rich country,"—and so it would be, were it not for the unsettled character of the people and their government. May the peace which they have just attained give this long troubled people a season of rest and material progress which will mark an era in their history, and may the youthful sovereign who has so recently ascended the Spanish throne, be crowned with a long life and a reign as glorious in the arts of peace as was that of his most renowned ancestor in those of war.

Germany.

United, Prussianized Germany, has evidently been too much engrossed in the politicel affairs of her neighbors to do herself justice at this great American international exhibition. There is no proper display here of her rich and really useful agricultural products. She makes a strong feature of her wine and beer exhibit, and her hops. The arrangement of kegs and bottles against tall, heavy wooden structures look like sections of castle walls and is strongly suggestive of their military art and taste; but this display only gives one a false impression of what German culture and German sentiment is. Pocket handkerchiefs decorated with pictures of her military heroes, do not fairly represent her inventive genius and skillful manufactures. Her monster gun in machinery hall simply makes more prominent the poverty of her really useful exhibits, and is a painful reminder of the debasing and destructive influences of a great national love for military glory, such as now overshadows that naturally great and noble people. No country can be great in both war and peace.

Holland.

Not far off little Holland, of the low lands, the diminutive neighbor of powerful Germany, may be seen in all her quaintness and neatness, with everything in its place and as orderly as a Dutch housewife's kitchen. She was early in position, and her promptness was strongly in contrast with the tardiness of her neighbors. The "Dutch Agricultural Society," and the societies of the States of Guelderland and Zeeland make a most creditable collective exhibit of fruits and vegetables in glass jars, all put up with characteristic neatness and care.

W. B. E.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING AUGUST 15TH, 1876.

WAGON COVERS.—Charles Cremer, Red Bluff, Cal.

FURNACES FOR ROASTING ORES.—Horatio O. Livermore, S. F.

BRICK AND MORTAR ELEVATORS.—Thomas Mann, Portland, Oregon.

EXPANSIBLE GATES FOR SEWERS.—Thomas Brady and Denuis R. Manning, S. F.

GRAIN SEPARATORS.—Thomas Jory and John W. Jory, Salem, Oregon.

HARNESS BUCKLES—William Fletcher Whitney, Ukiah, Cal.

DESIGNS.

CENTER PIECE.—Samuel Kollet, S. F.

——"The patents are unt ready for delivery by the Patent Office nntil some 14 days after the date of issne.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

General News Items.

SMALL-POX seems to he on the decrease.

EMPLOYEES of the New York and New Jersey railroad have struck.

THE import duties at this port last week aggregated $255,000.

THE weather at New York is decidedly cooler. From various points come reports of frost.

A REGISTRY clerk in the San Francisco postoffice has been arrested for robbing the mails.

Two murders by "Molly Maguires" occurred in the Pennsylvania mining regions this week.

THE preliminary works of the international exhibition, to be held in 1878 in Paris, have begun.

EDWARD S. STOKES, the murderer of Jim Fisk, will be released from the Auburn prison on October 23d.

THE iron works at Oswego, Oregon, will close down in about six weeks, and it is rumored that a company from Ohio are negotiating for their purchase.

FIRES occurred this week at Los Angeles San Benito, Livermore, Tres Pinos, Grangeville; also one near Lathrop, in which a boy was burned to death.

THE little dory *Centennial*, which started across the Atlantic from Gloucester, Mass., has arrived safely in Liverpool. There was only one man on board during the trip.

DISRAELI has issued a farewell address to his constituents, the electors of Buckinghamshire, by whom he has been returned to the House of Commons continuously since 1847.

EUGENE N. ROLLINSON, formerly senior partner of one of the principal brokers of Daniel Drew, has submitted a partial transcript to the Register in Bankruptcy. The entries in the books show that the gross amount of transactions between Drew and the firm were $75,000,000, which extended over a period of five years.

ONE MAJORITY.—The governor of Massachusette has been twice elected by a majority of one. A single vote sent Oliver Cromwell to the "Long Parliament," Charlee Stuart to the scaffold, revolntionized England and made Great Britain free. One vote gave us the tariff of 1842, and one vote made the tariff of 1846. One vote gave us Texas and war with Mexico, purchased California, turned thither the tide of emigration and will change the destiny of the world. One vote elected the Hon. David Belden county judge of Nevada county, years ago, and that one vote was our own, the first we ever cast. It placed on the judicial bench one who is now conceded to be an erudite and conscientious judge, who was thus hut an obscure and no considered talented lawyer. These facts should be a convincing proof to all that the influence of one man, he he high or lowly in station, has its effect on the destinies of the world, and every act should he well weighsed, every opinion carefully formed before its utterance.

An Asthma Remedy.

[From the Cincinnati Times.]

A CURE FOR ASTHMA.—I see that some one, in your valuable paper, asks for a cure for asthma. I have been afflicted with that dreadful disease for 44 years, and never found relief until last summer. In looking over the *Journal and Messenger*, one of your city papers, I saw a notice of "D. Langell's Asthma Cure." I sent and received by return mail, and it gave me relief in five minutes. My case was one of the worst. I can now lie down to sleep. God bless D. Langell for his remedy. His address is D. Langell, Apple Creek, Wayne Co., O. A SUBS. RIBER.

Rising Sun, Ind.

A BOX OF GLENN'S SULPHUR SOAP, which contains three cakes and costs only 60 cents, is sufficient to supply material for at least 20 sulphur baths, which would eradicate a whole catalogue of rheumatic and cutaneous maladies. Sold everywhere.

New "T" Rails.

Fifty-five tons, fifty pound, fish bar pattern, Tredegar make; also, 85 tons Erie pattern, Crawsbay make, for sale cheap, or would exchange for old material, by

DANL. W. RICHARDS & CO.,
Iron and Metal Dealers, 88 to 104 Maagin St., N. Y.

GENERAL MERCHANDISE.

WHOLESALE.

WEDNESDAY M., Aug. 23, 1876.

BAGS.

Gnn. Stand Wht..	12	@12½
Neville & Co's...		
Hand Sewed....	12	@12½
24x36.....	—	@—
24x40.....	—	@—
Machine (in 24x40	—	@15½
" " 22x40.	14½	@—
" " 22x40.	13	@—
" " 22x36.	11½	@12
Flour Sacks ½ bbl	6	@11
" " ¼s.....	6	@7
" " ⅛s.....	4½	@5
Hessian 40-in.....	12¾	@13½
do 45-in.....	10	@—
do 36-in.....	8¾	@—
Wool Sacks, ¾ lbs.	45	@50
do 4 "...	50	@52½
Stand. Gunnies...	11¾	@12
single seam do..	—	@—
Bean Bags.....	7	@8

CANNED GOODS.

Asst'd Pie Fruits		
in 2 lb cans.	2 75	@ 3 00
do Table do...	3 75	@ 4 25
Jams & Jellies	4 25	@—
Pickles ¾ gl...	—	@ 3 50
Sardines, qr box	65	@ 1 80
do ½ boxes	3 00	@—

COAL.—Jobbing.

Australian, ton	7 75	@ 9 00
Coos Bay.....	—	@ 8 00
Bellingham Bay.—		@ 9 00
Seattle.....	—	@ 9 00
Cumberland.....	14 00	@16 00
Mt. Diablo.....	5 75	@7 75
Lehigh.....	—	@22 00
Liverpool.....	10 00	@11 00
West Hartley.....	—	@14 00
Scotch.....	9 00	@10 00
Scranton.....	13 00	@16 00
Vancouver's Isl.	10 50	@12 00
Charcoal, ¾ sk...	75	@—
Coke, ¾ bbl.....	—	@ 60

COFFEE.

Sandwich Island	—	@ 31½
Costa Rica per ¾	22½	@—
Guatemala.....	—	@23½
Java.....	—	@ 31
Manilla.....	—	@ 21½
Ground in cs....	25	@—
Chicory.....	27	@—

FISH.

Sao. Dry Cod, new	—	@ 6½
cases.....	6	@ 7½
do boneless....	9	@10
Eastern Cod.....	8	@ 8¾
Salmon in bbls.	7 25	@—
do ½ bbls	3 75	@4 00
do 2lb cans.	2 00	@—
do 1lb cans.	1 35	@—
do Cal. R. ½ bbls	5 00	@5 50
Pick. Cod, bbls.	22 00	@—
do ½ bbls	11 00	@—
Mack'l, No. 1, ¼ bbls	11 00	@ 13
" Extra...	—	@12 00
" in kits...	1 90	@2 25
" Ex mess.	3 50	@4 00
" Ex mess. ½ bbls	—	@12 00
Pic'd Herr's, bx.	3 00	@ 3 50
Bns. Sm'k'd Herr's	40	@ 50

LIME, ETC.

Lime, St'a Cruz, ¾ bbl.....	2 00	@ 2 25
Cement, Rosendale, do.....	2 75	@ 3 50
do Portland	4 75	@ 5 50
Plaster, Golden Gate Mills.....	3 00	@ 3 25
Land Plaster, ¾ ton.....	10 00	@12 50

MISCELLANEOUS.

Pulu.....	@	7½

NAILS.

Assorted size, keg	3 75	@4 00

OILS.

Pacific Glue Co		
Neat F'ts No. 1.	1 00	@ 90
Furo.....	—	@—
Castor Oil, No. 1..	—	@ 95
Baker's A A.....	—	@1 15
Cocoanut.....	—	@ 60
Olive Plagniol..	5 50	@6 75
do Possel.....	4 75	@5 00
Palm ¾.....	—	@—
Linseed, raw....	—	@ 62½
do boiled....	—	@ 64½
China nut in cs..	65	@—
Sperm, crude..	1 60	@1 65
do bleached..	1 80	@2 25
Coast Whales	47½	@ 50
Polar, refined..	—	@ 80
Lard.....	—	@1 20
Graphina.....	—	@ —
Davoe's Brill't...	25	@ 27½
Long Island....	—	@ 25
Kuraka.....	26	@ 27½
Devoe's Petrn m	25	@ 27½
Barrel Kerosene	23	@ 25
Olive.....	—	@3 50
Downer Kerose'e	—	@ 37½
Elaine.....	38	@—
Gas Light.....	33	@ 35

PAINTS.

Pure White Lead	9¾	@10¼
Whiting.....	—	@ 1¾
Putty.....	4	@ 5
Chalk.....	—	@ 1½
Paris White....	—	@ 2½
Ochre.....	—	@ 3½
Venetian Red...	—	@ 3½
Red Lead.....	10	@ 11
Litharge.....	10	@ 11
Eng. Vermillion	—	@1 25
Averill Chemical Paint, per gal.		
White & tints.	2 00	@2 40
Green, Blue & Ch Yellow..	3 00	@3 50
Light Red....	3 00	@3 50
Metallic Roof.	1 30	@1 80

RICE.

China No. 1.....	7¾	@ 6
Hawaiian, ¾ lb..	7¾	@ 7¾
Carolina, ¾ lb..	10	@—

SALT.

Cal. Bay, per ton	10 00	@14 00
do Common..	5 00	@ 7 00
Carmen Island.	12 00	@15 00
Liverpool fine..	22 50	@25 00

SOAP.

Castile ¾ lb....	10	@ 11½
Common brands..	4½	@ 6
Fancy do ..	7	@ 9

CANDLES.

Grant's.....	16	@ 16½
Mitchell's.....	18	@ 20

SPICES.

Cloves ¾ lb.....	45	@ 47½
Cassia.....	23½	@ 26½
Citron.....	28	@ 30
Ginger.....	95	@ 97½
Whole Pepper....	14½	@ 15½
Pimento.....	16	@ 17½
Gr'nd Allsp'rdz	—	@1 12
do Cassia do..	—	@1 50
do Cloves do..	—	@1 50
do Mustard do	—	@1 20
do Ginger do..	—	@1 00
do Pepper do..	—	@1 00
do Mace do...	—	@2 00
Gowen's Pure Ground ¾ lb	—	@ 50

SUGAR, ETC.

Cal. Cube per lb..	—	@ 12¾
Circle A crushed	—	@ 12
Powdered.....	—	@ 12¾
Fine crushed....	—	@ 12
Granulated.....	—	@ 11¾
Golden C.....	—	@ 10½
Hawaiian.....	10	@ 11
Cal. Syrup in kgs	—	@ 62½
Hawaiian Molasses.....	25	@ 27½

TEA.

Oolong, Canton, lb	19	@ 25
do Amoy...	25	@ 50
do Formosa	40	@ 90
Imperial, Canton	25	@ 40
do Pingsuey	45	@ 80
do Moyune.	60	@1 00
Oompoder, Can.	75	@1 00
do Pingsuey	50	@ 80
do Moyune.	65	@1 25
Yng Hy, Canton	28	@ 40
do Pingsuey	40	@ 70
do Moyune.	65	@ 85
Japan, ½ chests, bulk	30	@ 75
Japan, lacquered bxs, 4, ½ and 5 lbs	45	@ 57
Japan, 3 lb bxs	45	@ 90
do pl'n bxs, 4, ½ lb	35	@ 65
do ½ & 1 lb paper	30	@ 55

TURPENTINE.

Eastern.....	51½	@55

METALS.

[WHOLESALE.

THURSDAY, M., Aug. 24, 1876.

American Pig Iron, ¾ ton	32 00	@ —
Scotch Pig Iron, ¾ ton	31 50	@ 32 00
White Pig, ¾ ton	40 00	@ 50 00
Oregon Pig, ¾ ton	31 50	@ 32 50
Refined Bar.....	—	@ — ¼
Boiler, No. 1 to 4.....	—	@ — 9
Plate, No. 5 to 9.....	—	@ — 5½
Sheet, No. 10 to 14.....	—	@ — 4½
Sheet, No. 16 to 20.....	—	5¼@ —
Sheet, No. 22 to 24.....	—	6 @ —
Sheet, No. 26 to 28.....	—	6½@ —
Horse Shoes, per keg.....	7 00	@ 8 50
Nail Rod.....	—	10 @ —
Norway Iron.....	—	8½@ — 9½
Rolled Iron.....	—	4 @ — 8
Other Irons for Blacksmiths, Miners, etc.	—	@ — 4½

COPPER.—

Copper Tin'd.....	— 37	@ — 40
Sheathing, ¾.....	— 24	@ — 40
Sheathing, Yellow.....	— 21	@ — 22½
Sheathing, Old Yellow.....	— 10	@ — 11
Composition Nails.....	— 21	@ — —
Composition Bolts.....	— 24	@ — —

STEEL.—English Cast, ¾ lb..... — 20 @ — 25
Anderson & Woods' ordinary sizes..... — — @ — 15
Drill..... — 16 @ — 16½
Flat Bar..... — 16 @ — 20
Plow Steel..... — 8¾ @ — 9

TIN PLATES.—

10x14 I C Charcoal.....	11 00	@ —
10x14 I X Charcoal.....	13 00	@ —
Roofing Plate I C Charcoal.....	10 00	@ 10 50
Banca Tin.....	— 24	@ — —
Australian.....	— 25	@ — —
ZINC.—By the Cask.....	— —	@ — 11
Zinc, Sheet 7x3 ft, No 7 to 10 ¾lb.....	— —	@ — 11
do do 7x3 ft, No 11 to 14	— —	@ — 11½
do do 8x4 ft, No 8 to 10	— —	@ — 12½
do do 8x4 ft, No 11 to 16	— —	@ — 12
NAILS Assorted sizes.....	3 60	@ 3 75
QUICKSILVER, per lb	43	@ 45 —

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, Aug. 23, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 90 to 90⅝. Silver, 5¼@5⅝.

GOLD in N. Y. 110⅞

GOLD BARS, 860 .90. SILVER BARS, 11@21 per cent. discount.

EXCHANGE on N.Y., 50-100 per cent. premium for gold; on London bankers, 48; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, 12 per cent. discount.

LONDON — Consols, 93⅝; Bonds, 102¾

QUICKSILVER in S. F., by the flask, per lb. 45c

Amusements.

WADE'S OPERA HOUSE, Mission Street, near Third. Open every evening with first-class Dramatic Company. Box Office open from 9 A. M. to 10 P. M. Doors open at half past seven. Commence at eight o'clock. AIMEE IN OPERA BOUFFE.

CALIFORNIA THEATER, Bush Street, above Kearny. Open every evening with the best Dramatic Company in the United States. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance. Doors open at half past seven. Monday, August 21st, MARY ANDERSON.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Antilles Mining Company—Location of

Principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, levied on the seventh day of July, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Blow, W W.....	381	50	$ 10 00
Blow, W W, Trustee.....	377	2250	450 00
Blow, W W, Trustee.....	378	375	75 00
Cox, A P, Trustee.....	394	1125	225 00
Olazier, I & Co, Trustees....	373	300	60 00
Hunt, D B.....	347	100	20 00
Hnnt, D B, Trustee.....	345	450	90 00
Hnnt, D B, Trustee.....	346	125	25 00
Hunt, D B, Trustee.....	361	150	30 00
Hinkle, Phillip.....	374	300	60 00
Haynes, John W.....	355	150	30 00
Hotaling, A P, Trustee.....	350	750	150 00
Hosmer & Bourne, Trustees..	383	150	30 00
Hosmer & Bourne, Trustees..	364	75	15 00
Hosmer & Bourne, Trustees..	379	150	30 00
Kesali, C W.....	357	150	30 00
Landers, John, Trustee.....	371	375	75 00
Reeves, C F, Trustee...	301	1125	225 00
Reeves, C F, Trustee.....	302	1125	225 00
Singleton, M A, Trustee.....	359	150	30 00
Twing, D H & Co, Trustees..	375	300	60 00
Turner, John.....	380	750	150 00
White, T A, Trustee.....	393	1125	225 00
Wade, A P.....	348	825	165 00
Wade, A P.....	395	3000	600 00
Wade, A P, Trustee.....	367	2000	400 00
Wade, A P, Trustee.....	368	500	100 00
Wade, A P, Trustee.....	369	250	50 00
Wade, A P, Trustee.....	370	250	50 00

And in accordance with law, and an order of the Board of Directors, made on the seventh day of July, 1876, so many shares of each parcel of such stock as may be necessary, will be sold at public anction, at the company's office, on Friday, the eighth day of September, 1876, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

H. M. MORGAN, Secretary.

Office, 207 Sansome street (third floor), San Francisco, Cal.

Mariposa Land and Mining Company

of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 6), levied on the sixth day of July, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

COMMON STOCK.

Names.	No. Certificate.	No. Shares.	Amount
Adams, Thomas.....	A 4	50	50 00
Brumagim, J H.....unissued		750	750 00
Brumagim, J H.....	426	25	25 00
Brumagim, J H.....	427	25	25 00
Bound & Co.....unissued		300	300 00
Castelano & Co, A V.... ...	60	100	100 00
Castelano & Co, A V.....	61	100	100 00
Castelano & Co, A V.....	65	100	100 00
Collius, O A.....1240		100	100 00
Colhron, W T.....	473	100	100 00
Colhron, W T.....	474	100	100 00
Duonell, T L.....unissued		25	25 00
Durbrow, Lamont....unissued		100	100 00
Elston, W A.....unissued		150	150 00
Hallgarten & Co.....unissued		50	50 00
Harriott & Noyes.....1249		100	100 00
Harriott & Noyes.....1251		100	100 00
Hedges, Alleu.....1161		100	100 00
Kennedy, Oeo H.....1157		100	100 00
Kenuedy, Oeo H.....1158		100	100 00
Rathhorne, R Wm.....	121	100	100 00
Rathhorne, R Wm.....	146	100	100 00
Rathhorne, R Wm.....	156	100	100 00
Rathhorne, R Wm.....	177	100	100 00
Rathhorne, R Wm.....	179	100	100 00
Rathhorne, R Wm.....	280	100	100 00
Rathhorne, R Wm.....	287	100	100 00
Rathhorne, R Wm.....	307	100	100 00
Rathhorne, R Wm.....	318	100	100 00
Rathhorne, R Wm.....	319	100	100 00
Rathhorne, R Wm.....	334	100	100 00
Rathhorne, R Wm.....	335	100	100 00
Rathhorne, R Wm.....	336	100	100 00
Rathhorne, R Wm....	337	100	100 00
Rathhorne, R Wm.....	338	100	100 00
Rathhorne, R Wm.....	339	100	100 00
Rathhorne, R Wm.....	340	100	100 00
Rathhorne, R Wm.....	343	100	100 00
Rathhorne, R Wm.....	344	100	100 00
Rathhorne, R Wm.....	345	100	100 00
Rathhorne, R Wm.....	381	100	100 00
Ryce, A Thorndyke.....1235		200	200 00
Smith, Morrie H.....unissued		100	100 00
Stone, Geo F.....unissued		100	100 00
Steru, Chas.....unissued		100	100 00
Taylor, W & J.....uniesued		100	100 00
Towar & Learued.....unissued		200	200 00
Thorpe, William.....	431	1	1 00
Vihhard, Chauncey...unissued		1	1 00
Van Schaick & Co...uniissued		1000	1000 00
Van Schaick & Co.....	69	100	100 00
Van Schaick & Co.....	70	100	100 00
Van Schaick & Co.....	71	100	100 00
White, Morris & Co..unissued		300	300 00
Wolfberg & Co.....unissued		200	200 00
Weeks, W A.....unissued		1500	1500 00
Woodmsn, Cyrus ....unissued		100	100 00
Watson, A W.....	467	10	10 00
Weil, Henry.....1245		100	100 00
Weil, Henry.....1245		100	100 00

PREFERRED STOCK.

Ambleman, Edgar M.unissued		200	200 00
Baldwin, J C.....	A 13	16	16 00
Bloomingdale, M.....unissued		202	202 00
Bernheimer, I & S....unissued		135	135 00
Brumagim, J H....unissued		305	305 00
Block, Henry.....	A 31	67	67 00
Block, Henry.....	A 32	63	63 00
Block, Henry.....	A 33	5	5 00
Block, Henry.....	A 34	1	1 00
Block, Henry.....1243		100	100 00
Block, Henry.....1244		100	100 00
Block, Henry.....1245		100	100 00
Block, Henry.....1248		100	100 00
Block, Henry.....1247		100	100 00
Block, Henry.....1248		100	100 00
Block, Henry.....1249		100	100 00
Block, Henry.....1250		100	100 00
Block, Henry.....1251		100	100 00
Block, Henry.....1252		100	100 00
Block, Henry.....	1253	100	100 00
Block, Henry.....1254		100	100 00
Block, Henry.....1255		100	100 00
Block, Henry.....1256		100	100 00
Block, Henry.....1257		100	100 00
Block, Henry.....1258		100	100 00
Block, Henry.....1259		100	100 00
Block, Henry.....1260		100	100 00
Brumagim, D W.....1228		100	100 00

Names.	No. Certificate.	No. Shares.	Amount.
Chesbrough, Mrs Sarah D	unissued	135	135 00
Cranford, Geo R.....	unissued	100	100 00
Connett, W H.....	128	100	100 00
Clarke, J P.....	A 36	50	50 00
Girdler, Chas A.....	unissued	100	100 00
Heinemann, Payam & Morgan	unissued	70	70 00
Hollins, Harry B....	unissued	100	100 00
Harriott & Noyes.....	A 37	25	25 00
Harriott & Noyes.....	A 38	100	100 00
Hay, Frank.....	A 45	26	26 00
Hoyl, Ann A.....	A 11	14	14 00
Holmes, Philip W	88	100	100 00
Kellogg, Chas.....	unissued	14	14 00
Monroe & Co, E S....	unissued	100	100 00
Moore, Silas H.....	A 26	28	28 00
Olcott, Horatio L.....	207	100	100 00
Rathbnrne, R Wm.....	175	100	100 00
Rathbnrne, R Wm.....	223	100	100 00
Rathbnrne, R Wm.....	255	100	100 00
Rathbnrne, R Wm.....	256	100	100 00
Rathbnrne, R Wm.....	258	100	100 00
Rodwell, C M.....	1120	100	100 00
Scott, Wm B.....	1109	100	100 00
Scott, Wm B.....	1110	100	100 00
Scott, Wm B.....	1111	100	100 00
Scott, Wm B.....	1112	100	100 00
Scott, Wm B.....	1113	100	100 00
Scott, Wm B.....	1114	100	100 00
Scott, Wm B.....	1115	100	100 00
Scott, Wm B.....	1116	100	100 00
Scott, Wm B.....	1117	100	100 00
Smith, Morris H.....unissued		100	100 00
Scott & Co, Wm B.....	A 9	0	0 00
Scott & Co, Wm B	1102	100	100 00
Scott & Co, Wm B.....	1103	100	100 00
Scott & Co, Wm B.....	1104	100	100 00
Scott & Co, Wm B.....	1105	100	100 00
Scott & Co, Wm B.....	1106	100	100 00
Scott & Co, Wm B.....	1107	100	100 00
Scott & Co, Wm B....	A 12	45	45 00
Van Schaick & Co....unissued		47	47 00
Woodman, Cyrus ....unissued		106	106 00

And in accordance with law, and an order of the Board of Directors, made on the sixth day of July, 1876, so many shares of each parcel of said stock as may be necessary will be sold at public auction, at the office of the Company, room 33, Nevada block, 309 Montgomery street, San Francisco, California, on Saturday, the second day of September, 1870, at the hour of one o'clock, P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

LEANDER LEAVITT, Secretary.

Office, Room 33, Nevada block, 309 Montgomery street, San Francisco, Cal.

Mariposa South Mining Company—Location of

principal place of business, San Francisco, Cal. Location of works, Spanish Belt Mining District, Nye county, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the eighth day of August, 1876, an assessment, No. 1, of ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, 418 California street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 19th day of September, 1876, will be delinquent, and advertised for sale at public anction, and unless payment is made before, will be sold on Tuesday, the seventeenth (17) day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Secretary.

Office, Room No. 2, 418 California street, San Francisco, California.

Northerly Five Cent Hill Gravel Mining

Company. Location of principal place of business, San Francisco, Cal. Location of works, El Dorado Co., Cal.

Notice is hereby given that at a meeting of the Directors, held on the ninth day of August, 1878, an assessment of $1 per share was levied upon the capital stock of the corporation, payable immediately, to the Secretary, at the office of the company, room 33, Merchants' Exchange, California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Monday, the 11th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 28th day of September, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

WARREN BRYANT, Secretary,
Room 33, Merchants' Exchange, San Francisco, Cal.

Sierra Iron Company—Location of principal

place of business, San Francisco, Cal. Location of works, Sierra and Plumas counties, Cal.

Notice is hereby given, that at a meeting of the Trustees of said company, held on the 18th day of August, 1876, an assessment of $1 per share was levied upon the capital stock of the corporation, payable immediately, in gold coin of the United States, to the Secretary, at the office of the company.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1876, will be delinquent, and advertised for sale at public anction, and unless payment is made before, will be sold on Thursday the 26th day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

CALEB T. FAY, Secretary.

Office, No. 9 Halleck Block, 318 Sansome street, San Francisco, Cal.

Taylor Mill and Mining Company—Principal

place of business, city and county of San Francisco, Cal. Location of works, Golden Wedge Mining District.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 10th day of August, 1876, an assessment of forty (40) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at his office, No. 607 Montgomery street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 13th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the fourth day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

SAMUEL S. MULVEY, Secretary.

Office, No. 607 Montgomery street, San Francisco, Cal

Tintic Milling and Mining Co.—Notice

to Stockholders. In accordance with a resolution adopted at a meeting of the Trustees of the Tintic Milling and Mining Company on the 14th day of August, 1876, a special meeting of the stockholders of said company is hereby called, the same to be held at the office of the company, No. 310 Sansome street, San Francisco, Cal., on Monday, September 18th, 1876, at two o'clock P. M., to decide upon the proposition to increase the capital stock of said company from $3,000,000, divided into 30,000 shares, being the present capital, to $10,000,000, divided into 100,000 shares.

JOHN F. MILLER,
WM. F. PATTERSON,
O. H. LAGRANGE,
N. HAMILTON,
O. C. MILLER,
} Trustees.

San Francisco, Cal., August 14th, 1876.

Union Stone Company of California—

(Sorel Patent).—Location of principal place of business and works, city and county of San Francisco, Cal.

Notice is hereby given, that at a meeting of the Board of Directors of this company, held on Tuesday, the 22d day of August, 1876, an assessment (No. 4) of 20 cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 19 First street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Tuesday, the 26th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 17th day of October, 1876, to pay delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors.

E. F. KNOX, Secretary.

Office, No. 19 First street, San Francisco, Cal.

Iron and Machine Works.

WM. HAWKINS. T. G. CANTRELL

HAWKINS & CANTRELL,

MACHINE WORKS,

210 & 212 Beale St.,

Near Howard, - - - SAN FRANCISCO.

MANUFACTURERS OF

Steam Engines and all kinds of Mill and Mining Machinery.

Also msnufacture and kssp oonstantly on hand a supply of our

Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horss Power.

N. B.—Johhing and Repairing done with Diapatch.

FULTON

Foundry and Iron Works.

HINCKLEY & CO.,

MANUFACTURERS OF

STEAM ENGINES,

Quartz, Flour and Saw Mills,

Hayes' Improved Steam Pnmp, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard, San Francisco.

THE RISDON

Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,

SAN FRANCISOO.

Mannfactnrers of Steam Engines, Quartz and Flour Mill Machinsry, Steam Boilsrs (Marine, Locomotive and Stationary), Marine Engines (High and Low Prssure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors:

Joseph Moore, Jesse Holladay, C. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary
24v17-qy

THOS. PENDERGAST. HENRY S. SMITH.

ÆTNA IRON WORKS.

MANUFACTURERS OF

IRON CASTINGS

and MACHINERY,

OF ALL KINDS.

Fremont Street, bet. Howard and Folsom,

SAN FRANCISOO.

SHEET IRON PIPE.

THE

Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,

Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guarantesing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

☞ All kinds of Machinery made and repaired.

24v22-3m JOSEPH MOORE, Superintendent.

THOMPSON BROTHERS,

EUREKA FOUNDRY,

Light and Heavy Castings of Every Description Manufactured.

Sole Proprietors and Manufacturers of

LYNCH'S

Ventilating and Illuminating Tile,

The Only Illuminating Tile Manufactured for Lighting Cellars, Basements and Dark Rooms which provides proper ventilation for snch places.

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BET. MISSION & HOWARD, - - SAN FRANCISCO.

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Rolling Mill Company,

SAN FRANCISCO, CAL.

Established for the Manufacture of

RAILROAD AND OTHER IRON

—AND—

Every Variety of Shafting,

Embracing ALL SIZES f

Steamboat Shafts, Cranks, Piston and Connecting Rods Oar and Locomotive Axles and Frames,

—ALSO—

HAMMERED IRON

Of every descript on and size,

☞ Orders addressed to PACIFIO ROLLING MILL COMPANY, P. O. box 2032, San Francisco, Cal., will receive prompt attention

☞ The highest price paid for Scrap Iron.

PHELPS

Manufacturing Company,

MANUFACTURERS OF ALL KINDS OF

Wharf and Bridge Bolts, Railroad Trestle Work, Car Frames and Bolts, Machine Bolts, Set Screws and Tap Bolts, Lag or Coach Screws.

ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGON AND SQUARE NUTS, WASHERS, BOLT ENDS, TURN-BUCKLES, ETC., ETC.

13, 15 & 17 Drumm St., near California,

SAN FRANCISCO, CAL.

OCCIDENTAL FOUNDRY,

137 and 139 First street, - San Francisco

STEIGER & KERR,

IRON FOUNDERS.

Quicksilver Condensers and Furnace Castings.

Sole manufacturers of the Hepburn Roller Pan and Callahan Grate Bars, suitable for Burning Screenings.

NOTICE.—Particnlar attention paid to making Snperior Shoes and Dies.

UNION IRON WORKS,

Sacramento.

ROOT, NEILSON & CO.,

MANUFACTURERS OF

STEAM ENGINES, BOILERS,

CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston

PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets,

SACRAMENTO CITY.

Brass Foundry & Pump Factory.

A. J. SMITH, Plumber,

Sole Proprietor and Manufacturer of the

Celebrated Hndson Force Pnmps, Atwood & Bodwell Windmill Brass Pumps, Smith's Copper-Lined Pumps, Plumbers' Force Pumps.

☞ Speoial attention paid to Brewers', Distillers', Beer and Hot Liquor Pumps and Wine Pumps. Particular attention paid to AIR PUMPS, also to

DIVERS' SUBMARINE PUMPS.

Artesian Well Pumps Made to Order.

☞ Brass Castings Made to Order.

No. 222 FREMONT STREET, - - SAN FRANCISOO

CALIFORNIA BRASS FOUNDRY,

No. 125 First Street, opposite Minna,

SAN FRANCISCO, CAL.

All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells, and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Ooupling and Connections of all sizes and patterns furnished with dispatch

☞ PRICES MODERATE. ☜

J. H. WEED. V. KINGWELL.

California Machine Works,

119 BEALE STREET, SAN FRANCISCO.

BIRCH, ARGALL & CO.,

Builders of QUARTZ, SAW AND FLOUR MILLS

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THE ECONOMY HYDRAULIO HOIST FOR STORES,

And General Machinists. 25v28-3m

STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Qnartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

10v27tf J. HENDY, No. 32 Fremont Street.

McAFEE, SPIERS & CO.,

BOILER MAKERS

AND GENERAL MACHINISTS,

Howard between Fremont and Beale, st., San Francisco

Miners' Foundry and Machine Works,

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First Street, bet. Howard and Folsom, San Francisco

Machinery and Castings of all kinds.

The Mining and Scientific Press,

Established 1860, is a Large, Ably Edited and Liberally Illustrated Weekly—the BEST PRACTICAL MINING AND MECHANICAL JOURNAL in America. $4 per annum, postage paid. DEWEY & Co., San Francisco.

Machinery.

The Ingersoll Rock-Drill

Is Extensivoly Used in the East and

TAKES THE PLACE OF ALL OTHERS,

Wherever introduced, because it can he run with less power, labor and repairs, and do more work than any other Drill in the market. It has but few parts, is easily handled, being light, and HAS AUTOMATIC FEED, which saves labor. WE ASK FOR TRIAL AGAINST ANY COMPETITOR. For particnlar information regarding Drills or Air Compressors, send for circular to

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426 California Street

THE O'HARRA

CHLORIDIZING FURNACE.

Guaranteed to Chloridize from 85 to 95 per cent. of any gold or silver ores that are not mors profitable for smelting. Will also desulphurize ores and put them in proper shape for working in cupola furnaces.

Oost of Roasting and Chloridizing by this Process:

Two cords of wood at $6	$12.00
Two firemen at $4	8.00
1500 lbs of salt at 1½c	22.50
Wear of shoes and power	1.50
Cost for 15 tons	$44.00
Cost for one ton	2.93½

In a furnace of three or four times this capacity the cost is decreased hy 20 per cent.

The furnace is now working successfully at the Poe Consolidated Co.'s mines, in the Psavins District. For further information, apply to

D. J. O'HARRA,

Reno, Nevada.

DEETKEN'S

ROASTING FURNACE,

For Gold, Silver and Copper Ores.

The roasting capacity of the Furnace, per 24 hours, is from 6 to 60 tons, according to percentage and nature of the sulphureted ore, with an expenditure of one and a half to two cords of wood, and two to three shifts of unskilled labor, according to amount of ore handled. The Furnace is adapted for chloridizing, as well as oxidizing, roasting, and for the manufacture of sulphuric acid. In point of cheapness of construction and efficiency in working, the Furnace is far the best in use. Millmen in need of a cheap and efficient Roasting Apparatus will apply to

G. F. DEETKEN,

Consulting Metallurgist, Grass Valley, Cal,

Furnace can he seen on application for permit, at Grass Valley.

LATEST IMPROVEMENT.

Excelsior Scroll Saw.

Double Treadle, including one dozen Saws, 30 intimitable Fret Saw ing Patterns and Prepared Wood to the value of $4. A new device for tightening Saw, Power Drilling attachment, Wrench, Oil Cup and Driver. Speed, 800 strokes per minute. Saws 1½ in. thick. Price, complete, cased and delivered on board cars or at Express office, $12.

SMALL STEAM ENGINES,

With copper Boiler, to drive light Lathes, Scroll Saws, etc. 100 Scroll Work Designs, free on receipt of Stamp.

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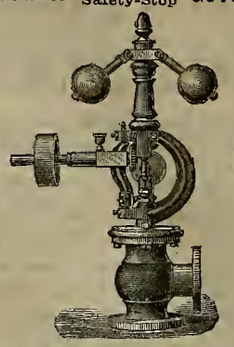

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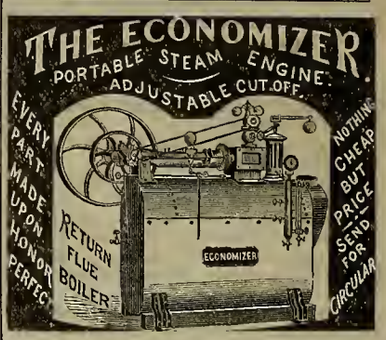

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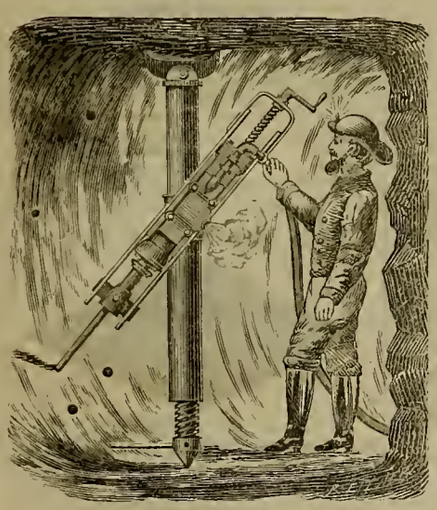
THE WORKING PARTS OF THE DRILL ARE FEW AND SIMPLE IN ARRANGEMENT, SO THERE IS NO LIABILITY OF INJURY. THE CLAMPS FOR HOLDING THE DRILL ON THE TRIPOD, FOR HOLDING THE DRILL TOOL IN POSITION, AND FOR FIXING THE WEIGHTS ON THE LEGS OF TRIPOD ARE ALL IMPROVED AND VERY E FECTIVE.



The device for rotating this Drill has few parts, and can not get out of order. There is no chance for wear. The motion is positive, and never fails of action. The Drill Carriage can be turned clear round the column, and can also turn in a complete circle on the head of the clamp.

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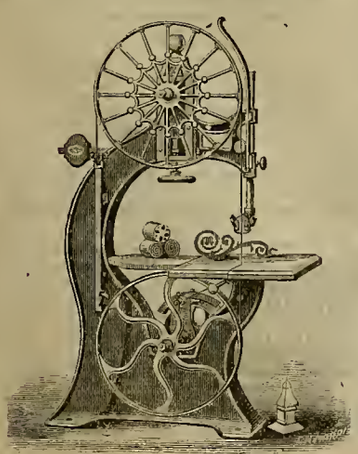

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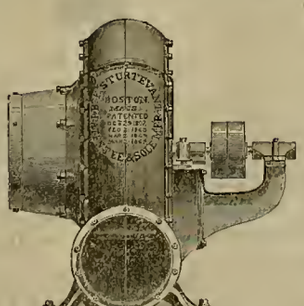

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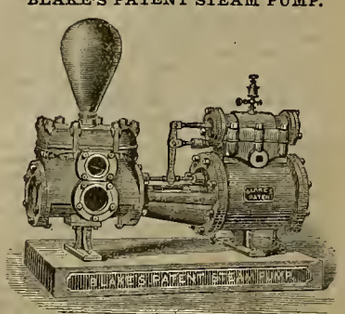

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In addition to American Patents, we secure with the assistance of co-operative agents, claims in all foreign conntries which grant Patents, including Great Britain, France, Belgium, Prnssia, Anstria, Victoria, Peru, Russia, Spain, British India, Saxony, British Columhia, Canada, Norway, Sweden, Mexico, Victoria, Brazil, Bavaria, Holland, Denmark, Italy, Portngal, Cuha, Roman States, Wurtemherg, New Zealand, New South Wales, Queensland, Tasmania, Brazil, New Grenada, Chili, Argentine Repnblic, AND EVERY COUNTRY IN THE WORLD where Patents are obtainahle.

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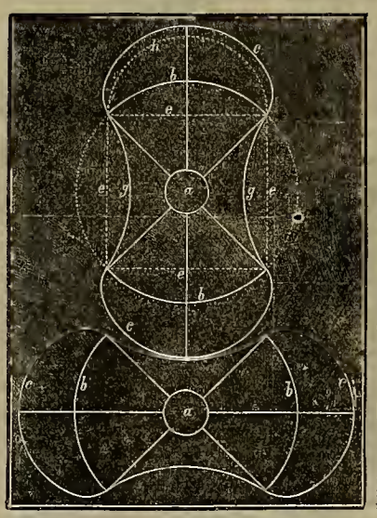
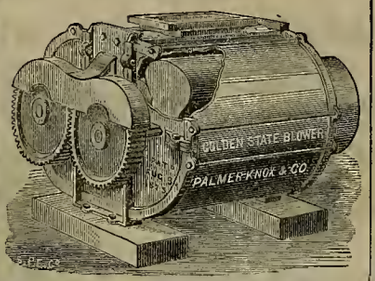
FOUNDRY and MACHINE WORKS.





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Blast or Exhaust for Furnaces or Reduction Works.

They have no superior. The casing is made in sections, so as to he easily accessihle. They run easily, not rapidly, and the perfect contact of wings gives a uniform and powerful blast.

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A Desirable Bargain.

Mr. Lee H. Utt, of Pala, San Diego county, offers for sale a share in his valuable place, consisting of 320 acres, and situated as described above. There is an Apiary on the ranch in successful operation. For this business it possesses marked advantages. Twenty acres are seeded to alfalfa and eight acres are in vines. The place has growing on it 420 trees, many of them in hearing.

The owner will warrant the Cavendish Dwarf Banana to grow as well here as in Florida. He has three now growing. The pasture now enclosed will keep 50 head of cattle. The ditch—which is large enough to run a mill—is stocked with trout, and has a fish pond 100 feet square, and full of fish. There is a nice warm spring, with hath house; the water contains sulphur, salts and iron.

The place possesses great natural advantages, and the present owner has not spared money nor labor to improve; hnt heing a valetudinarian he is not strong enongh to attend to the work. To the right kind of a man a rare opportunity is here offered. To such a person as will come in good faith he extends the invitation to stop on the ranch long enough to become familiar with its characteristics and capacities.

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Thanks for Prompt Attention.

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Of Twenty Years' Experience in opening and working Mines, building mills and working gold and silver ores, especially those turned *Rebellious*, is open to engagement. Address, E. B. SMITH, this office.

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The mining public is hereby notified that all persons who represent themselves to be my agents or to have authority under my patents to build and use, or to contract with others for the right to build and use a Cylindrical Rotary Roasting Furnace (except in Lander county, Nevada,) are frauds, and any person or persons that constructs one of my furnaces either with or without additions, alterations, or supposed improvements, or attempts to use one constructed under a contract with any snch unauthorized person, will he prosecuted as infringers of my rights on the premises. I have made arrangements to have all my furnaces constructed hy the Etna foundry, in this city, and no other foundry has a right to make one without my written consent. For rights to hnild and use, address

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The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices Ahundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circnlars forwarded, and full information given upon application.

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We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes: Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.

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Sold by all the principal hardware stores on the Pacific Coast. LINFORTH, KELLOGG & CO., General Agents for the Pacific Coast.

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HAVING BEEN COMPLETED AND NOW IN OPERATION, THE COMPANY DESIRE TO PURCHASE REFRACTORY GOLD AND SILVER ORES;

They also invite mine owners to forward them ore for test treatment, in lots of not less than from two to five tons, with a view of practically testing the value of the process, and licensing the same.

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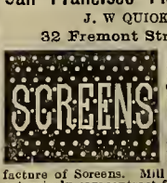

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BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, SEPTEMBER 2, 1876.

VOLUME XXXIII. Number 10.

[Editorial Correspondence.]

The Centennial at Philadelphia.—No. 13.

The Government Building.

This portion of our national exhibition is no mere mercantile display. It is a great object school—at once a museum and an illustrated history of the country. Each of the departments has drawn upon its own resources for the material wherewith to fill its allotted space; the various objects have all an illustrative, historical or instructive interest, and appertain to the original inhabitants of the country, to its early settlement by whites, to the Revolutionary struggle or later wars, to the progress of the arts of peace, to inventions, to scientific researches and natural resources.

The Army and Navy.

The military man may here study from life-size models the history and changes of the army uniform. He can examine and study the various kinds of firearms, weapons, etc., which have been or now are in use. He can also witness in actual progress the manufacture of rifles, metallic cartridges, etc. The famous 20-inch Rodman gun, from the Rip-rap, is here, mounted upon a traverse, and looking as mute and solemn as though it could never carry death and destruction to an enemy miles away. Then there are two 15-inch guns, and numerous others, both smooth bore and rifled, of various calibers, down to the smallest in use, and just outside a large mortar lifts up its yawning mouth. Then we have the Gatling gun and Fieschi battery of guns, and all the various machine combination of small arms, whereby modern battle-fields are so often made such terrible places of carnage.

The Navy Department Display

Is also remarkably full and fine. It shows a wonderful collection of specimens of shot, shell, and all the paraphernalia connected with naval combats. Marine engines and boilers are exhibited of most curious and complicated make, designed for being placed in contracted and peculiar places, such as used often demands; immense cables with mammoth iron links seemingly sufficient to hold a dozen ships in the face of the most fearful gale; beautifully finished models of every class of ships in the navy, and specimens of every variety of naval stores from a ship's biscuit to a sheet anchor. Upon the outside and near the main entrance we have the *fac simile* of a monitor turret, with its two Rodman guns in position, showing just how these modern war engines are furnished and fought. Most visitors mistake it for a real turret; but it is only a shell of wood, of the ordinary dimensions of a turret, covered with heavy sheet iron. The weight of a real turret is about 250 tons, and consequently too heavy to be moved to such a locality. The work of placing the 20-inch Rodman in position was quite heavy enough to tax severely our best engineering appliances, and that weighs only about 50 tons. The art of submarine warfare is fully illustrated by various devices in model, but especially by a huge cigar-shaped real torpedo, about 25 feet long, with a propeller at one end, and an electrical apparatus at the other to guide and control its actions when sent upon its errand of destruction. In the naval as well as in the army section are shown the various hospital appointments employed in actual service.

The Smithsonian Exhibit.

This, to most people, is the most interesting exhibit of all. It occupies nearly one-quarter of the entire Government building, and presents a display such as has never before been attempted. It is full of marvelous interest and most useful instruction. Science, which has occupied an inferior position in previous expositions, has here been accorded her prerogative, and comes most honorably to the front. She reaches back to the very dawn of knowledge in bringing forth the subjects for her research. She teaches exclusively in the silent but impressive manner of object lessons, and the means at hand are most varied and almost without limit. The ethnological and archæological collection displayed here is something really marvelous. No other nation can equal it; in no previous year of our progress could it have been so fully realized.

The researches of science have taught mankind that the main force of culture lies in the encouragement and progress of industrial art. Industrial art led the early inhabitants of the earth to fashion flint knives, stone axes and mortars, stone arrowheads, bows, slings, fire sticks, etc.; then with digging sticks—the earliest implement of tillage—first raised man above the level of the brute, and gradually taught him to smelt copper and tin, and unite them into a hard alloy suitable for spear heads, axes, knives, chisels, improved digging tools, etc. Then, and not till then, did men begin to erect durable dwellings of wood and stone, and accomplish productive tillage, such as is required to maintain many people on small areas.

Thousands of years elapsed, and industrial art still made progress—slow it is true—but progress nevertheless; and we find implements and tools still further improved. Man had learned to forge, temper and weld iron—the most useful of all metals. Progress then became more and more rapid, until ships with masts and sails had supplemented the canoe; the mold board plow had taken the place of the iron-pointed stick or forked limb; the water wheel, the magnetic needle, the paper mill, the spinning wheel and, finally, movable types came, one by one, to aid man in his various avocations, and to add, by their presence and power, to the growing culture of mankind. Next came, in comparative quick succession, the telescope, the quadrant and compass, the puddling furnace, the rolling mill, the steam engine, the locomotive and labor saving machinery of a thousand kinds, and lastly the electric telegraph, to bind together the nations of the earth with a bond of social and commercial interest, which is constantly growing stronger and stronger and breaking down the partition walls of difference between the various tribes and nations. Such are the triumphs of industry, which have brought with them the highest forms of social and intellectual culture and built them upon a foundation which marks a world-wide difference between ancient and modern civilization.

A volume would be insufficient to make any adequate allusion to even the chief of the different matters of real interest in this marvelous collection. The wonderful *fac-simile* models and sun pictures of the cave cities and cliff structures of Colorado and Arizona alone furnish material for volumes. The entire exhibit is divided into four sections, which are again sub-divided for the ready convenience of careful inspection and study, and the entire arrangement is thoroughly systematic. The zoological and botanical collections are most carefully disposed and exposed for view and study.

The Wonders of the Patent Office,

Shown in this building, are nearly allied in interest and importance to the Smithsonian exhibit, and include many thousands of models properly classed and arranged. They represent the toil, study, hopes, disappointments and realizations of thousands of inventors, and embody all manner of mechanical motions, principles and technicalities.

The Postoffice Department

Has established a branch office in this building, where all who wish may have their letters directed. A system of postoffice boxes has also been arranged throughout the grounds for the collection and mailing of letters, as in the various cities of the Union. This arrangement is a matter of great convenience, and the business of this Centennial office is attended to with a promptness and urbanity which makes it really what it is no doubt intended to be—a model postoffice. Connected with this exhibit is a machine for the manufacture of envelopes, a sort of a paper-eating monster, which is fed at one end from a pile of small sheets of paper that are picked up one by one, drawn, as it were, into the very bowels of the monster, cut, twisted, folded, gummed, stamped, hung up to dry, and finally counted out at the other end into packages of a given number of envelopes, all ready to be boxed up and sent away to the stationer.

The Signal Service Board

Is also here, and the visitor is brought into close contact and permitted to see and examine all the ingenious devices and methods by which

CHAIN MAKING AT THE MECHANICS' PAVILION.

modern science is enabled to predict, on philosophical principles, those facts about the weather which, years ago, the almanac makers presumed to set down with such confidence, when they in reality knew nothing about it.

Miscellaneous.

Near by the above the Signal Service exhibits a very interesting model of the excavation works now going on to remove the obstructions to navigation at Hell Gate, near New York. The bottom of the channel is first shown, together with the topography of the adjoining shore, the coffer dam, the debris which has been raised, etc.; after which the attendant, by the aid of machinery, raises the bottom of the channel first shown, which forms the roof of the excavation that has been made below. By this means a model of the underground works is brought to view showing the galleries, pillars, etc., in miniature, as they actually exist. A better idea can thus be formed of this novel piece of engineering than can be obtained from an actual inspection of the locality itself. Workmen are now engaged in placing the cartridges of dynamite and nitro-glycerine, which are to be exploded about the 5th of September. It will no doubt be recollected by most of our readers that the well known San Francisco engineer, A. W. Von Schmidt, first conceived this plan of removing sunken rocks, gave it a successful demonstration in the removal of Blossom rock in the harbor of San Francisco, and subsequently obtained a patent for the process. Mr. S. has recently commenced a suit against the United States for an infringement of his patent in the work which we have described.

W. B. E.

Dom Pedro is going to Ephesus to visit the site of the Temple of Diana.

Chain Making.

There is probably no one industry upon our coast that is more difficult to establish on a fair paying basis than that of chain making. The inclination of the average American to purchase anything that "will do," provided it is cheap, and the extreme low price at which the prison made chains of the Eastern States are offered in our markets, is the prime obstacle in the way. Where chain must be had to fit a wheel, or for special purposes, and where great strength is required without extra size being admissable, our local chain manufacturer must be called upon.

The only local chain manufactory here is that of the Pacific chain works, J. E. Gordon, proprietor. These works were established in this city in the early part of 1874, by the present proprietor, although he did not assume the management until about a year ago. Previous to that time it was conducted by the workmen themselves in their own names, Mr. Gordon simply furnishing the capital. This plan, however, did not work, the men being unsteady, and a quarrel and separation ensued. Mr. Gordon thereupon took the matter into his own hands, securing an entirely new set of men, under the supervision of Mr. Peter Davies, who has been nearly 50 years in the business, having come from Philadelphia, where he was serving as foreman in one of the leading chain factories in the United States.

The number of men employed varies from five to fifteen according to the amount of work on hand. Chinese labor is utilized for sifting coal and menial work only, although they manifest a strong desire to do the mechanical part and acquire a knowledge of it with surprising rapidity. With a laudable disposition to encourage white labor, Mr. Gordon has, as yet, given them no opportunity.

The iron used in the manufacture of chain at these works is rolled to order especially for the purpose, from selected scrap, by the Pacific rolling mill, in which company Mr. Gordon has been a stockholder since its organization. As a large portion of the chain shipped from the East is made by prison labor, and of a very poor quality of iron, it would seem that Mr. Gordon should be entitled to a better price for his product, but such is not the case; he has to compete with the price of poor chain, and even then finds it difficult to secure a fair portion of the business for our local factory. His specialty is manufacturing extra quality of chain to fit wheels and machines for mills, mines, factories, etc., also ship's cable chains. To give an idea of the variety of chains manufactured at the works, we copy from the card as follows: Crane, cable, dredging and crown proof coil chains, log, raft, safety, railway car, ship and bridge chains, back and trace chains, plain or twisted, pole, lock and stay, coal mine and sugar mill chains.

The engraving in connection with this article represents the forge of the Pacific chain works in the machinery department of the fair, and is probably familiar to many of our readers, as it has so far been the center of attraction at this exposition, the crowd around it at all times being so great as to scarce admit of a sight of the workman without waiting a long time. He is engaged in manufacturing ordinary coil chain, size three-eighths inch, a leading size among hardware dealers. The same kind is also worked up into trace, hack, pole, stay, and other kinds of chains. Old farmers and mill men often inspect the separate links one after another to assure themselves of the integrity of the weld, and all express satisfaction. The quickness with which the work is done is a source of surprise to all.

The works are located near the rope walk at the Potrero, on the corner of Iowa and Yuba streets, in a building 30x50 feet, erected by Mr. Gordon for the purpose, on some of his own land. Just in the rear, in connection with it, there is a four-roomed cottage where the workmen live.

The office is at Mr. Gordon's store, No. 349 Market street, where all orders and enquiries should be addressed. The business is an important one and capable of being considerably extended, but Mr. Gordon, having a large wholesale hardware business on his hands, has so far been unable to spare the time needed to work it up.

CORRESPONDENCE.

Alpine County—Its Mines and Resources Past, Present and Future.

[Written for the PRESS by VICTOR HARLAND.—No. 6.]

Silver Mountain District.

In addition to the mines already mentioned, which are, at present, the only active mines in the Scandinavian canyon, there are many others, now held by private individuals, which deserve a more extended description than is possible for your correspondent to give at the present time. In the future, when these comparatively dormant locations shall in turn be developed, it may be of interest to the PRESS and its readers to note their gradual improvement as one by one they pass into the hands of capitalists preparatory to extended improvements. Therefore at present, what may be said of one will apply equally to a majority of the locations here made, especially regarding their general character and susceptibility of future value as mines. There are, undoubtedly, interspersed among those mentioned other locations which cannot justly claim the attention merited by others. It would be surprising, indeed, were not such the case; for as your readers are aware, at the time of a mining excitement, when a new district or locality is thrown open to the mining world, every available location is soon taken, and the spirit of desire for the possession of equally valuable lodes, causes prospectors in many instances to lose sight of the difficulties attending the development of new lodes, and, during an era of unusual activity or excitement possess themselves of lodes, which under ordinary circumstances they would pass with merely a superficial notice. This is a feature of the finish times of every mining district, and it is universally conceded by all who have followed its minutiæ that mining, in its many and varied forms, is the most alluring avocation known to man. During

The Earlier Period,

When this locality was first discovered and occupied, excitement and hilarity was of daily occurrence. The dense growth of the beautiful pine, the unsurpassed purity of the atmosphere, the facilities for an economical development of the lodes, and the splendid water privileges of the district, gave rise to the popular belief that at some time in the future this would be a region of great worth and unlimited business activity; and here permit me the prediction, that although years have elapsed since these discoveries were made, and but comparatively little work performed upon the individual locations other than shallow tunnel developments, yet, notwithstanding this long period of inactivity and the absence of methodical working, the ideal hopes indulged in by those early locators and hardy pioneers will ere long prove a reality, born not of mythical imaginations or momentary vagaries, but of facts and figures. Experience, long tried, have taught us that mere superficial openings in the mountain sides above the immense surface disturbances here revealed, are in the majority of cases utterly useless, while the capital necessary to promote and continue tunneling interests of such magnitude as appears in many places throughout the county, is not to be found with that ease first hoped for during the earlier experiences. In the description that will follow of the mines in these several districts, it will be noticed that in almost every instance this has been the method of prospecting, and in many cases, at mere nominal depths. This locality, as well as others, has seen its portion of such work.

The Pittsburg Mine,

Located south-easterly of and about one-fourth mile distant from the I X L, consists of four locations upon as many of these parallel lodes; the last of the series being a south extension of the last named lode. This was once a prominent company, of Eastern organization, with the office of the company located at Pittsburg, Penn. Nothing having been done upon the property for a number of years it has lately been re-located, the locations thus made forming the four claims as mentioned Under the old organization a tunnel was started, the initial point being located at some distance above the canyon lode, and continued until it had reached a distance of about 600 feet. At a distance of about 100 feet from the tunnel mouth their first lode was encountered, about 40 feet from surface. At this slight depth, the surroundings being taken into consideration, nothing more could reasonably be expected than appeared in the croppings above the surface.

This company, represented by the late John A. Thompson, (Snow-shoe Thompson) as superintendent, encountered the same difficulties regarding expenditures for development that has hitherto baffled the efforts of the Lady Franklin company. It has a good location for permanent works, a large area of surface, and a fair supply of good timber. To a company of men having sufficient means at their command to prospect the lodes by means of a shaft, the purchase of this property would be in every relation a good investment, and if properly developed would yield a goodly return for labor expended. To the north and south of these lodes are situated

Others of Like Nature,

But insufficiently worked, having nothing that would tend to develop the lodes below the canyon level. One of these, the Gould & Curry, is held by Wm. Mercer, Esq., the present superintendent of the Lady Franklin company. This location consists of a southerly extension of 1,000 feet on the lode first encountered in the Pittsburg tunnel, and is opened by a tunnel of probably 100 feet in length, cutting the lode at the slight depth of 50 feet. When penetrated, the lode shows a width of 10 feet and a very good quality of ore. Specimens of a nature unique and valuable have been extracted, the quartz appearing like ribbons of crystal, adhering in places to the porphyritic rock surrounding the lode, and showing throughout its crystal form the beautiful ruby ore. This location is admirably situated for deep working, and is held in high estimation by the owner. To the north of the Pittsburg locations are other lodes more or less developed by surface tunnels. Preparations are being made to resume work upon some of them upon assurance of success attending the test of the O'Harra furnace, now in process of erection at the Exchequer mill, of the quantity or quality of the ore discovered in these lodes the writer is not sufficiently acquainted to enter into details regarding it. The general appearance and position of the veins, and their existence within this mineral belt, is regarded as favorable for permanent working, and undoubtedly a majority of them are worthy of more attention than they have heretofore received. As we approach

The Mouth of the Canyon,

The Balaclava, Snow Shriek, Olive Branch, and others are noticed. The first named is regarded as fine property and in conjunction with two or three others, held by Thomas W. Leggett, has been surveyed by L. L. Hawkins, Esq., United States Deputy, and a patent will undoubtedly follow in due time. Reaching the mouth of the canyon the Scandinavian lode of massive proportions is encountered. This has also been lately relocated and will be further prospected ere long by the present claimants A tunnel of 600 feet or more has been driven from near the base of the mountain, but work was suspended before the lode was reached, thus adding another to the long list of undeveloped claims abounding in this region. It is estimated that the lode will be penetrated at a point approximating 300 feet in advance of the face of the tunnel. The outcrop is fully 20 feet in width, with a strong, bold outline, and judging from its appearance on the surface and assays of rock from different points on the lode, it will develop finely at a reasonable depth below the tunnel level. An advantageous site for hoisting works is easily attainable within the lateral boundaries, thus making it a desirable location for investment of capital. From the mouth of this canyon to the divide—a distance of two miles—the

Evidences of Mineral Wealth

Beneath the surface is noted by all who visit the locality. A good wagon road, now almost exclusively used by the Exchequer company, is constructed from the base of the mountain to the works of the last named company. A sufficiency of the finest timber of the Sierras abounds on every side, and the time is not far distant when the general tenor of business—now comparatively inactive—will be greatly changed. To the capitalist this region holds forth every inducement necessary for safe investment, and that it is already becoming more popular in outside circles is attested by the significant visits lately made by parties interested in mining, and subsequent purchase from former claimants.

Magnitude of our Hydraulic Mining Enterprises.

Few people abroad, and not many even in California, have any adequate conception of the extent to which large and valuable mining estates have been gathered up and consolidated by some of the hydraulic companies operating in this State, nor yet of the length of time and the expenditure of money that have been required to effect these objects. Many otherwise well informed persons have an idea that these companies, like those organized for silver mining, spring up in a day, and with a gourd like growth are ready for business; that it is possible for them to commence work with little capital and on short notice; only a claim of some sort, an office with a board of directors, a president and secretary, and set of blank stock books, being necessary for entering upon practical operations and insuring a financial success. Nothing, however, could be more mistaken than a notion of this kind. Very different sort of institutions are these hydraulic companies from the majority of those formed for ore working; the washing of auriferous gravel being, as a general thing, carried on in a spirit very unlike that which so largely governs those engaged in vein mining. The properties of the hydraulic miner, difficult of acquirement and varied in character, have, in most instances, been aggregated only through long years of careful watching, good management, and at a heavy cost to the owner. Not often bought for speculative purposes, they have been improved with economy and administered with a view to insuring steady and profitable production; this department of mining, where the conditions are all favorable, offering to those desirous of making permanent investment, as good inducements as any other industry in the State.

The following extract from a late issue of the *Bulletin*, descriptive of the possessions of the Eureka Lake and Middle Yuba canal company, situate on the San Juan divide, Nevada county, conveys a good idea of the dimensions, varied character and value of one of the largest and best managed of these great mining estates in California.

This property, composed of mines, water rights, ditches and reservoirs, tailing and tunnel claims, saw mills, wood lands, etc., has been acquired by the present owners while residing here, engaged for a period of more than 20 years in mining, trading and banking, and who, familiar with everything on or pertaining to the ridge, have from time to time secured the same, locating some and buying others when favorable opportunities offered for getting hold of choice tracts of gravel or other interests suited to their purpose, which was the aggregating of, not only an extensive, but a complete mining estate, possessing in itself everything necessary to carry on hydraulic operations on a large scale with the greatest attainable success. The gold-bearing gravel owned by this company covers an area of nearly 2,000 acres, the bulk of it lying along the old channel near Columbia hill and Cherokee, with considerable tracts at Lake City, North Bloomfield, Relief hill, Snow point, Moor's flat, Woolsey's, San Juan, and elsewhere on the ridge. They own, convenient to their mines, large tracts of wood land, with both steam and water-driven saw mills, whereat they cut enough lumber and sluice blocks for their own use and the country around. Among the appendages of this estate are extensive deposits of rich tailings, bed rock tunnel sites, outlets, commanding other grounds and various similar appurtenances and franchises of minor importance; its feature of greatest value, not excepting the mines themselves, consisting of.

Water Rights, Ditches, Etc.

The following is a list of the ditches now owned by this company, all being works of large capacity and the most of them of great length. The Eureka lake, San Juan, Middle Yuba, Miners', Grizzly and the Irwin; besides which they own a great number of subsidiary ditches, used to convey water from the mains and the local reservoirs upon the mines. These principal ditches have a united length of more than 200 miles, and a capacity to deliver about 10,000 inches of water, the quantity now being carried by them, and continued with little diminution till winter, being 6,000 inches. The average amount delivered throughout the year, reaches about 200,000,000 gallons per day, enough to meet the wants of San Francisco for all time to come. The cost of these ditches, the most of them having been built at an early day, was large, not less in the aggregate than $1,500,000. The Eureka especially was an expensive affair, the Magenta and National flumes, famous for a long time as the most extensive and costly structures of the kind in California, having constituted sections of this ditch. Being liable to destruction from wind, fire and early decay, the company, upon their being blown down some years ago, lowered the line of their ditch at that point and substituted trenches for these lofty and expensive but perishable works.

Water-Shed and Storage.

The principal reservoir of this company consists of Eureka, French, or Canyon creek lake, as it is variously put down on the maps. It is capable of holding 933,000 000 cubic feet of water, which quantity, by raising the dam built across its outlet 12 feet, could be increased more than one-quarter. Four miles further down Lake Faucherie has in like manner been converted into a reservoir, in which can be retained 217,000,000 cubic feet of water, the several small lakes in the neighborhood having a capacity to hold a further quantity of 100,000,000 cubic feet, giving to these various receptacles a water storage of 1,250,000,000 cubic feet, equivalent to 10,000,000,000 gallons of water—as much as the large ditch leading from these reservoirs is capable of carrying off in five months. Besides these storage reservoirs the company have 35 distributing reservoirs located in the vicinity of the mines, and having an aggregate capacity of 25,000 inches. The water-shed having its principal drainage into these lakes and supplying streams covers an area of several hundred square miles, much of it consisting of peaks and ridges of naked granite. Flowing in the form of melted snow from the rocky summits and slopes of the Sierra this water, when first collected, is as pure as this element ever occurs in nature.

Water Sales. Receipts, Etc.

Though working but a portion of them, this company own more than a dozen well opened and outfitted mines, all rich and in good shape for running. To some of these claims outlet has been secured through long bed-rock tunnels, the extent of these excavations covering many thousand linear feet, the length of monster pipe and flume laid down being reckoned by the mile. Several of these mines are leased to other parties, a number being suffered to lie idle, the owners preferring to supply water to those who have long been their customers to using it in their own claims, though this would afford them larger profits. This company sell their water at the rate of 10 cents per inch for a run of 12 hours, a rate that could be materially advanced without diminishing their sales, were they disposed to be exacting. Before they were consolidated the receipts of the Middle Yuba canal company from water sales amounted to about $150,000 per year, having aggregated during eight and a half years, beginning January 1st, 1856, nearly $1,000,000; the receipts of the Eureka Lake company for three years, commencing January 1st, 1860, having amounted to $625,000, their expenses being meantime $120,000. While the revenues arising from this source are not so large now as formerly, the Consolidated company using most of their water themselves, the net earnings realized from working their mines and from sales of water greatly exceed the income formerly derived from water sales alone.

At Columbia Hill,

Where this company are carrying on their principal operations, they own one of the most valuable deposits of gravel in the State, the auriferous belt here being over a mile wide, and varying from 200 to 600 feet in depth. This material, which pays from top to bottom, being of high grade throughout, is entirely free from adhesive clay, layers of sand, boulders and other troublesome matter, enabling washing operations to be prosecuted cheaply and continuously. The manner in which this ground has been exploited and equipped is nowhere excelled. A description of the disintegrating and gold saving apparatus here employed would cover all that is most new, powerful and advanced in hydraulic mining. The monitors used have an outlet diameter of 15 inches, being a third larger than any other ever constructed. The main flume is 6,000 feet long and eight feet wide, an unusual size. Most of the time as much as 3,000 inches of water are run in this claim under a pressure of 300 feet, supplying a force that tears down and carries off immense quantities of this easily separated gravel. In the pit already washed out here all the exhumed cities of Italy could be set down, with room to spare. Still, the ground disposed of bears so small a proportion to the remaining mass that it is scarcely missed; and yet mining has been going on here pretty briskly for more than 25 years—this being one of the earliest, as it has always been one of the most active camps on the San Juan ridge. To figure on the probable time required to empty even a linear mile along these old river channels would be to busy ourselves with the events of another century.

Altitude of Our Hills.

Professor Davidson has for some time been engaged in taking observations from the top of Monte Diablo, and furnishes the following list giving the height of hills in sight from Monte Diablo:

Clay street hill, San Francisco, has an altitude of 337 feet above ocean level, and is distant 32 miles.

South Farallone island, 350 feet altitude, distant 66 miles.

The sea horizon is distant 83 miles.

Mount St. Helena, 4,343 feet altitude, distant 68 miles.

Mount Tamalpais, 2,604 feet altitude, distant 39 miles.

Snow Mount, south-west angle of Mendocino county, 7,000 feet altitude, distant 114 miles.

Mount Monticello, west of Cottonwood, 3,030 feet altitude, distant 57 miles.

Mount Vaca, west of Vacaville, 2,340 feet altitude, distant 35 miles.

State Capitol, Sacramento, distant 53 miles.

Marysville Butte, 2,039 feet altitude, distant 92 miles.

Lassen's Peak, 10,650 feet altitude, distant 183 miles

Downieville Buttes, 8,720 feet altitude, distant 157 miles.

Lola Mount, near Truckee, 9 230 feet altitude, distant 138 miles.

Pine Hill, near Folsom, 2,150 feet altitude, distant 77 miles.

Pyramid Mount, 10,290 feet altitude, distant 114 miles.

Round Top, overlooking Placerville road, 10,650 feet altitude, distant 120 miles.

Stanislaus Peak, 11,500 feet altitude, distant 125 miles.

Mount Lyell, about 10,000 feet altitude, distant 144 miles.

Mount Hamilton, site of the Lick observatory, 4,300 feet altitude, distant 52 miles.

Santa Lucia range, south of Monterey, 6,200 feet altitude, distant 132 miles.

Mount Bache, north of Santa Cruz, 3,790 feet altitude, distant 54 miles.

The area actually within view from the summit, including land and ocean, is computed by Professor Davidson to be about 32,000 square miles.

SWITCHMEN SOUNDING THE LOCOMOTIVE WHISTLE.—On some of the French railway lines an arrangement for giving notice of danger is in vogue, as follows: The signal or switch man, when he turns the disk, sends an electric current in the direction of the coming train to a bar placed between the rails, and when the engine reaches the spot, a metal brush placed between the wheels sweeps the cross-bar, the current passes to the engine, and, by means of an electro-magnet, presses upon a lever, which opens the steam whistle, thus bringing it virtually under the control of the switchman on the road. From its simplicity, this arrangement is regarded as preferable to most of the other devices for this purpose.

MECHANICAL PROGRESS.

A Boot Polishing Machine.

According to the *Ironmonger*, we shall soon take our daily "shine" by machinery. We read as follows: A great many attempts have been made to produce machinery for cleaning boots; but up to the present it may be said that none have been really successful. All that we have ever heard of have been composed of revolving brushes, against which the boot has had to be held. The brush has been caused to revolve by means of treadles or similar contrivances. The labor, therefore, of cleaning boots must have been as great as if the boots were cleaned by hand, and the polish far inferior; for the brush revolves always in one direction, and to polish leather brilliantly there must be a backward and forward movement of the brush. Mr. Southall, of Leeds, appears to have overcome the difficulty, for we have been favored with a drawing of a machine which he has patented, which seems admirably adapted for doing its work. The machine is only about the size of an ordinary sewing machine, with stand. Through the frame of the machine, in bearings, is placed a horizontal sliding shaft. A worm wheel in one of these bearings acts as a fixed for turning round the boot. A vertical rocking bar works between two centers, and carries an arm lever, on the end of which is fixed the brush (an ordinary flat one.) The brush end of this arm lever is made to rise or fall, according to the inequalities of the boot upon which it rests. The driving shaft is a short horizontal one, and carries a worm for turning the feed, a fly-wheel and crank and joint for pulling the brush backward and forward. There is an expanding last, made so that it will suit all sizes and sorts of boots. All that a person has to do is to slip a boot on the last and tighten it, lower the brush so that its weight rests on the boot, and then turn an ordinary handle, when the boot begins to move slowly round, and presents every part it is intended to clean to the brush, whilst the latter works backward and forward with rapidity, and the result is a most brilliant polish, which it would be vain to attempt by hand. The machine is so easy to turn that a child of nine years old can work it. It has only just been introduced to the public, and we believe will be exhibited for the first time at the Manchester and Liverpool show at Southport, where, no doubt, it will be an attraction.

NEW IRON MAKING PROCESS.—The members of the Manchester scientific and mechanical society paid a visit to the Standard iron and steel works (formerly Bolckow, Vaughan & Co.), Gorton, to inspect a new process for making iron and steel, patented by Mr. Samuel R. Smyth. About six to seven tons of common scrap iron were melted in an ordinary cupola, and run into a Bessemer converter, the current of air from the blowing engines being used to introduce certain chemical compounds and reagents into the molten metal for the purpose of eliminating impurities. This was done at a sacrifice of only a small percentage of iron. The process of refining and purifying occupied between nine and ten minutes, and the quality of the production appeared to be in every way satisfactory. Both grey and white iron can be produced of a high specific gravity and of great density. A number of test bars made by Mr. Smyth's process from grey iron were submitted for inspection. The cast-iron test bars were one inch square and four feet eight inches long, and at the time of testing were placed upon supports four feet six inches apart. The weight was suspended in the center on a knife-edge, the deflection measuring every 100 pounds up to 600 pounds. The total deflection was found to be 1·375 inch. The weights were then gradually removed, and when all were off the deflection was found to be about 0·062 of an inch only. The weights were again placed in the scale, and the deflection again taken. When 720 pounds was registered the deflection was 2·078 inch. The average breaking weight of five samples was 733·6 pounds. The material works as easily as ordinary cast iron. Altogether the process seems likely to fulfil the sanguine expectations formed of it. The works have only been in operation a few days, and it is intended to erect an apparatus for making wrought iron of high quality in large masses without piling or welding.—*Manchester Examiner.*

PIECE WORK.—In a report drawn up by the deputation of workmen who were sent from Paris to the Vienna Exhibition three years ago, and only now published, the following arguments are advanced in favor of piece work: "In most of the Paris manufactories and workshops workmen are paid by the hour. Now, it always happens that the employer fears that the amount and quality of the work executed are not worth the price he pays for it; the workmen, on the other hand, being underpaid, is always afraid of doing too much. In self-defence, the employer resorts to vexatious precautions which are of no use to him, and which only excite the resentment of the workmen—a resentment which he loses an opportunity of displaying. This latent animosity between the employer and the workmen is to be deplored in the interest of both parties, and the best way of putting an end to it is to adopt the principle of piece work, by which the independence of the workmen is effectually secured."

Speed of Wheels and Pulleys.

Although we are constantly solving problems as to the speed of wheels of a given dimensions and the dimensions of the wheels revolving at given speeds, inquiries on this subject come to us in such numbers that we cannot do better than give some plain, authorative rules which all mechanical readers will do well to remember. We find in *Iron* the following concerning calculating the speed of wheels and pulleys.

To find the number of teeth in a gear wheel, revolving at a given speed: Multiply the speed of the driving wheel in revolutions per minute by the number of teeth it contains, and divide by the speed of the driven wheel, and the quotient is the number of the teeth required. Example: If a wheel contains 50 teeth and makes 25 revolutions per minute, what number of teeth must a wheel contain to gear into the first, if it makes 125 revolutions per minute? $50 \times 25 = 1250 \div 125 = 10$, the answer. For pulleys, or hand wheels, the rule is the same, except that the diameter of the wheel is taken instead of the number of teeth. Example: A driving wheel is 24 inches in diameter, and makes 120 revolutions per minute; what size of pulley must be used to obtain 60 revolutions per minute? $120 \times 24 = 2880 \div 60 = 48$, the answer.

Another rule, which will answer whether we employ a single pair or two pair of pulleys, is as follows: Divide the speed required by the speed of the driving shaft, and the quotient will be the proportion between the revolutions of the driving shaft and the revolutions required. Then take any two numbers that will, when multiplied together, give a product equal to that proportion; one of such numbers will form the relative proportion between the sizes of the first pair of pulleys, while the other number will form the relative proportion between the sizes of the other pair. Example: It is required to run a machine at 1,200 revolutions per minute, the driving shaft making 120 revolutions per minute. What size of pulleys should be used? $1,200 \div 120 = 10$. Then: $5 \times 2 = 10$, or $4 \times 2\frac{1}{2} = 10$; so that the proportion being 10 to one, we may use two wheels of any sizes, provided that the one on the driving shaft is ten times as large as the one on the machine. Or since $5 \times 2 = 10$, we may place on the driving shaft a pulley 5 feet diameter and belt it to one of 1 foot diameter, thus forming the proportion between the first pair of wheels of 5 to 1. The next pair of pulleys must be in the proportion of 2 to 1, that is to say, we may belt together a 2-feet and a 1-foot pulley, a 4 and a 2-feet, or any others, so that one is twice as large as the other. Again, since $4 \times 2\frac{1}{2} = 10$, our first pair of pulleys may have the proportion of 4 to 1, and the second pair the proportion of $2\frac{1}{2}$ to 1, or *vice versa*, as circumstances may require.

It is obvious that, when the speed of the driving shaft is less than the speed required, the larger pulley of each pair must be used as the driving wheel.

MACHINERY OF THE BRITISH FLEET.—The Newcastle *Chronicle* says: "Some curiosity having been manifested as the cost of machinery supplied to the vessels of our fleet, it may not be uninteresting to give a few figures on the subject. The contract for the engines of the *Thunderer*—now disabled at Portsmouth—was £46,500. The estimate for the hull was £250,000; but as this did not include guns, or the extra cost involved by her hasty preparation for sea, it is not unlikely that she was worth fully £450,000 when she blew up on Friday last. The cost of the *Cornwallis*, a 60-ton gun ship, built twenty years ago, was £12,206 for boilers and engines, and about £73,000 for hull and entire fitting. The machinery of the *Bellerophon* cost £86,960; that of the *Agincourt*, £83,779, the *Hercules*, £82,814; the *Northumberland*, £7,871; the *Minotaur*, £79,500; the *Warrior* and *Black Prince*, £74,000 each; and the *Achilles*, £69,000. Of these ships the *Northumberland* was the most expensive, costing £471,352; the *Agincourt*, £465,477, and the *Minotaur*, £456,830. The outlay on the ships now building, however, is considerably greater. The *Dreadnaught*, an armor-plated turret-ship of four guns, is to cost no less a sum than £508,395, and of this $107,000 is set apart for machinery. The *Alexandra*, a broadside ship of twelve guns, will cost £411,980 for hull alone, and the contract price for her engines is £110,500 more."

BEATING ENGLAND ON HER OWN GROUND.—To previous intimations in earlier reports touching the competition of America and France in the tool and hardware industries, the Birmingham daily *Post* is now directing the attention of its readers. That paper says: "During the past few months a French manufacturing firm has established an agency in Birmingham, and has supplied large quantities of the hardware peculiar to Birmingham and its district at prices considerably lower than those of native manufacturers, such articles being, nevertheless, frequently made from Staffordshire iron and Sheffield steel. Another significant hint as to future competition, not only in foreign and colonial markets, but even on English soil, is the list of prices of several American manufacturers, who are supplying not only axes and steel forks, for which they have long been famous, but a great variety of hardware goods. Not only the business-like style of these lists of prices, and the artistic character of the illustrated lists, but the style and excellence of these American manufactures deserve the serious attention of employers and employed."

SCIENTIFIC PROGRESS.

Insanity in the United States.

The intelligent care of the insane, with a view to the restoration to health and society, is so recent that it may be dated, in the United States, in the present century. The time is even within the recollection of many now living, when faith in the curability of the disease became general, even among medical men. Upon the dawning of the belief that insanity was susceptible of cure, hospitals began to be built, for the two-fold purposes of custody and treatment; for besides the difficulty of taking care of lunatics at home, it was found that comparatively few recovered. From this period hospitals began to be regarded as not only the best, but to most persons the only places for the insane. Hence an increasing demand for their accommodation; and though their numbers have multiplied largely, and have greatly increased in size, they are still inadequate to entertain all who knock at their doors and with piteous appeals seek admission. In this connection may be noted a curious result of the establishment of new hospital facilities. The newer States, in estimating the hospital capacity necessary for their insane, have naturally consulted the census statistics to find what number to provide for; but it is invariably found that when a hospital is opened for the accommodation of a given district, the applications for admission far exceed its capacity, largely outnumbering the statistics collected by the census-taker. The country seems suddenly thronged with insane people, and we are apt to be impressed with the belief that this dread disease is largely on the increase. But the probable fact is that no such increase really exists. It is not unnatural that, mainly out of family pride, the questions of the census-takers are often evaded, and the relatives of the unfortunate patient, seeing no benefit to come from revealing this "skeleton in the closet," keep it from observation. But, promptly when an asylum is opened within their reach, free to all without pay, the curtain is drawn and they come forward with their afflicted.

That insanity does not increase, *pro rata*, at least in the United States, is proven by the census returns for the past twenty years. In 1850, this country had a population of 23,191,876, and a total number of insane and idiots of 31,397, or 1 in 378. In 1860, with a population of 31,443,322, there were 42,864 insane and idiots, or 1 in 733. And in 1870, with a population of 38,555,983, there were 61,909 of that class, or 1 in 623. In England, during the same period, there was an average of about 1 in 450; in Scotland, 1 in 460; in Ireland, 1 in 400; in France, 1 in 600; and in Australia, 1 in 524. These reports, if accurate, show a favorable condition in this country as compared with that of others.—*Scribner's for September.*

METEOROLOGICAL.—*Iron* makes note of recent facts in the application of meteorology to industry: On the first of May last, agricultural weather-warnings began to be issued from the Paris observatory. While the forecasts made for the benefit of seamen and fishermen relate to the intensity and direction of the wind, those for farmers will have reference to the rainfall, thunderstorms and inundations. The last will occasion little difficulty; with the help of the electric telegraph, timely information of heavy rains and the first rising of the rivers will be collected and distributed to the dwellers on the plains. Data will also be collected with regard to all kinds of meteorological phenomena, and may we expect the predictions to become more reliable year by year. As an illustration of the indications which may be relied upon in foretelling change or continued favorable weather, an instance is given in which the latter was accurately forecast from the coincidence of a high and rising barometer in the extreme north of Europe with a contrary condition in Sicily. These indicated a continuance of the polar current, bringing with it clear skies and a consequent increase of temperature during the day, which were predicted and verified by the event. Professor Loomis has also shown that when barometers are high and temperature low in the Aleutian islands the reverse obtains in the United States, that a similar correspondence exists between Iceland and Central Europe, and that the amount of rainfall bears a well-defined relation to the pressure at the center of a storm.

ELECTRIC EXPERIMENTS.—M. Plante's most recent experiments with his powerful secondary batteries throw some light, he considers, on the formation of hail. Using a battery of 400 secondary couples, he placed the electrodes in a dish of salt water, and from the positive electrode (which was sometimes wrapped in a piece of moist blotting paper) there were thrown up in all directions a multitude of ovoid globules. If the electrodes meet only a moist surface, instead of a thick liquid layer, the calorific effects prevail, the aureole is more brilliant, and the water is quickly transformed into vapor. M. Plante thinks the electric discharges in clouds may, according to the density of these moist conductors, cause their reduction to vapor, or their instantaneous aggregation into globules much larger than the cloud globules themselves, and the liquid bombs thus formed may be projected to great heights, where the temperature is much lower. This he gives as one possible way of the production of hail.

Local Botanical Points.

At the last meeting of the California Academy of Sciences, Dr. A. Kellogg gave a report on a dozen or more plants, some of them new species and the others in certain respects peculiar. These included a species of phacelia found by Sam. Brannan, Jr., in 1871, at the top of Granite mountain, Kern County. The flowers are purple-blue, and the stems shaded a little with yellow. Plants of this species are highly valued for the garden. Dr. Kellogg christened the specimen after the finder. A new species of the wild pea, brought from Southern California by Mr. Hutchins, was exhibited, and the name given to it is *Macrocarinatus lathyrus*. It is, perhaps, one of the most ornamental yet discovered. The stem is perennial, and it twines round large bushes, attaining a height of five feet, and hangs with large clusters of purple blossoms, larger than any known heretofore of this genus. Of a third plant, *A. psoralea*, left by Mr. McLane, a student at the University, and said to have been collected on Tamalpais, Dr. Kellogg did not think it possible to make a new species. He thought it probably a foreign plant that had got mixed up in the portfolio of the collector. A fourth plant Dr. Kellogg named the *Lupinus sericatus* from the satin-like appearance. The flowers are purple-blue. It was found in Lake county by a Miss Anderson. The stalk of a sun-flower, obtained in Owen's valley, was shown, with the remark that probably it would be included in the *Helianthus Californicus*, as a very distinct variety. The farmers say it has recently appeared in the vicinity. It has a white stem, very smooth, and as many as 300 blossoms form on one plant. As a feature for the park it is very valuable. Among other plants presented were specimens of *nemophyla* and *calindrinia*.

DIRECT PROOF OF EVOLUTION.—A correspondent of *Nature*, taking for his text Mr. Huxley's suggestion that "the sole direct and irrefragable evidence of the method whereby living things have become what they are is to be sought among fossil remains," shows that important work in that direction has been lately done by three Continental scientists. M. Paul, of the Austrian geological survey, in conjunction with Dr. Neumayer, of Vienna, a distinguished palæontologist, have recently discovered most interesting proofs of the origin of new forms by a descent in a large accumulation of lake and lagoon deposits of the latest tertiary, which extend over a great portion of the Hungarian plain. The beds are about 2,000 feet in thickness, and the upper fresh-water series, by far the thickest portion, contains a number of well marked zones of molluscan life. The existing genus Palndina is in great profusion, and about 40 forms have been distinguished which clearly illustrate the mode of derivation of the newer from the older types. Intermediate links between forms so differentiated as to have been placed in different genera by competent naturalists have been found, and those differing forms have been thus traced to a common ancestry. Uniformity of physical conditions during an immense period renders these vast lake deposits very favorable for such investigations; but Dr. E. Mojsisovics has also, in a recent monograph, shown very clearly the relations of the molluscan forms of the Alpine triae to their ancestral types in the mesozoic and palæozoic strata. This is a comparatively new department of observation, but from the interest now taken in the question of evolution it will doubtless be more and more worked out.

NEW PROCESS FOR THE MANUFACTURE OF DEXTRIN.—M. Anthon writes to the *Chemical News* as follows: "At present, fecula in the separate state is exclusively employed in the preparation of dextrin, all that portion being wasted which is retained by the fibrous part of the potato or of the bran. To prevent this loss the author recommends the use of the entire potato dried and ground after being freed from its soluble principles by washing in acidulated or alkaline water. The fecula thus obtained is sprinkled with hydrofluosilicic acid (0·5 to 1 per cent. of the weight of the fecula); it is then placed in a drying room at 38 to 44 degrees till there is no further loss of weight; the temperature is then raised to 70 or 75 degrees till no loss occurs, and finally to 90 degrees. The dessication being thus complete, the fecula, whilst still hot, is placed in large flat sheet-iron troughs which are introduced into large stoves heated at 100 to 125 degrees. The transformation into dextrin is known to be complete when a sample taken out, on being cooled and moistened with cold water, adheres together in little glassy globules."

PRIZES FOR A NEW BLEACHING AGENT.—A Vienna industrial league offers a silver medal to any one who will discover a method of bleaching every kind of silk perfectly white without the use of sulphur or other chemical injurious to silver. In embroidery and silver lace where silk and silver are used together, the silver is blackened by the sulphur in the silk. A similar prize is offered for the most beautiful and solid domestic article for weighting light-colored silks.

THE ARRIVAL OF PROFESSOR HUXLEY.—Professor Huxley, the celebrated English scientist, has arrived in this country. He is at present traveling privately, and will devote the greater part of his brief visit to the Centennial Exposition. It was not his intention to deliver any lectures here, but he has lately reconsidered his determination, and has consented to give three discourses during the latter part of September, in New York city.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to Aug. 10.		1 W'k to Aug. 17.		1 W'k to Aug. 24.		1 W'k to Aug. 31.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	....	....
Advance	....	....	....	....	....	....	....	....
Alpha	4⅝	4⅛	4⅝	4⅛	6⅜	4⅞	6⅜	5⅛
Alta	4	3⅜	3⅝	3	3	2⅝	3	....
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	1⅜	1	....	....	....	....	....	....
Andes	2¼	2⅛	2⅜	....	2½	2¼	2½	....
Alps	1⅜	87½c	50c	....	50c	....	50c	....
Amazon	50c	....	....	....	....	....	....	....
Balt'm'e Con	2½	2⅛	2⅜	1⅝	3⅜	2⅛	2⅝	2⅛
Belcher	22	19¼	25	20½	23¾	22½	25	23¼
Belmont	2½	....	2⅝	2⅜	3	2⅞	2⅞	2⅝
Best & Sel	50¼	48¾	49½	46	50¾	48¾	50½	47⅝
Buckeye	....	....	....	....	....	....	....	....
Bullion	49	43	47	44½	55	49	55	49
Caledonia	10½	9	8¾	7¾	8⅛	7⅛	9	8¼
California	66	61½	61½	58⅞	60	58¾	60⅜	58½
Challenge	4¾	4½	4¾	4⅜	4¾	4	4⅞	4¼
Chollar-Pot	96¾	92	94	87	97½	84	100	88
Confidence	19⅝	18	19	17½	19¼	18¼	20	18¼
Con Imperial	5⅜	5	5⅝	5	5⅜	5⅛	6⅛	5½
Con Virginia	59	56¼	54	51¾	54⅜	52⅜	55½	52⅜
Crown Point	14½	12⅜	13⅜	11⅝	13⅜	11	12	12
Coso Con	30c	....	35c	25c	70c	30c	30c	25c
Dungeon	....	....	....	....	....	....	....	....
Dayton	....	....	....	....	5½	5	6	5¼
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka (Y)	....	....	....	....	....	....	....	....
Eureka Con	12½	11¾	12	11	11¾	10⅞	12⅛	11
Exchequer	17⅝	16	17¼	16½	21	17¼	21	16¼
Europa	....	....	....	....	....	....	....	....
Gila	75c	60c	....	....	75c	....	....	50c
Globe Con	20c	12c	16c	10c	15c	....	20c	....
Golden Char	45c	10c	1.10	87½	1.15	1	1.15	1
Gould & Cur	17½	16	15¾	14	15	14½	16	14⅞
Bale & Nor	12½	10	11	9¾	11	10½	13⅛	11¼
Ida Elmore	....	....	....	....	....	....	....	....
Jefferson	....	75c	....	75c	....	87½	....	....
Julia	9¼	8¾	8¾	8	9	7⅝	9	8¾
Justice	25	24	24	22¾	28	24½	25½	25
Jackson	3¾	3½	3½	3	3½	....	4	3⅞
K K Con	....	....	....	....	2½	1½	3¼	3
Kentuck	13½	12½	13¼	12	13½	12	14⅜	13½
Knickerb'k'r	80	62½	62½c	....	75c	....	80c	62½c
Kossuth	1¾	1¼	1⅜	1	80	75	1	87½c
Lady Bryan	1⅜	1	1¼	80c	1.25	72½c	65c	58c
Lady Wash	2¾	2⅛	2⅜	....	2½	2¼	3⅜	2¼
Lead	....	....	....	....	....	....	....	....
Leopard	12	10¾	12	10¾	11¾	10⅜	11½	9¾
Leviathan	1¾	1	87½c	75c	1	87½	87½c	74c
Mahogany	....	....	....	....	....	....	....	....
Mansfield	....	25c	....	....	25½	....	....	....
Meadow V'y	50c	....	50c	37½c	1	25c	1	75c
Mexican	36¾	33⅜	35½	31½	36¾	34⅜	35¼	33⅞
Midas	....	....	....	....	....	....	....	....
Mint	25c	....	25c	....	25c	15c	35c	....
Monitor Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	1	95c	1	75c	87½c	....	87½c	75c
Niagara	23c	....	....	....	....	....	....	....
North Belle	25½	24	25½	20	23½	18¾	25	21½
Ophir	2¼	2⅛	2½	2	3⅛	2¾	2⅝	2
Occidental	4	3½	3¾	....	3¾	3⅜	3¾	3½
Ophir	53⅞	51½	52¾	47⅜	56⅞	51½	56¾	53¾
Or Gold Hill	....	....	....	....	....	....	....	....
Overman	83½	77½	78	74½	77½	74⅜	77½	75
Pacific	....	....	....	....	....	....	....	....
Phil Sheridan	1¾	....	75c	....	50	....	....	....
Ploche	....	....	....	....	....	....	....	....
Poorman	55c	20c	60c	30	60c	50c	50c	40c
Prospect	7½	6½	6½	5½	6	4¾	7	5½
Prussian	....	....	....	....	....	....	....	....
Ray & Ely	9½	8	8½	8	8¾	6½	8	7
Rock Island	2½	2	2	1⅞	2	1⅞	2	1.70
Rye Patch	....	....	....	....	....	....	....	....
Savage	21¾	20	21	18	20½	19	22¾	21
Seg Belcher	87	79	88	78	....	80c	85	80
Sierra Nev'da	16½	14½	15¾	14¾	14½	14	15	14½
Silver Hill	8	7½	7¾	7½	9½	8¾	11	10
Sth Charlot	....	....	25c	....	25c	20c	15c	....
Succor	25c	20c	75c	....	55c	....	75c	60c
Union Con	15½	14½	14⅞	13¼	15	14⅜	14⅜	....
Utah	19	18	23¾	19½	22¼	20	22	20½
Wells-Fargo	30c	23c	28c	17½c	30c	....	30c	....
Woodville	2¼	1⅞	2	1⅝	1½	1½	1⅝	....
Yel'w Jacket	32½	30½	31¾	29½	34½	32	35¼	30¾

Sales at S. F. Stock Exchange.

FRIDAY, A. M., AUG. 25.

1120 Alpha ..... 60@59½
50 Andes 2¾
75 Alta 3
255 Best & Belcher 48½
70 Bullion 55
575 Belcher ..... 23¾@24
140 Baltimore Con 2½
85 C Point 12c
955 California ..... 58¾@58½
30 Chollar ..... 98@99
200 Con Virginia 53½
20 Confidence 19½
1240 Con Virginia ..... 53@52¾
380 Caledonia ..... 8¾@8½
30 Challenge 4½
3370 Con Imperial ..... 5¾@5⅞
80 Dayton ..... 5¾@5½
50 Dardanelles 1
430 Exchequer ..... 20½@20¾
120 Gould & Curry ..... 15@14¾
2165 Hale & Nor ..... 11½@11¾
295 Julia ..... 8¾@8¾
1910 Justice ..... 25½@25¾
315 Kentuck ..... 13¾@14
545 Kossuth ..... 87½c@1
40 Knickerbocker 82½c
200 Lady Wash 2¾
100 Lady Bryan 65c
1320 Leviathan ..... 75@75½c
320 Mexican ..... 34¾@35
600 Maryland 75c
200 New York 75c
85 Nth Con Va 1
250 Ophir 54½
20 Ophir 54¾
30 Occidental 3¾
25 Prospect 6
524 Rock Island ..... 1⅞@2
1405 Sierra Nevada ..... 14¾@14½
380 Savage ..... 20¾@21
600 Succor ..... 75c@65c
690 Sil Hill ..... 10@10½
50 Trojan 95c
275 Utah 21
215 Union ..... 14¾@14½
250 West Belcher 23¾
100 Ward 1¾
50 Yerville 1
1560 Yellow Jacket ..... 34½@35

AFTERNOON SESSION.

25 Alps 50c
355 Alpha ..... 59½@59¾
95 Belcher ..... 24@23¾
100 Belmont 2¾
240 Best & Belcher ..... 48@47¾
50 Bullion 55
1100 Coso Con ..... 27½@29c
300 Con Imperial 5¾
1550 California ..... 58¾@58¾
255 Caledonia ..... 8¾@8¾
50 Globe Con 9c
445 Con Virginia ..... 52¾@52½
675 Eureka Con 11
250 Exchequer ..... 20¾@21
250 Gold Charlot 1.05
100 Gila 90c
1100 Hussey ..... 11¾@11¾
610 Hale & Nor ..... 11¾@11¾
480 Jefferson 1
100 Jackson 3½
695 Justice ..... 28¼@28¾
330 Julia 8¾
350 K K Con 3¾
50 Kentuck 13¾
255 Leopard ..... 11½@10¾
905 Manhattan ..... 10@15¾
1000 Mansfield 20c
100 Meadow Valley 1
590 Modoc ..... 5½@6
1.0 Mexican ..... 34@33¾
2500 New Coso 2½
420 Northern Belle ..... 21½@22½
160 Ophir ..... 53¾@53⅞
20 Overman 78¼

50 Golden Chariot 1.10
450 Gila ..... 1@95c
200 Hussey 11
555 Jackson ..... @3½
480 Jefferson 1
200 Kossuth 1
825 K K Con 3
100 Kentuck 14¾
30 Lady Wash 3¼
130 Leopard ..... 10@10½
700 Modoc ..... 6@5½
225 Maryland 76c
45 Mexican 34½
385 Meadow Valley 1
170 Manhattan ..... 16@15¾
845 Northern Belle ..... 22@23
700 New Coso 2½
255 N Con Va 1¼
30 New York 80c
120 Occidental 3¾
550 Poorman 50c
400 Prospect ..... 6@5¾
200 Panther 1
725 Rock Island ..... 2@1⅞
100 Ray & Ely ..... 7@7½
845 Trojan ..... 95@90c
1105 Union 14½
200 West Belcher 23¾
157 Ward 1¾
5?0 Wells-Fargo 30c
223 Woodville 1¼
260 Yellow Jacket ..... 33½@34

TUESDAY, A. M., AUG. 29.

745 Alpha ..... 55@54½
25 Alta 3
220 Best & Belcher ..... 49@49¾
430 Belcher ..... 23¾@23½
80 Bullion 50
970 Baltimore Con ..... 2¼@2⅜
200 Caledonia ..... 8¾@8½
40 Challenge 4½
50 Chollar 95
1375 Con Virginia ..... 53¾@56
395 Crown Point ..... 12½@12¾
485 California ..... 59½@59¾
1800 Con Imperial 5½
40 Exchequer ..... 19@18¾
20 Gould & Curry 15¾
385 Hale & Nor ..... 12@12½
1805 Julia ..... 8¾@9
295 Julia ..... 8¾@9
320 Kentuck ..... 14½@14¾
530 Knicker 75c
100 Lady Bryan 60c
1000 Leopard 10¾
320 Mexican ..... 34@33¾
40 Maryland 75c
500 North Con Vir 1¼
150 New York 87½c
80 Occidental 3¾
365 Ophir ..... 54¾@54½
110 Overman ..... 76@75½
200 Prospect 6
2?0 Savage 21¾
275 Silver Hill ..... 10¾@11
30 Sierra Nevada ..... 14¾@14⅝
100 Succor 60c
200 Trojan ..... 95c@1
1000 Union 14½
100 Woodville 1⅝
1275 Yellow Jacket ..... 33¾@34

AFTERNOON SESSION.

560 Alpha 57½
1255 Best & Belcher ..... 24@24½
315 Best & Belcher 50
815 California ..... 59@59¾
110 Caledonia 8¼
495 Coso Con 29c
600 Con Virginia ..... 57¾@58
580 Con Imperia ..... 5¾@5⅞
220 Crown Point ..... 12¾@13
1185 Eureka Con 11
200 Exchequer ..... 19½@19¾
230 Gen Thomas ..... 2¾@2½
300 Golden Char ..... 1.10@1.15
350 Hussey ..... 80c@85
330 Hale & Nor ..... 12¾@12½
100 Jackson 3
720 Jefferson 1
390 Justice ..... 29@28¾
35 Julia 9
100 K K Con 3¾
200 Keutuck 14½
510 Leopard ..... 10@10¼
955 Manhattan ..... 15¾@16¼
540 Modoc ..... 6¾@5½
740 Meadow Valley 1
2570 Mansfield 22½c
800 Mexican ..... 34¾@34½
50 New Coso 2¾

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., AUG. 24.

595 Alpha ..... 59¾@59⅝
60 Andes 2¼
110 Alta ..... 3@2¾
100 Baltimore Con 2¾
320 Best & Bel ..... 49¾@50¾
40 Belcher ..... 23½@23¾
180 Bullion ..... 54½@55
150 Challenge 4¾
30 Chollar ..... 97@97½
1205 California ..... 57½@57⅝
295 Crown Point ..... 12¾@12⅝
295 Con Virginia 53¾
3285 Con Imperial ..... 5¾@5¾
140 Confidence 19¾
50 Cronkhite ..... 2½@2¾
500 Exchequer ..... 20½@21
80 Dayton 5¾
310 Gould & Curry 15
70 Hale & Norcross 8¾
500 Julia ..... 8¾@9
520 Justice ..... 27¾@25
300 Kentuck ..... 13¾@13¾
425 Kossuth ..... 75c@87½c
300 Knicker ..... 60@61
450 Lady Bryan ..... 72½@75c
600 Lady Wash ..... 2¾@3
50 Leviathan ..... 81½@81
1090 Mexican ..... 34@35¼
200 Modoc 6¼
200 New York 87½c
100 North Con Va 1
576 Ophir ..... 52½@54¼
40 Overman 77½
50 Occidental 3¾
50 Phil Sheridan 50c
235 Rock Island 2
180 Savage ..... 20@20¾
405 Sierra Nevada ..... 14¾@14¾
120 Silver Hill ..... 9@9½
100 Succor 75c
100 Trojan 87½c
170 Utah 21
980 Union Con ..... 14¾@15
110 Woodville ..... 1¼@1⅜
100 Wells-Fargo 30c
365 Y Jacket 34

AFTERNOON SESSION.

200 Alpha ..... 53@57½
120 Belmont 2½
255 Belcher ..... 23½@23⅝
300 California ..... 58¾@59
800 Coso Con ..... 30@25c
485 Eureka Con ..... 10¾@11
100 Exchequer 20
100 Gila 90c
315 Gen Thomas ..... 1¾@1¾
980 Golden Charlot 1.05
10 Hale & Nor 11¾
2000 Hussey ..... 11¾@1.05
1105 Imperial ..... 5¾@5¾
220 Jefferson ..... 90@95c
100 Julia 8¾
500 K K Con ..... 3@3¼
235 Leopard 10¾
530 Meadow Valley ..... 1@85c
254 Manhattan ..... 15¾@15¾
150 Modoc ..... 4¾@6
540 Mexican ..... 35@35½
570 Northern Belle ..... 20@21
400 New Coso ..... 2¾@2½
85 Occidental ..... 3¾@3⅝
300 Panther 1¼
60 Raymond & Ely ..... 7¾@8

Pacific Board—Latest Sales.

WED'NSDAY, A. M., AUG. 30.

190 Alpha ..... 54½@55¾
50 Belcher 24
195 Best & Bel ..... 49¾@50

265 Crown Point ..... 12¾@12½
245 California ..... 60¾@60⅝
2655 Con Imperial ..... 5¾@5¾
50 Con Virginia ..... 53¾@53½
55 Northn Belle ..... 23@23¾
640 Ophir ..... 56¾@56¾
110 Overman ..... 76@75¾
100 Phoenix 80c
400 Poorman 50c
20 Prussian 1
20 Raymond & Ely 7¾
305 Best & Belcher ..... 50@50¾
150 Bullion ..... 56@55
675 Con Virginia ..... 53½@53
110 Crown Point 13
580 California ..... 60¾@60¼
6410 Con Imperial ..... 5¾@5¾
75 Chollar ..... 95@96
1 10 Confidence ..... 18¾@19
675 Caledonia ..... 8¾@8½
950 Exchequer ..... 18¾@18¾
335 G & Curry ..... 14@15¾
2005 Hale & Nor ..... 12½@11¾
250 Julia ..... 8¾@9
4430 Justice ..... 29½@28
50 Kentuck 14
1975 Lady Bryan 75c
435 Mexican ..... 34½@34¾
505 Ophir ..... 55¾@56¼
195 Overman ..... 76@75
120 Savage ..... 22@2.
10 Sierra Nevada 14¾
200 Succor 75c
50 Utah 22
195 Union Con 14½
2095 Yellow Jacket ..... 33½@32¾

AFTERNOON SESSION.

375 Alta 3
510 Alpha ..... 52½@51¾
300 Andes 2
1895 Belcher ..... 23¾@23½
690 Coso Con ..... 25@28c
350 Challenge ..... 4½@4¾
100 Cosmopolitan 35c
600 Dayton 6
1000 Eureka Con ..... 12¾@12½
150 Exchequer ..... 18¾@18¾
260 Gila ..... 85c@90c
360 Gen Thomas 2½
50 Globe 20c
1550 G Chollar 1
440 Gould & Curry ..... 15½@15¾
450 Hussey ..... 81½@75c
410 Helo & Nor 12
200 Jefferson 1
180 Jackson 1
510 Justice ..... 26@28¾
100 Knickerbocker 70c
125 K K Con 3
160 Kossuth ..... 95c@1
380 Leopard ..... 10@9¾
75 Lady Wash ..... 3½@3¾
1000 Leviathan ..... 75c@75c
600 Mansfield 25c
1000 Mexican ..... 35¾@35¾
50 Occidental R. R & M Co 3¾
200 Ocean View Quicksilver M Co 1
50 Mint 25c
25 Maryland 75c
540 Mexican ..... 35½@33¾
480 Manhattan 15¾
140 Northern Belle ..... 22@22½
850 New Coso ..... 2¼@2¾
200 New York 75c
830 North Con Vir ..... 1¼@1¾
100 Overman 75½
240 Overman 75
200 Prussian 1
250 Panther 1
9.5 Poorman ..... 50@40c
310 Succor 75c
700 Rock Island ..... 2@1.70
40 Ray & Ely 8
100 Silver Hill ..... 11@10¾
105 Savage ..... 21¾@22
65 Sierra Nevada ..... 14¾@15
1000 Trojan 1
65 Virginia 1
300 Woodville 1¾
100 Ward 1¾
120 West Belcher ..... 2¾@2¾
700 Wells Fargo 30c
1020 Yellow Jacket ..... 31@30¾

THURSDAY A. M., AUG. 31.

525 Alpha ..... 52½@51½
50 Amazon 40c
120 Bullion ..... 46½@48
630 Best & Belcher ..... 49¾@50¾
90 Baltimore ..... 2¾@2¾
1 0 Chollar ..... 95@96
1305 Con Imperial ..... 5¾@5½
40 Crown Point 12¾
80 Confidence 18
230 Caledonia 8¼
30 Challenge 4¾
50 Chollar 95
1000 Exchequer 18¾
80 Gould & Curry ..... 15¾@15¾
220 Gould & Curry ..... 15¾@15¾
620 Hale & Nor 12
480 Julia ..... 8¾@8¾
1000 Justice ..... 26¾@26
135 Kentuck ..... 13¾@13¾
50 Mexican ..... 33¾@34
75 Maryland 75c
85 New York ..... 63½@65c
280 N Con Vir 1½
40 Overman 74
65 Ophir ..... 55½@55¾
50 Prospect ..... 6¾@6¾
415 Savage ..... 21¾@21¾
110 Succor 75c
10 Seg Belcher 80
215 Sierra Nevada ..... 14¾@14¾
80 Trojan 90c
20 Utah 22½
400 Union ..... 14¼@14¾
200 Wells-Fargo 30c
100 Ward 1¾
2610 Yellow Jacket ..... 30¾@30¾

AFTERNOON SESSION.

215 Alpha ..... 52@52¾
215 Alps 62½c
50 Belmont 2½
265 Best & Bel ..... 50@50¾
400 Coso Con 25c
210 Con Virginia 53
155 California ..... 58¾@59
445 Caledonia ..... 12¾@13
240 Gen Thomas 2¾
100 Gila ..... 85@75c
20 Gould & Curry ..... 15¾@16
400 Hussey ..... 75@70c
160 Hale & Norcross 12
400 Mansfield 30c
50 Modoc 6¼
120 Northern Belle 24¾
200 Panther 1
2055 Poorman ..... 50@45c
20 Seg Belcher 80
1490 Yellow Jacket ..... 31@30¾

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business.
Alpe S M Co	Ely Dist	9	50	Aug 8	Sept 12	O D Soulre	Stevenson Bldg
Alpha S M Co	Washoe	4	50	Aug 17	Sept 21	W H Watson	302 Montgomery st
Amazon Con Co	Washoe	3	15	Aug 8	Sept 9	J A Reichert	320 Pine st
Caledonia S M Co	Washoe	18	1 00	Aug 28	Sept 30	Oct 20	R Wegener 414 California st
Con Imperial M Co	Washoe	1	25	July 25	Aug 29	Sept 19	W E Dean 419 California st
Coso Con M Co	Cal	1	15	Aug 30	Oct 7	Oct 28	R H Brown 426 California st
Crown Point S M Co	Washoe	27	1 00	Aug 15	Sept 19	Oct 10	J Newlands 419 California st
Daney M Co	Washoe	2	15	July 26	Aug 31	Sept 21	Geo R Spinney 320 California st
El Dorado South Con M Co	Nev	10	2 00	Aug 2	Sept 6	Sept 26	W Willis 309 Montgomery st
Geddes & Bertrand M & M Co	Nev	1	50	July 24	Sept 22	J A Vance	Stevenson's Bldg
Gila S M Co	Nev	1	25	July 10	Aug 19	Sept 14	W A Knapp 309 Montgomery st
Glasgow G & S M Co	Washoe	3	15	Aug 8	Sept 9	Sept 30	J A Reichert 320 Pine st
Gold Mountain M Co	Cal	6	25	July 25	Aug 26	Sept 28	W Aug Knapp 309 Montgomery st
Golden Chariot M Co	Idaho	17	50	July 11	Aug 18	Sept 8	L Kaplan Merchants' Ex
Gould & Curry M Co	Washoe	21	1 00	Aug 11	Sept 15	Oct 5	A K Durbrow 309 Montgomery st
Hale & Norcross S M Co	Washoe	51	1 00	Aug 3	Sept 12	Oct 3	J F Lightner Nevada Block
Kossuth M Co	Nev	7	50	Aug 15	Sept 19	Oct 12	E F Stone 419 California st
Lady Washington M Co	Washoe	8	50	July 26	Aug 29	Sept 16	D L Thomas 419 California st
Meadow Valley M Co	Ely Dist	12	75	July 21	Aug 29	Sept 25	T W Colburn 418 California st
Newark S M Co	Ely Dist	13	25	July 26	Sept 1	Sept 23	J A Fairweather 306 Pine st
Mides M Co	Washoe	20	1 00	Sept 18	Oct 5	Oct 25	L Kaplan Merchants' Ex
Mint G & S M Co	Nev	14	10	Aug 9	Sept 12	Oct 5	D A Jennings 401 California st
New York M Co	Washoe	10	25	Aug 29	Oct 2	Oct 21	D L Thomas 419 California st
North Con Virginia M Co	Nev	4	25	July 27	Aug 30	Sept 18	J Maguire 419 California st
Phil Sheridan G & S M Co	Nev	2	50	Aug 8	Sept 11	Oct 2	W E Townsend Nevada Block
Pioton M Co	Washoe	11	10	July 13	Aug 15	Sept 2	S Phillips 408 California st
Sierra Nevada S M Co	Nev	45	1 00	Aug 22	Sept 25	Oct 12	W W Stetson 309 Montgomery st
Silver Hill M Co	Washoe	8	1 00	July 18	Aug 22	Sept 12	W E Dean 419 California st
Succor M & M Co	Washoe	15	50	July 11	Aug 14	Sept 1	W H Watson 302 Montgomery st
Utah S M Co	Washoe	13	2 00	July 11	Aug 16	Sept 4	G G Prast 309 Montgomery st
Wells Fargo M Co	Nev	5	15	July 6	Aug 26	Sept 11	O H Bogart 328 Montgomery st
Yellow Jacket M Co	Washoe	23	1 00	July 18	Aug 22	Sept 22	G W Hopkins Gold Hill

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Accidental Con M Co	Nev	1	10	Aug 21	Sept 24	Oct 12	O Metchke 426 Montgomery st
Alabama M Co	Nev	1	10	Aug 14	Sept 19	Oct 11	W H McClintock 419 California st
Almaden Con Quick M Co		1	30	Aug 15	Sept 25	Oct 16	C C Finkler 628 Montgomery st
Antilles M Co	Cal		20	July 7	Aug 6	Sept 8	H M Morgan 20? Sansome st
Badger M & M Co	Cal	3	10	July 29	Sept 25	Oct 16	G H Spencer 408 California st
Barcelona Con M Co			1	July 21	Aug 21	Sept 25	J P Moore 426 California st
Brooks S & S M Co	Nev	2	1 00	July 10	Aug 16	Sept 5	E T Allen 535 California st
California Water Co	Cal	18		30 July 27	Aug 30	Sept 18	Geo P Thurston 315 California st
Cincinnati G & S M Co	Cal	6	10	Aug 29	Sept 29	Oct 16	W Small 535 California st
Coquille Black Sand M Co	Oregon	3	20	June 24	Aug 6	Sept 21	F P Reynolds 111½ Leidesdorff st
Defiance M Co	Coso Dist	Cal	1	50	July 17	Aug 26	W G Hughes 314 Montgomery st
El Dorado Water & D G M Co	Cal	14	1 00	July 22	Aug 22	Sept 7	H Elias 524 Sacramento st
Enterprise Con M Co	Cal	9	25	Aug 12	Sept 18	Oct 10	F J Hermann 418 Kearny st
Excelsior Quicksilver M Co			5	10	Aug 8	Sept 19	Oct 10 A Halsey 312 Montgomery st
Gen Thomas M & M Co	Nev	2	50	July 29	Sept 1	Sept 21	W Willis 309 Montgomery st
Great Eastern Con Quick M Co	Cal	4	20	July 21	Aug 21	Sept 9	W H Widman 415 California st
Gregory M Co	Cal	2	1 50	Aug 16	Sept 19	Oct 6	W R Townsend 309 Montgomery st
Green Valley M Co	Cal	6	40	June 30	Aug 22	Sept 11	A D Carpenter 604 Clay st
Hayward Con M Co	Nev	1	5	July 24	Aug 27	Sept 18	J Gilroy 27 Drumm st
Kearsarge Con Quick M Co	Cal		15	July 1	Aug 28	Sept 16	Jas McHaffee Stevenson Block
Lee G & S M Co	Washoe	1	5	Aug 10	Sept 16	Oct 5	C J Eaton Express Bldg
Mariposa L & M Co	Cal	6	1 00	July 6	Aug 7	Sept 2	L Leavitt 309 Montgomery st
Mariposa South M Co	Nev	1	10	Aug 8	Sept 19	Oct 17	J W Clerk 418 California st
McClellan Con M Co	Nev	1	10	Aug 21	Sept 24	Oct 12	O Metchke 426 Montgomery st
New York Hill M Co	Grass Valley	1	10	July 29	Sept 1	Sept 21	F J Hermann 418 Kearny st
Northern Five Cent Hill G M Co			15	Aug 9	Sept 11	Sept 28	Warren Bryant Merchants' Ex
Occidental R. R & M Co	Cal	2	25	July 22	Aug 24	Sept 11	A C Hammond 401 California st
Ocean View Quicksilver M Co	Cal		50	Aug 2	Sept 8	Sept 29	D Buck Nevada Block
Pinal M Co	Arizona		1	10	July 24	Sept 1	Sept 22 O H Bogart 328 Montgomery st
Rattlesnake Quick M Co	Sonoma	Cal	4	20	July 21	Aug 25	A Baird 304 California st
San Jose M Co	Nev	12	5 00	June 14	Aug 16	Sept 11	A Carrigan 107 Front st
Santa Rosa G & S M Co	Washoe	22	25	July 16	Aug 22	Sept 14	J M Gillam 113 Davis st
Sierra Iron Co	Cal		1	00	Aug 18	Sept 30	Oct 26 Caleb T Fay 318 Sansome st
South Barcelona M Co	Nev		1	00	Aug 21	Sept 27	Oct 18 J P Moore 426 California st
Table Mt Alpha M Co	Cal	11	10	July 13	Aug 15	Sept 5	L Leavitt 309 Montgomery st
Taylor M & M Co	Garden Valley Dist		40	Aug 10	Sept 13	Oct 4	S S Murfey 607 Montgomery st
Vulcan Coal M Co	Santa Cruz Co		1	15	Aug 2	Sept 7	Sept 28 J Greif 636 Washington st
Well Street Q M Co	Cal		2	20	July 11	Aug 14	Sept 4 D K Tripp 401 California st
Young America M Co	Nev		4	10	July 18	Aug 21	Sept 9 R H Brown 426 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Cole S M Co	Nev	Called by Trustees	Nevada Block	Special	Sept 28
Belcher M Co	Nev	J M Buffington	309 California st	Annual	Sept 4
El Dorado Water & Gravel Co	Cal	H Elias	524 Sacramento st	Annual	Sept 8
Eureka M & Smelting Co	Nev	A O Ryce	308 California st	Annual	Sept 29
Gold Run M Co	Cal	C Palmer	41 Market st	Annual	Sept 4
K K Con M Co	Nev	B B Minor	309 Montgomery st.	Annual	Sept 4
Lake & Quicksilver M Co	Cal	A Baird	304 California st	Annual	Sept 6
Melbourne M Co	Nev	E R Warsaw	419 California st	Annual	Sept 2
Nonpareil G M Co	Cal	A DuPrat	502 Montgomery st	Special	Sept 5
Northern Belle M & M Co	Nev	W Willis	309 Montgomery st.	Annual	Sept 4
Oakland Quicksilver M Co	Cal	W W Treylor	309 Montgomery st	Annual	Sept 4
Succor M & M Co	Nev	W H Watson	302 Montgomery st	Annual	Sept 1
Tintic M & M Co	Utah	Called by Trustees	310 Sansome st	Special	Sept 18
Virtue M Co	Oregon	R H Brown	426 California st	Annual	Sept 4
West Comstock M Co	Nev	O G Wood	401 California st	Annual	Sept 4

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alpe S M Co	Ely District	O D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	June 19
California M Co	Washoe	C P Gordon	Nevada Block	2 00	Aug 5
Consolidated Amador	Cal	F B Latham	426 California st	25	Aug 9
Con Gold Hill Quartz M Co	Washoe	R Wegener	414 California st	25	April 7
Con Virginia M Co	Nev	A W Havens	Nevada Block	2 00	Aug 11
Comanche M & M Co	Nev	W W Traylor	Nev

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE.

EXCHEQUER.—Alpine *Chronicle*, Aug. 19: This mine, like good wine, improves with age. First-class ore is being taken out and sent to the mill. The force at the mine is being increased almost daily, and as soon as the mill is started a larger force will be required.

ANVANCE.—This shaft is down about 340 feet, and we learn that good quartz has been taken out this week.

ALAMEDA.

BLACK HAWK COAL MINE.—Alameda *Independent*, Aug. 18: This coal mine has not been spoken of by us for some time, but it has not been neglected by its enterprising owners, who have been steadily at work in their efforts to develop it. It is found a few miles from Niles, not far from the Alameda creek, beneath a mountain about 2,500 feet high. There are four men constantly employed—two by day and two by night—on the tunnel they are running in under it to reach the vein. Their tunnel is five and a half by seven feet in size, and already run in a distance of 670 feet in length. Dark slate and gray sandstone form the material that they are now working through, and in five or six weeks more they expect to strike the vein. They cart out the refuse material of the rock that they blast and break up in the shaft upon cars that run on a wooden track laid down for the purpose, which has a gauge of three feet. They have been obliged to put in an air pipe so as to supply the workmen with good air to breath. There is a current of water of four inches running out of the shaft all the while, which shaft is on an upward incline as one goes in of about an inch rise every 20 feet. It is by this aid of this water current that the supply of air is obtained for the air pipe used by the men who are at work. Wm. Hagan, of Centerville, put in this pipe, which works first rate. The only improvements outside consist of a wooden shantiee for the men to sleep and eat in. Nine thousand dollars have been already spent in doing the work that is finished. The owners have unlimited confidence in the value of the vein, as well as in the certainty of reaching it in a few weeks more. They have proved their faith by their works, and we hope the rich reward of their toil will soon be forthcoming in the shape of a mine abounding in first-class coal.

BUTTE.

NEW MINE.—Butte *Record*, August 26: Surveyor Knowlton has been to Mosquito creek during the past week, surveying a line of ditch for a company composed of R Cuibertson, John Chamberlin, George Davidson and others. He finds that water can be brought on the claim with a ditch five and a half miles long, and we understand that the company will, within a short time, commence operations. The ground, which is very rich, judging from the specimen dust shown us by Mr. Cuibertson, is on the ridge between the Mosquito Creek house and Feather river, about a mile and a half from the former place. Success attend your efforts, boys. There is many a rich deposit in Butte county yet unopened. All that is needed is one or two "strikes" to make our mountains teem with miners again as of old.

CONTRA COSTA.

PROMISING COAL VEIN.—Antioch *Ledger*, August 26: In a recent article concerning the Empire coal mine and the future prospects of the owners we stated that the grounds of the company embraced three separate and distinct veins of coal, known as the Clark, Middle and Black Diamond veins. The Empire owners are at present extracting coal from the Clark vein; they have also been sinking a shaft upon, and within the past week have opened the Middle vein, which is fully three feet in thickness and presents a quality of coal even better than that now being extracted from the Clark vein. Four hundred feet south of this is the Black Diamond vein. It is the intention to open all three of these veins and construct a railroad to Antioch, a distance of five miles over a comparatively level country.

CALAVERAS.

QUAKER CITY MINE.—Calaveras *Chronicle*, Aug. 26: Favorable developments are being made at the Quaker City mine, near the Junction. At present they are cross-cutting the ledge at a distance of 180 feet from the shaft in the 200-ft level. The prospects of the mine are encouraging in the extreme. A splendid chute of pay ore has been uncovered, the full extent of which has not yet been determined, although a level nearly 200 feet in length has been driven upon it. The mine is being systematically worked and we are sanguine that it will prove one of the best in the State.

BRADY MILL.—The alterations and improvements that for some time past have been making in the mill at the Brady mine are now completed, and everything is in readiness to commence crushing excepting the lack of the "plows" necessary to "agitate" the pulp in the pan. These articles will be supplied within a day or two, however, and it is probable that milling will be resumed Monday morning. The mill is now in prime order and condition, and we confidently expect that it will give a good account of itself when put in motion.

BLAST.—A blast of 27 kegs of powder was exploded in the Veith hydraulic claim on Tunnel ridge last Tuesday. The usual method of running drifts into the bank for the reception of the powder was adopted and the result of the explosion was all that could be desired. Piping has been resumed.

MURPHY'S CAMP.—The placer mining interests of Murphys are being prosecuted with good paying results, employing some 60 to 80 men. Some interest is again being taken in quartz, the projectors having the fullest confidence of success in their enterprise. An enterprise has lately been completed connecting, by a good wagon road, the town of Murphys with the property of the Calaveras gold mining company on Indian creek. The country is very rough, but an easy grade has been accomplished. I halted at the works of the above company and was kindly received by Mr. G. T. True and Mr. J. S. Niswander, the superintendent. A splendid 20-stamp mill, self-feeding, is crushing on rock being taken from their new shaft at the 200-ft level. The rock is rich in gold but somewhat refractory on account of the large amount of sulphurets it contains. All tailings are carefully saved, and in the opinion of Mr. Niswander they will soon have a good mine on top. The hoisting works are run by steam—the mill by water. Free water and abundance of timber should make this a valuable mine. Passing on toward Sheep Ranch I pass Wood's mine, which had that day received engine and boiler for their hoisting works. The mine being off my route a little, though in sight, I did not visit it and am only able to give the statement of disinterested parties that the promises of the mine are exceedingly flattering.

SHEEP RANCH.—The Ferguson & Wallace mine I presume is the best paying quartz mine in the State, when working expenses are considered. Their compact little five-stamp mill is working night and day on rock from their 200 ft level, which has averaged $70 per ton, not assorted, but as it comes from the ledge. Their new hoisting works are a most accomplished piece of mechanism, and their engine runs as smoothly and firmly as it is possible to make it. Messrs. Ches. Clarey & Jim Harkins have taken a contract to run a tunnel for Norman and Bill Clarey in their Pioche ground, running on vein matter, and when completed will drain the mine to a depth of 400 or 500 feet. Peter Davis has shafted upon his Good Hunter to a depth which assures him that he has in that claim possibly the best mine that no has ever discovered. He now commences a tunnel which will drain the claim some 400 feet below the croppings.

FRESNO.

THE NEW PLACER MINES.—Fresno *Expositor*, Aug. 16: The new placer mines, located on Old Mill creek, in the eastern portion of Fresno county, are creating considerable excitement hereabouts. Ever since L. A. Clarke exhibited the specimens of gold that he found on Mill creek, parties have been leaving almost daily for the new mines. A mining district has been organized under the name of the Centennial mining district, and by-laws have been adopted. On Monday we met Mr. Clarke, and from him gained many particulars regarding the mines. They were first discovered by N. Harlan, an old miner. The gold seems to be coarse wash gold, although many of the pieces bear evidence of being drift from some quartz vein. In appearance the gold resembles that taken out on Sycamore creek, which was the purest gold dug in the county, bringing $18.50 per ounce. Several large nuggets have been taken out, the largest weighing over $22. The mines lie in the bed of the creek, and there being a large quantity of heavy boulders, it renders mining rather difficult. There is not enough water for washing, but there is an abundance for prospecting. The prospects are so good that these who have located claims feel confident that they will make a raise, as in winter the creek carries plenty of water for washing the dirt. The reason why the mines on this creek have never before been discovered, and worked, probably arises from the fact that in the winter the stream is so high that the gold channel is entirely covered, but the existence of gold there was known to many of the old miners of this section.

MARIPOSA.

THE BANDERITA MINE.—Mariposa *Gazette*, Aug. 26: During the past week we have been favored with a visit from Mr. Levi Keyes, the general superintendent of the Banderita and other quartz mines, situated above Coulterville, in this county, and to whom we are indebted for several items of interest. The Banderita is well and favorably known, and is entitled to rank with first-class mines. It has had many difficulties to contend with, one of which is the dissatisfaction of small creditors to give indulgence and wait until the superintendent makes his periodical clean-ups. No better evidence need be wanted of the richness and productiveness of this mine than the fact that during the past four years fully $160,000, taken from it, have been paid out for the machinery placed upon it, for provisions and for hired labor. The company have a 10-stamp mill, run by water power, and the old tunnel, which penetrates the mine about 300 feet from the surface, is upwards of 500 feet long. At this point a whim is constructed and a shaft sunk 175 feet, which develops a well defined vein of paying rock, eight feet thick. The company have upon the ground a Burleigh drill, and other machinery necessary for running a new tunnel, which will strike the vein in about 600 feet below the surface or outcropping of the vein, and 250 feet below the bottom of the shaft before alluded to. This work when completed, as contemplated, will, without doubt, be the greatest mining enterprise ever undertaken about Coulterville.

BLUE LEAN MINE.—This mine, recently purchased by Messrs. Tiffany & Hephurn, situated on Bull creek, 15 miles above Coulterville, is being developed as rapidly as industry can do it. A four-stamp mill has been erected and has been running about a month, crushing rock taken from the Scanlan mine, about four miles distant, and during the time a shaft has been sunk upon the lead. The Scanlan mine is bonded to Messrs. Tiffany & Hephurn for $40,000. Considerable work has been done upon it since it was bonded, and its former reputation of being a superior mine is holding good.

DOUGLASS MINING COMPANY.—This company, whose mill and mine is situated near the town of Coulterville, in this county, give employment to 75 men. They have a 20-stamp mill, driven by steam power, and have several valuable veins of quartz rock in the vicinity of the mill. Two of the most noted are the Potosi and Mary Harrison veins. An extensive hoisting apparatus, with a 40-horse power engine, have been constructed upon the Douglass, which will be complete and ready to operate by the first of September. The Mary Harrison, in her palmy days, produced gold in fabulous quantities, and her brows were wreathed in ringlets of the precious metals, but by bad management she fell from her high estate and lost her good name. Her character waned so low that she was in a fair way to be lost forever, but the good Samaritan, Mr. Gilbert Douglass, mining engineer and superintendent, extended a friendly hand to her, and now report has it that an eight-foot vein of good paying ore is reached, and Mary is in her pristine glory (if not purity) again.

NAPA.

THE IRON MINE.—St. Helena *Star*, August 23: We are pleased to note the return last Saturday of Captain Blasdell, and that he is making arrangements for a resumption of work on the Iron mine. Such an enterprise is full of importance to us, and cannot fail to benefit our local trade largely. We wish him every encouragement. A large quantity of ore will first be shipped below, before arrangements are made for reduction here. Work is expected to begin by September 1st, or very soon after.

REDINGTON MINE.—Napa *Register*, August 26: This great mine is still giving up the usual yield of a thousand flasks of quicksilver a month. Two new furnaces are in course of construction, which will greatly increase the product.

NEVADA.

BIG LEDGE.—*Foothill Tidings*, Aug. 26: Mr. J. F. Smith, an old Alpine friend of ours, now living at Washington in this county, sends us down some samples of rock from a ledge located by him last spring, which he says is 20 feet thick. The claim lies between the Yuba mine and Diamond creek, and the quartz before us looks similar in character to that from the Yuba. Though from the croppings it shows strong copper indication. We should say that it would be likely to prove a gold bearing ledge and one of great value.

THE Crandall gold, silver, iron and copper mining company filed its certificate of incorporation with the Secretary of State on the 19th inst. The ledge upon which operations will be confined at present is situated just below Boston ravine, on the hill opposite to where the old McCauley mill stood. It was located nine years ago and has turned out, from the yearly workings to hold the claim only, considerable rich rock, milling as high as $80 to the load. Early in the history of the claim the owners became scattered and for this reason no work has heretofore been done, beyond the amount yearly required to hold it. Under the new United States law the delinquent shares have been called in and the Crandall company intend opening up the mine through the old McCauley and Watts tunnel, which runs into the same hill some 400 or 500 feet, and it is thought will tap the ledge in about 200 feet more, thoroughly draining it and giving 70 to 80 feet of backs. It is said that at one time some of the finest specimen rock ever seen in the district came out of this ledge, and being in the Gold Hill and Rocky Bar range and very close to these celebrated rich ledges, one may safely calculate on its proving a very valuable mine when once opened up.

THE Godfrey mining company, sinking for a gravel deposit south beyond Alta Hill, near Mr. I. W. Weed's place, are down nearly 90 feet with their shaft, being over a third of the depth they expect to go to reach the ancient river channel below. Captain Godfrey, under whose direction this work is being done, has a theory and practice of his own in regard to the location of these gravel deposits, also of quartz veins and underground water courses, which, during a conversation had with him this week, we became very much interested in, and by his leave, which he has promised in due time to give us, we shall on some future occasion tell our readers something about it.

FRANKLIN.—Mill machinery all on the ground, and expected to be up and at work on the rich ore of that mine within eight weeks.

EUREKA.—The clean-up last week was 300 ounces of amalgam. North cross-cut No. 8 advanced 12 feet, and this More house cross-cut 15 feet.

HOMEWARD BOUND matters are progressing satisfactorily, and all who live down that way are looking for big things from this mine when properly opened—an Omaha and Allison Ranch combined.

NEW YORK HILL.—The new hoisting works are well along toward completion and a new office has just been built. The building covering the machinery is large and high, giving the best of dumpage.

A CONTRACT has been let to Thomas Miller to run the tunnel of the Crandall mine to the ledge. Work has already been commenced thereon.

THE Centennial company, working through the old Wide-Awake shaft on the very top of Osborns hill, are said to be taking out pay rock at every step of their prospecting, making their own as well as the adjoining ground upon which they enter theirs every day more valuable.

PLACER.

HARD CEMENT.—Dutch Flat *Forum*, Aug. 22: We had an interview with the superintendent of the Green Valley mine, last Sunday, who states that the cement in the shaft is so hard that but little progress can be made, and that he considers it would be good policy to abandon it and put down another shaft about 250 feet higher up the river. He will go to San Francisco in a few days to consult the company in relation to such a movement.

GREEN VALLEY MINES.—We are indebted to R. Huysinck for news from the G. V. B. G. M. Co. The company hevs at last found bedrock in their shaft at the depth of 50 feet, which makes this distance from the surface about 100 feet. The last 12 feet was found to be a hard blue cement. The pump is run by a hurdy wheel, which also furnishes power to run a four-stamp mill to crush the cement. Work has not as yet progressed far enough in the shaft to admit more than one man working on a shift, but as soon as an opening is made they will increase the number and drift to both sides of the channel. The tunnel which is run to the back channel is now in 150 feet. The gravel is a hard blue cement and the indications are encouraging. The mine is now in the very best condition to prospect thoroughly and to good advantage, and the superintendent is pushing matters as fast as possible. It is to be hoped that this great mining enterprise will prove a success.

MINING ITEMS.—The Polar Star claim continues washing. The pipe leading to the Southern Cross claim is being put in place as fast as made. The Lakamp claim continues washing a few hours each day. The Franklin is also washing a few hours each day and clearing off the bedrock, preparatory to putting up and rigging a first-class water power derrick this fall. The Yankee tunnel is still being driven ahead vigorously. Last week there were eight face shots fired, advancing 36 feet. The Baker shaft is still going down. It was sunk 12 feet last week. At Gold Run, the Indiana Hill, Sachs and Cedar claims continue washing.

AT LITTLE YORK we visited the Empire Hill claim one of the finest and best paying hydraulic mines in that district. Here they are provided with a nice new derrick, capable of lifting a rock that weighs eight tons with apparently as much ease as a boy would handle a ball. It is a very great labor saving institution, and works like a charm. They are now using 1,200 inches of water, and under the personal direction of Tom Bailey, the foreman, sad havoc is being made with the rich gravel bank against which they are piping. The water of the company is abundant to run the Empire Hill and the Liberty Hill claims, alternately, until the rainy season sets in.

MORE CHROME.—Placer *Herald*, Aug. 26: Some time ago a ledge of chrome iron was discovered near Auburn, and parties from the chrome reduction works at Baltimore were attracted here, and forthwith contracted, at a remunerative price, for every ton the mine might produce. Unfortunately, however, the ledge pinched out, and thus terminated, rather abruptly, what at first promised to be an important enterprise. A few months ago, while we were on the Forest Hill divide, our attention was attracted to some croppings of heavy, dark, fine grained ore, out on a hillside among the tall pines, not far from the Suger Pine mill, and about eight miles from Forest Hill. From the specimens of chrome we had seen we judged this to be the same, though not being an expert, we dared not press our opinion. We now learn that this lead has been more thoroughly prospected, and that it proves to be a superior quality of chrome iron, and very extensive. Its distance from the railroad may prevent it from being worked remuneratively at present, and yet, where, like in this deposit, there is known wealth, the ingenuity of man will not be long in overcoming the obstacles necessary to acquire it.

SANTA CRUZ.

ROH COAL DEPOSIT.—Santa Cruz *Courier*, August 25: For a long time Mr. Strader, of the firm of Strader & Co., has been prospecting in the hills above Coralitos, feeling certain that the prospects he had seen from there and the indications of the ledges in that vicinity were sure signs of coal deposits. After two years of hard work and an expenditure of $65,000, this gentleman feels confident that he has developed a mine that will largely pay him for his trouble, and furnish a better quality of coal than does any other mine west of the Sierra Nevada mountains. A *Courier* reporter last week visited Mr. Strader, and by him was informed of the principal points concerning the discovery: It is termed the Vulcan mine, and is situated about three miles north of Coralitos, on Coralitos creek, and is owned and worked by the Vulcan coal mining company. It has four well defined veins, each of which can be traced two miles, and are located thus; the first, which is right on a level with the water bed, is 100 feet below the second; the second, 400 feet below the third, and the third 700 feet below the fourth. They have a shaft sunk on one of them 160 feet deep, from the bottom of which an 85-foot drift has been run in towards the lower veins. The depth of eighty-five feet this vein was nine feet in width, and of an improved quality from what it was above. This coal resembles anthracite, and is perfectly free from sulphur. It can be mined much more cheaply than can the Diablo coal, because this company has plenty of good timber right on the spot, whereas the first named company has to ship it from a distance. It is calculated that it will cost only $3 per ton to deliver the Vulcan coal at tidewater, and $1.50 per ton to freight it from there to San Francisco. Thirty sacks of this coal were recently shipped to Savage & Son, San Francisco, who smelted iron with it by way of giving it a test. It has the appearance of "Scotch Flint," which it pays to ship across the ocean. The Vulcan company has already had a number of bids from various quarters for the purchase of this mine.

SONOMA.

SANTA ROSA COAL.—Sonoma *Democrat*, August 25: The Taylor Mountain coal mining company of Santa Rosa was incorporated a few days since. The shaft of the mine is down 92 feet and a tunnel is now being run to tap the vein 260 feet vertically from the top of this shaft. The tunnel is in about 100 feet and has cut a small vein of coal from two to four feet. The vein matter at the bottom of the shaft is about ten feet, with a hard coal vein of from two to four feet. We saw a sample of the coal Saturday morning, taken from the bottom of the shaft. The piece shown us weighs about 40 pounds and in quality is very fine—surpassing any coal heretofore found on this coast. The prospects of this mine are every way prosperous and encouraging, and the advantages to Santa Rosa from its development, if it proves as it now promises are incalculable.

PINE FLAT.—Russian River *Flag*, August 24: The Oakland mining company have added another condenser to their furnace, and are working right along on an apparently exhaustless supply of very rich ore. Much of the cinnabar is so rich that not a particle of foreign substance can be seen in it. Their furnace has capacity for only six tons per day, and yet 300 flasks of mercury per month are turned out. There are only 18 miners employed. The mine is still under the management of Wm. A. Dennis, one of the most competent superintendents that has ever been in this district.

The Bacon has put in steam hoisting works; they employ 20 men, who are sinking a shaft toward the ledge. Last week, at the depth of 280 feet, a body of very rich ore was tapped, but its extent is not known. The mine is owned by English capitalists, who will make a big affair of it if a paying lead is struck.

The Kentuck is working ten men, taking out good metal, which they will reduce in the Geyser furnace.

TRINITY.

PAID WELL.—Trinity *Journal*, Aug. 24: From Mr. C. M. Mead, of Minersville, we learn that the claim owned and worked by himself and Nathan Wheeler, on Mosquito gulch, paid exceedingly well the past season. Several nuggets of over $20 each were picked up during the season, and one piece of $61. Mr. Mead tells us that ore another winter sets in they will have the claim in the best possible working order, as they intend fitting up with a little giant iron pipe, and other improved machinery.

CINNABAR DISTRICT.—From Mr. S. J. Dickinson, who left Cinnabar recently, we learn that the low price of quicksilver has had a depressing effect on prospecting in that section. Only about 50 men were at work in this district. The retorts at the Altoona were running on concentrated ore and producing about 12 flasks a day.

TUOLUMNE.

CONFIDENCE MINE.—This, properly speaking, is the deepest mine in this county, having attained at the present time a depth of 800 feet from the surface. This main shaft is run on an incline of 25 deg. In descending at a depth of 225 feet from the surface you encounter level No. 1, which has been opened a distance of 500 feet. The vein here having been extracted we could only judge its width from wall to wall. In some places appearances indicated the width to be from three to 30 feet. Proceeding downward at a depth of 250 feet we encounter level No. 2, which is 400 feet in length, with the same large and prosperous looking ledge. At a depth of 350 feet is situated level No. 3, 300 feet in length. No 4, 425 feet from the surface, is 600 feet in length, and No. 5 is at present 1,400 feet. No. 6, and last, is 800 feet, the present depth of their workings, and driven a distance of 600 feet along the ledge, showing a regular and well defined vein of quartz, measuring full four feet in thickness. The work on the above at the time of our visit was temporarily suspended on account of the incapacity of the pump to lift the fast accumulating waters. However, we were informed that in a few days a new and larger pipe would take the place of the present one, enabling them to prosecute their labor as heretofore. In connection with this mine the company are the possessors of a large 20-stamp mill, propelled by a 60-horse power engine, their average reduction of ores being nearly equal to 20 tons daily. They also have two arastras kept steadily running recrushing the pulverized matter escaping from the batteries. The ores being of that class commonly known as free gold, with little or no sulphurets, making it, no doubt, a great deal easier and of less cost for reduction.

WASHOE DISTRICT.

BULLION.—Gold Hill *News*, Aug. 24: New life and vigor is being infused in every quarter of the mine. The obtaining of a good air ventilation on the lower levels has enabled the commencement of the opening of the mine in a thorough manner that it was impossible to do without it. On the 1400-ft level the north drift is again being pushed rapidly ahead in an entirely unprospected portion of the mine. In the connecting winzes between the 1400 and 1700-ft levels, the enlargement and connection of the two is about finished. The 1550-ft station is also completed, ready to start a drift and cross-cut the ore vein at that point. The north drift on the 1700-ft level is again started up and is being run into an entirely new section of the vein and mine. It penetrates the ledge 1850 feet below the surface, and is rightfully regarded as one of the most important points on the Comstock. On the 2000-ft level the drift running into the Alpha ground has been thoroughly cleared up and repaired, new air pipes put in and other dead work completed, so that but little progress has been made in the face of the drift. Last evening, however, the repairs were finished and the advance commenced in good earnest. The prospects are that if the Bullion and Alpha are paying mines we shall soon know it.

JUSTICE.—Daily yield, 110 tons of ore, keeping the mills steadily runoinz. The quality of the ore is good and a much greater quantity could be extracted if the management so desired. The 800-ft level has every prospect of opening up much finer and more extensive bodies of ore than has yet been developed in any portion of the mine.

IMPERIAL CON.—Daily yield, 30 tons of ore, keeping the mill steadily running. The ore breasts are looking well, and it is confidently expected that the extraction of ore can be greatly increased in a very short time.

MELBOURNE.—This mine is one of the eastern group of new mines just being opened on the main east range of the great Comstock ore belt. It is located in Gold Hill mining district, east of the town of Gold Hill, and about 2,500 feet south of the Con. Virginia and California mines. It is in the immediate vicinity and forms one of the same group which is included in the Occidental Jull's, Prospect and Europa mines.

JULIA.—A new survey has been made, and the course of the main south drift on the 1600-ft level has been pointed directly for the Ward shaft, for the purpose of making an air connection with that mine. The running of the drift in this course will carry it east of the ledge. It is the intention to cross-cut the ore vein at distances of 100 feet as the main drift advances. The east drift on the 1800-ft level, after penetrating 45 feet of porphyry entered a soft, fine-appearing body of ledge material, through which it penetrated a distance of 40 feet more, when last evening a heavy, smooth clay slip was cut, and the entire face of the drift passed into a splendid body of solid, clean-appearing quartz and ore. The extent of this new discovery, of course, is not yet known, although there is no doubt that it is a continuation of the ore found on the east side of the shaft at the 1700-ft station.

CALIFORNIA.—Daily yield, 700 tons of ore. The ore breasts on both the 1500 and 1600-ft levels are yielding rich ore, and have as fine and permanent an appearance as it is possible for a mine to possess. The yield of bullion for August up to the present time is considerably greater than it was at the same date in July, and the yield of the mine will not fall much if any short of $2,500,000 for August. On the 1600-ft level it has been found necessary to temporarily suspend work in the face until the drift can be retimbered. The face of this drift is still in rich ore. The ore in east cross-cut No. 2, on the 1400-ft level, continues to show better and better as the drift advances. The shaft is now down 83 feet below the 1500-ft level. The new 60-stamp mill is about ready to set to work. The mills are all kept running up to their full working capacities.

CON. VIRGINIA.—The shaft has been completed to the 1550-ft level, at which point a large and convenient working station is being opened. The extraction of ore will be lighter this month than it was last, owing to a cave in the Gould & Curry shaft, which has suspended the extraction of ore until such time as the shaft shall be again in good working order. The mine is looking well at all points, and is being put in the

finest possible working condition, so that when the shaft shall be finished and the new mill shall be ready to run, a lively run may be looked for, and the mine again be placed in the front rank of the bullion producing mines of the world. The new amalgamating mill is fast approaching completion, nearly all the machinery being in place, ready for use.

OVERMAN.—The pit, 34 feet in depth, for the immense stone foundation of the new and powerful pumping engine is almost completed. The large reservoir east of the shaft for the use of the condensing engines is completed and is being filled with water drawn from the shaft while sinking.

SIERRA NEVADA.—The 1700-ft station is completed and a drift started to cut and prospect the ore vein at that point. A large and powerful blower is being erected to furnish air for the 1700-ft level when it is opened.

CROLLAR-POTOSI.—Daily yield, 100 tons of ore, which is being milled as fast as it is extracted. This ore is taken from the old Santa Fee and Potosi workings, and has an assay value of about $32 per ton. The new and powerful pumping engine will soon be completed, ready to start up.

UTAH.—The shaft is now down 465 feet below the 400-ft level, or 866 feet below the surface. The flow of water has been caught up in the side tanks, so that the shaft is almost dry, and the sinking is carried forward much more expeditiously than for some time past.

GOULD & CURRY.—The heavy slide in the shaft has been caught up and the shaft repaired. Sinking the joint winze below the 1600-ft level on the Savage line is making good progress.

WARD.—Sinking the shaft is going ahead six feet per day. This is just about the liveliest sinking that has ever been done on the Comstock.

BROWN PONT.—The north drift on the 1700-ft level is steadily advancing to connect with south drift from the 1940-ft level of the Yellow Jacket mine for ventilation purposes.

NORTH CON. VIRGINIA.—The new pumping engine is in place, and the erection of the pumping machinery is rapidly approaching completion. Everything is in readiness to place the pumps and coinmns in the shaft; the drain tunnel is finished and it will not take long to have everything in readiness to extract the water and resume sinking the shaft.

ORIGINAL COMSTOCK.—A reorganization of the company having been lately made, work is to be resumed upon the mine without delay. A body of quartz was struck in the shaft a short time ago similar in character to that found a few years ago, which produced $6,000 in gold from the ore taken out within 35 feet of the surface.

LADY WASHINGTON.—The bottom of the shaft is still in quartz of the same solid and favorable character heretofore described.

SILVER HILL.—The main incline has reached a vertical depth of 650 feet, at which point a station is being opened for the purpose of cross-cutting and prospecting the ore vein.

NIAGARA.—Sinking the main incline is going rapidly forward at a rapid rate of speed.

LEVIATHAN.—The north drift on the 600-ft level is making the usual good progress, the face in quartz mixed with clay and occasional spots of ore.

BEST & BELCHER.—Owing to the cave in the Gould & Curry shaft last week, but little work has been done in the mine since our last report.

DAYTON.—A force of men have been put to work to cross-cut and develop the 350 feet of ledge laid bare by the south drift on the 300-ft level. In a day or two more men will also be set to work to cross-cut and open the mine on the 600-ft level, where there is nearly 1,000 feet of the ledge in a manner stripped ready to open up. A splendid new and powerful air compressor is being placed, ready to furnish air when necessary, for the use of the prospectors on the lower levels.

OPHIR.—Daily yield, 300 tons of ore, keeping the mills crushing up to their full working capacities. The ore bresste on the 1600-ft level continue to open out finely, and afford a fine yield of good ore. The north drift on the 1600-ft level is steadily advancing toward the Mexican line. The main drifts and cross-cuts on the 1700-ft level are being cleaned out and repaired, preparatory to driving still further east to find a continuation of the east body of ore recently struck on the 1600 and 1650-ft levels.

YELLOW JACKET.—The south drift from the bottom of the winze on the 2040-ft level is in a distance of 55 feet. At a distance of 60 feet from the winze a cross-cut east has been started to cut the ledge. The faces of both the drift and cross-cut are in a very favorable ledge formation. The main south drift on the 1740-ft level has been reopened.

AMAZON & GLASGOW.—The Combination shaft is down 385 feet—86 feet below the third station level. The bottom of the shaft cut the clay wall of the ore vein yesterday afternoon, which is well defined and shows well. Some lively developments are looked for in a very few days. The ore developments on the third level were of a fine description, much of the ore being of a good quality.

BELCHER.—The erection of the new pumping machinery and the placing of the pumps in the shaft is being pushed to completion with all the rapidity that the perfection of the work will admit of. Daily yield of ore 250 tons.

SAVAGE.—The new pumping engine is in complete working order. Steam has been turned on and everything found to operate in the smoothest and best possible manner.

BUCKEYE.—A cross-cut has been made from the main south drift on the 650-ft level at a point 150 feet south of the main shaft. The ledge at that point is solid quartz and low grade ore and is well defined.

HALE & NORCROSS.—The pumps and columns are in place to the surface, ready to complete the connections with the big pumping engine.

CALOTTA.—The new engine is up and runs as smoothly and nicely as it is possible for machinery to do. Yesterday the diamond drill was set to work and all nightfall was boring into the earth's crust at a lively rate.

WEST BELCHER.—The extraction of ore has been commenced from the west upraise on the 300-ft level. The ore is of good quality, the assays averaging $80 per ton.

ROCK ISLAND.—A strong flow of water was struck in the main south drift on the 850-ft level last Tuesday morning, which has delayed the work on that level and kept the pumps working at their topmost speed ever since.

MEXICAN.—The main north drift on the 1466-ft level is steadily advancing, the face in favorable ledge matter. The northwest cross-cut near the south line is rapidly advancing, the face still in ore.

LADY BRYAN.—The old buildings have been removed, a new reservoir built, and other preparations made for the rapid progress of the work as soon as the new machinery arrives.

HERALD.—The incline shaft is down 95 feet, the ledge constantly getting larger, and the ore improving in richness.

SUCCOR.—The masons are busy laying the heavy stone foundations for the new pumping engine and machinery.

TROJAN.—Sinking the shaft has been resumed in order to open on the ore vein at a greater depth.

COSMOPOLITAN.—The ore body in the upraise from the tunnel level is showing well. The ore in the south drift on the tunnel level is also opening up quite favorably.

PROSPECT.—The station is completed at the 400-ft level and the diamond drills have been started to penetrate the ledge at that point.

SOUTH END.—Sinking the shaft is being pushed with great vigor. Three shifts of men are employed. The hoisting machinery works finely.

(Continued on Page 164.)

Gems and Precious Stones.

[Written for the PRESS by HENRY G. HANKS.]

M. Opal, Hydrophane, Cacholong, Hyalite, Girasol.

The only variety of this mineral of value as a gem is the precious or fire opal.

The precious opal shows a rich play of colors.

Fire opal presents light red and yellow reflections.

Hydrophane is opaque, but becomes transparent when placed in water, from which property it takes its name.

Sir David Brewster has said that the fire opal owes its peculiar color to numerous pores or fissures which decompose the light.

The composition of the opal is silica in the soluble state, and water, but some varieties are nearly anhydrous. A specimen of fire opal from Mexico, on analysis was found to consist of: Silica, 92; water, 7.75; sesquioxides of iron, .25; total 100.00

Its hardness is 5.5—6.5. Specific gravity, 1.9—2.3. Luster, vitreous, inclining to resinous, sometimes pearly. Color, white, yellow, red, brown and green. Streak, white, often showing rich play of colors by reflected light. B. B. infusible, but gives off water and becomes white.

Decrepitates and falls into splinters; dissolves in borax bead. Opal in all its variaties may be distinguished from other forms of silica by being nearly all soluble in boiling solution of caustic soda or potash.

Opal scratches glass slightly, is scratched by quartz.

Silicified wood, abundant in several counties in California, is a variety of opal, and is sometimes called opalized wood, or semi-opal.

Hyalita or Muller's glass, is a transparent variety of opal, which occurs in rounded masses coating other minerals.

Girasol is bluish white with reddish reflections.

Precious opal is sometimes called "oriental opal."

The opal was well known to the ancients as "opalus," from which the modern name opal is derived. Pliny writes of a Senator, Nonius, who owned an opal valued at two million of sesterces. Nonius was proscribed by Antonius, who wished to possess himself of the ring in which the opal was set. Rather than to part with it Nonius fled, taking nothing with him but the opal ring.

Good opals command a high price. A fine specimen, but not large, was sold in Paris for 2,400 francs, and another of fine color and rather large size was sold for 300,000 florins.

Opals command prices ranging from $4 to $10 per carat, pieces suitable for rings from $2 to $20 per carat.

A magnificent Hungarian opal at the London exhibition weighed 526½ carats, and was valued at £4,000 sterling.

Opal occurs in veins of porphyry, also in amygdaloid cavities, sometimes in limestone. Precious opal is found in Hungary and at Gracias a Dios, in Honduras. The opal occurs at Zimapan, in Mexico.

Hyalite is common on the plains in San Bernardino county, Cal., and at a locality 30 miles south of Mt. Diablo.

Common opal occurs in a peculiar formation at Mokelumne Hill, at Stockton hill, in Chile gulch, in Mt. Diablo range, 35 miles south of the mountain, also at Four Creeks, Tulare county, and in many localities in other parts of the world.

Opalized wood is found in Nevada county in many beautiful varieties. It is often washed out of the hydraulic mining claims.

There is a peculiar charm about the opal which makes it a great favorite with many people of taste and refinement. Some allow their preference to become a sort of monomania which leads them to pay very high prices for a favorite stone. This is much more common in the old countries than in America. Any person who sees a fine fire or precious opal of rare color set in a circle of diamonds can readily understand the feeling which prompts them.

Oppressive Figures.

"Our city; cost of its ruin," was the title of an outspoken temperance lecture delivered by Rev. A. S. Fiske, at the Presbyterian church on Howard street, last Sunday evening. There is no need, he premised, to enter into any elaborate discussion of the constitution of this thing that destroys, nor of the history of its development and use. Suffice it to say that alcohol is a thing evolved out of a rotten substance. It is the terrible essence of decay; it is the very living spirit of the putrid. Science has shown that it is neither food nor fuel. It is simply an irritant, and this was its effect from its first titillation to its last agony in delirium tremens. It is a lying spirit. Its distilleries can be honestly gauged by no government under Heaven, nor its treacherous drug fairly meted out by any measure yet invented of man, nor its taxes honestly paid under any system of revenue. The worm of the still is crooked in the grain and cannot be made straight, and it is a worm that dieth not, that gnaweth ever. There are no fewer than 2,300 places for the retail sale of intoxicants in this city. No man would venture to estimate the average earnings of such places throughout the country at less than $10 a day, giving an average of about $5 profit. The receipts in San Francisco would need to be much larger than this; for ours is a costly town and the rents are high, and living is good and all things are done with a wide, open hand, and we are nothing if we are not large in our vices. We do not mean to be stingy—we disdain to set the support of our drinking houses at a lower figure than that of the average through the country towns—than that of the narrow, puritanic, penny-saving East, as we are pleased to call it. But take the receipts at $10 a day. This gives an average of $23,000 spent daily among the 2,300 retail drinking places of the city. For a week the amount was $161,000, a good round sum. At thirty days, it gave $690,000 per month. Why, the figures are getting oppressive. Well, then, the figures are oppressive—not in a sermon only, but in a city; and they oppress not the imagination alone, but life everywhere. For the year the sum was $8,400,000. We spent money enough in twelve months for drink to carry on our common schools for ten years without having to pay our teachers warrants that had to be discounted. We squandered enough in one year to pay twice the sum of all our taxes. But the figures told the sad story in another way. 2,300 saloons among a population of 250,000 gave one to every 113 persons of both sexes and all ages. Out of the ranks of this 113 must be counted the children, the women and the untainted—a full three-fourths. That leaves 28 persons for the maintenance of each dramshop. What an appalling taxation these men have to bear! If Christians would tax themselves in the same ratio the redemption of the world would be speedily wrought. It is impossible even in the rich and powerful and devoted Presbyterian church to get for all Christian objects together so much as ten cents each a day. Consider the devotion of these 28 men to their drunken god. Get rid of this traffic and three-fourths of our police might be dismissed; many of our courts might be abolished, our prisons would be mainly emptied, our poor houses would be thinly peopled, our list of shameful and appalling crimes would be shortened, murders would be rare occurrences, a suicide would be a seven-day's wonder, and our security, honor and good name would be re-established in a day. We are exhibiting at this season the products of our industry; among them he noticed the products of the liquor traffic—no, not that exactly. The products of the traffic were outside—in the gutter, in blasted homes, in the drunkard's grave. "Is not the cost of the traffic in this city," he asked, in conclusion, "too intolerably heavy for the human mind to weigh, for the human heart to endure; and when its cost gets home upon your sons and your daughters and into the circles of your home, it will be heavy enough to break your heart as it has broken the hearts of ten times ten thousand in our land before."—*Call.*

Tulloch's Ore Feeder.

These machines save all hand labor in feeding the battery, and perfect control is had over the feed. By actual test the increase in ore crushed when fed by this device, instead of by hand, is said to have been two and a half tons to each five-stamp battery in 24 hours. They will save more gold than by hand feeding, owing to the regular, steady feeding and overflow of pulp over the plates, with no scouring of plates or loss of amalgam. The bulk of the gold is amalgamated in the battery. The Tulloch machine is so constructed that the drop of the stamps feeds the ore in just such quantities as the stamps require. Each drop regulates the supply required for the next drop, whether it is more or less, and this is the true principle of an automatic feeder. The tray moves longitudinally, and a stationary scraper forces the material forward at each backward movement of the tray, thus insuring the perfect feeding of all classes of ore, whether it be wet or dry. Mining experts and millmen endorse this machine highly. Mr. F. Ogden, 417 Market street, sole agent, will give further information if desired. This machine is now in use at the following mills: Consolidated Virginia, California, Trench, Douglas (Gold Hill), Northern Belle, Leopard, Homholdt, Eagle, Columbus, Duncan, Gold Mountain (Amador), Central America, Buchanan, Green Mountain, Santa Rita, Tiffany and Hepburn, Guaymas, Sumner, Sunrise, Riverside, Shawmnt, Knox & Boyd, Spring Gulch, Thomas Evans, Magruder, Leonard, Douglas (Mariposa), Hite, Phœnix, Banderita, Crescent, Barranca, Emigrant, Church Union, etc.

THE TRANSPLANTATION AND IMPLANTATION OF HAIRS.—An interesting paper on this subject appears in the *Zeitschrift fur Biologie*, from the pen of Dr. Ernest Schweninger, of Munich. He gives the following as the result of his numerous experiments: First, that the hairs that have been recently extracted, and to the root of which cell-layers of the root-sheath still remain adherent, if brought in contact with freshly granulating surface, are capable of contracting adhesions with this, and from this point a process of skinning over may commence, as after cutaneous transplantation. He has further shown that such hair root-sheaths can attach themselves to the iris and continue to grow. The iris, therefore, constitutes an excellent place for conducting experimental researches of this nature.—*Lancet.*

Wire Work.

The collection of useful and ornamental articles embraced under the head of wire works, can hardly be enumerated or realized, except we are placed directly in contact with them, and then we are astonished at their number and variety. Mr. A. S. Hallidie, president of the Institute, makes a fine showing of California industry in this line of goods. His display is unique, varied, tasty and multifarous, and demonstrates the usefulness of this class of manufactures.

Among the many articles we will enumerate round, flat, and oval wire rope of all sizes; brass, copper, and steel wire; silver plated wire; wire cloth and netting of many grades and widths; wire of all kinds for use of the different trades; garden trellises, summer houses, rustic chairs and seats, bird cages of innumerable patterns, fire screens, fly screens, and some pretty window screens, colored and ornamented with rustic views. These latter are very nice for kitchen and storeroom windows, being so close woven that a flea would have to tone down some to get through. But, perhaps, what is more interesting to many than all these, he exhibits in full operation the veritable old loom of our grandmother's, actually

Weaving Wire.

By the same old treadle and shuttle throwing process that they used when manufacturing "linsey woolsey" frocking, and "300-linen." This is quite a treat, and something old that to many visitors is entirely new. The children especially ought to thank Mr. Hallidie for this one thing, if for nothing more. There are also many articles of table use in his exhibit, such as castors, fruit baskets and the like, manufactured of white metal wire, that are very tasty, unique, and attractive.

The universal consumption of wire goods in the last few years has greatly stimulated the inventive genius of manufacturers, and wire is now used for a hundred and one purposes that twenty years ago were unthought of, and we believe the next ten years will see still more progress in that direction. We think that a cheap and useful article would be an arch for grape trellises that could be placed upon wood posts, the arches having loops through which wire could be stretched longitudinally for the support of the vines. This would be convenient for use in country residences, where wood posts would be cheaper than wire or iron, and the wire arches neater and better than wooden ones.

Mr. Hallidie has succeeded to the business of J. M. Eckfeldt & Co., and has united it with his own under the name of the California Wire Works, and now has his office and salesroom at 412 Clay street.—*Mechanics' Fair Daily.*

Hawkins & Cantrell's Steam Hoisting Engine.

The two large upright hoisting engines at the lower end of the machinery department of the fair are from the shop of Hawkins & Cantrell, 210 Beale street, and are good samples of the style of hoisting of which they have made a specialty for several years. Their engines were made for mining and wharf purposes or for any place where it is necessary to do hoisting. The engines are made heavier and stronger than those of Eastern manufacture, it being necessary in mining work to have them of the strongest and most durable character. The large double engines are made with locomotive boilers and intended to hoist from a depth of 1,000 feet. The smaller ones with single engine and reel have vertical engines. One of the engines exhibited is a 20-horse power one and weighs about 7,500 pounds. The smaller is a 10-horse power engine.

A number of the largest size of this class of engines are in use on the Comstock for prospecting purposes and in several cases are used for regular mining work at considerable depth. As a usual thing, however, engines of this kind are mainly used for prospecting purposes before large and heavy hoisting works are built. They are made with a heavy iron frame and so arranged that an engine, boiler, etc., can be shipped as one piece and set to work in an hour after arriving at the mine. It only needs a few timbers upon which to bolt the frame and it is all ready. Being much less expensive than heavy large hoisting engines, these are in demand for opening mines.

The largest size engines made of this class by Hawkins & Cantrell are double hoisting engines with link motion and double reel; one of 40-horse power only occupies a space of 20x14 feet; one of its advantages is that the engineer can control the brakes and the hoisting from two separate shafts and run his engine at one and the same time. The convenience of this arrangement can easily be seen by mining men.

The engine which is more especially intended for small mines is so simple that it requires no skilled labor to set it up, as the boiler and engine are both within one frame. An engine of this kind can, for five years at least from the opening of the mine, keep a 20-stamp mill at work at an expense much less than any other pattern. Messrs. Hawkins & Cantrell do a general machine shop business, but make a specialty of the engines we have described.

The Hawaiian Treaty.

As briefly noted in last week's Press, the treaty of reciprocal trade with the Sandwich islands has received the approval of the Washington government. The effect of the treaty upon the trade and industry of our State cannot be clearly marked out. It is the opinion of some of our leading merchants that it will not materially affect the price of articles of merchandise which may be imported under its provisions, but a profitable trade is looked for in the articles which we may export. This export trade to the islands does not amount to very much at present, the gross value of our exports to Honolulu being but about $350,000 since the beginning of the year. The treaty gives us free entry to the islands for almost every article of merchandise, produced or manufactured in this country. This will give us an advantage over other countries in all these lines of trade, and the value of the treaty in this respect will of course depend upon the capacity of the islands to use our productions and our enterprise in promoting the consumption of them among the people of the kingdom.

While the treaty gives almost *carte blanche* in respect to the merchandise which we shall send to the islands, it gives the islanders free trade in our ports for the following articles: Arrow root, castor oil, bananas, nuts, vegetables dried and undried, preserved and unpreserved; hides and skins, undressed; rice, pulu, plants, shrubs or trees; muscovado, brown and all other unrefined sugar, meaning thereby the grades of sugar heretofore commonly imported from the Hawaiian islands, and now known in the markets of San Francisco and Portland as "Sandwich island sugar," syrups of sugar-cane, melado and molasses; tallow.

As may be seen, the leading article above is raw sugar. This is the most important product of the islands and upon this article all the opposition to the treaty has been based. In the Southern States, especially in Louisiana, the opposition has been very marked because it is feared that the treaty will depress the price of cane products there. Whether our consumers will reap a benefit in low prices for sugar is not yet certain. The raw product will reach our refiners at a lower rate, but we do not expect to see a commensurate reduction in refiners' prices unless there should be more competition in the business than now exists.

By the terms of the treaty the reciprocity between the two Governments is to continue for seven years or longer. At any time after seven years the treaty may be abrogated by either party giving the other one year's notice. Thus it appears that we are booked for the experiment, and we can but hope that all benefits which its promoters have anticipated may be realized by both nations.

Land Law Decisions.

A dispatch from Washington, dated August 17th, is as follows:

Secretary Chandler has finally determined what his decision will be in respect to the selections of indemnity school lands in California. The points of the decision, which will be rendered to-morrow, are as follows: The department will insist upon the ruling made in the Selby case, as far as it affects selections made subsequent to its date and hereafter, which determines that no selections of indemnity lands will be valid unless made after final approval of surveys within which the State is entitled to indemnity; but in respect to selections made prior to the decision in the Selby case, the department will hold, first, that preemption and homestead settlements made in good faith upon lands selected by the State prior to such selections shall be protected, and entries made subsequent to such selections shall not be respected. Second, all selections made by the State after surveys by the surveyor-general shall be confirmed, unless subsequent surveys shall show that the lands for which such indemnity is claimed are still the property of the State; in which case the State may substitute lands, and return the selections made prior to the Selby decision. This practically confirms the title of all purchases from the State.

The following decisions by the Commissioner of the General Land Office are taken from *Copp's Land Owner*, for August:

Lode claims in Montana, located under the Territorial Act of December 26th, 1854, are entitled to 50 feet in width of surface ground on each side of the lode in addition of the width of the lode.

The portion of a mining claim sold to an alien cannot be patented while such owner is an alien, but on his declaration to become a citizen his right dates back to the purchase, and he may thereupon secure a United States patent for his claim.

Regular army officers, who served during the rebellion, may initiate homestead entry while in the army, but on making final proof must show at least one year's residence on the land entered, if they served four years during the late war.

Prairie lands, or lands not prairie but naturally devoid of timber, are subject to the operation of timber culture laws. Where a party applies to enter under the timber culture laws, land which appears on the township plot as already timbered, and is informed that he must disprove such apparent character, his application reserves the mentioned tract for a reasonable time from future disposition to any other claimant.

Useful Information.

How to Make an Emery Wheel.

Joshua Rose writing for the supplement of the *Scientific American* gives the manner of putting the emery and fastening it upon the wheel, as follows: The face of the wheel is well supplied with hot glue of the best quality, and some roll the wheel in the emery. The emery does not adhere so well to the leather as it does when the operation is performed as follows: Let the wheel either remain in its place upon the shaft, or else rest it upon a round mandril, so that the wheel can revolve upon the same. Then apply the hot glue to about a foot of the circumference of the wheel, and cover it as quickly as possible with the emery. Then take a piece of board about three-fourths of an inch thick and 28 inches long, the width being somewhat greater than that of the polishing wheel, and placing the flat face of the board upon the circumferential surface of the wheel, work it by hand, and under as much pressure as possible, back and forth, so that each end will alternately approach the circumference of the wheel. By adopting this method the whole pressure placed upon the board is brought to bear upon a small area of the emery and leather, and the two hold much more firmly together. The speed at which such wheels are used is about 7,000 feet per minute. The finest of emery applied upon such wheels is used for cast-iron, wrought iron and steel, to give to the work a good ordinary machine finish; but if a high polish or glaze is required, the wheels are coated with flour emery, and the wheel is made into a glaze wheel by wearing the emery down until it gets glazed, applying occasionally a little grease to the surface of the wheel. Another kind of glaze wheel is made by covering the wooden wheel with a band of lead instead of a band of leather, and then applying to the lead surface a mixture of rouge, crocus and wax, worn smooth by applying to it a piece of sheet steel, or a piece of flint-stone before applying the work. Others add to this composition a little Vienna lime. For flat surfaces, or those requiring to have the corners or edges kept sharp, it is imperative that such wheels as above described—that is to say, those having an unyielding surface—be used; but where such a consideration does not exist, brush and rag wheels may be used. In Europe comparatively large flat surfaces requiring a high polish are finished upon wooden wheels made of soft wood and unemeried, the polishing material employed being Vienna lime. The lime for ordinary use is mixed with water, and is applied by an assistant on the opposite side of the wheel to the operator. For superfine surfaces the Vienna lime is mixed with alcohol, which increases its efficiency; and here it may be as well to note that Vienna lime rapidly deteriorates from exposure to the air, so that it should be kept as little exposed as possible.

Straightening A Heavy Shaft.—J. J. Hill, of Hayden's Ferry, Arizona, writes as follows to an Eastern exchange: The following is a good way to straighten shafts that have been sprung by heat or otherwise. Lay the shaft on bearings at each end, with the arched side up, about one foot from the ground; then build a fire (wood will answer) under the part or parts to be straightened. When hot chill the top side, which is to be straightened, with water, which can be best done with a swab; continue the heating and chilling till the work is complete. Allow the heat to come back to the top side between each chilling, to quicken the process, and to ascertain when complete. After the shaft is hot, a very little fire will be required to continue the heat. I think that any kind or size of metal shafting can be straightened by this process. I made the experiment on a wrought iron shaft five inches in diameter and 12 feet long, that was sprung three inches by being burnt in a mill. It was only two hours from the time I built the fire under it till it was perfectly straight.

English Trade Marks.—The *Ironmonger* is informed that the English Commissioners of Patents have come to a decision of some interest as regards new trade marks—namely, that a crown or any royal symbol, or the name of a town, or the word "best," to denote quality, cannot be allowed as a trade mark, if adopted since the passing of the trade marks act, 1875. This exclusive regulation is an extension of those previously announced, which declare that the following devices, designs or words will not be registered as new marks or parts of new marks—namely, representations of the queen, or any member of the royal family, or of foreign sovereigns, royal or national arms, crests or mottoes, arms of counties, cities, boroughs and families, prize or exhibition medals, or the words, trade mark, patent, warranted, or guaranteed. To these exclusions, as above stated, are now added royal symbols, the names of towns and the word "best."

Files.—A new file should always be used with a light pressure on the work till the needle like points of the teeth are worn away. After this, a heavier pressure may be used with much less danger of breaking of the teeth at their base. Many new files are violently diminished of half their efficiency by a few careless strokes when first applied to the work.

Influence of Climate on Indian Corn.

In his review of the botanical features of the Centennial, Thomas Meehan writes: An interesting fact has been brought out by Professor Miles, of the Illinois industrial university, in regard to Indian corn. He was anxious to find out the most popular varieties in certain States; and he has the varieties arranged according to geographical popularity just as they run. Those acquainted with the morphology of an ear of corn know that the male (tassel) and the female (ear) are both structurally on the same plan. In the flint corn, the kinds most popular North, the tassel is composed of eight leading branchlets, along which the male flowers are arranged. To form a female spike, these eight are drawn upward, fasten themselves together by the husks, and by this union gain comparatively increased succulence; and what would be male flowers when separate become female united, and the result is an eight rowed ear of corn. In the Southern forms the branchlets of the panicle fork; and so when drawn up to form an ear, we have double the number—10, 12, but generally 16 rowed ears. Now the eight rowed corn is found most profitable from Canada to the southern part of New York State; after that the 16 rowed comes into favor. By studying Professor Miles' collection we learn for the first time why this is. In the north the grain is very large in proportion to the size of the cob; but as it gets south the cob thickens, at the expense of the grain. Why there should be this inverse influence is not clear; but the fact is evident; and it is one of the most interesting instances of the operations of climate on changing form that I have met with. Another similar fact is in relation to the production of the glumes. In Indian corn generally they are not needed, because the leaves are transformed into a husk, which envelopes the whole spike on which the naked seeds are arranged. There is a kind on exhibition here which pushes the spike out of the sheath or husk; and in this case the glumes are developed and form a covering to each seed, as in the case of wheat or oats or other grain. I believe this singular kind is called "Rocky mountain corn," but why I do not know. To many the appearances of these many varieties of corn, so seemingly different and all from one original, is astounding, while those who are very enthusiastic on developmental theories love to refer to them. But, in truth, the morphological differences are not very great. It is the appearances that are deceptive. The morphology of the male from a female primary flower shows a much more striking change.

Good Health.

Influence of Color on Health.

The influence of color in clothing upon the health of the wearer is a matter worthy of consideration. It is a well-known fact that a white surface throws back or reflects heat which comes in contact with it. For this reason, white or light-tinted clothing is better adapted to summer, as it reflects the sun's rays, and, to a degree, wards off heat.

It is an equally well-known fact that a black surface readily absorbs heat and freely throws out or radiates it. For instance, a steam radiator painted black will keep the temperature of a room considerably higher than if painted white, the heat producing agency remaining the same. This being the case, it would seem that black or dark clothing takes up and throws off a greater amount of heat generated within the body, and is, therefore, not as good as white, even in winter weather. Let any one who has worn dark socks, and been troubled with cold feet, change to white, and see if the results are not beneficial.

But there is an influence exerted upon the health by white or black clothing of far greater importance than that relating to heat. Every one knows that black absorbs or rather extinguishes all the rays of light, and reflects none. Every one ought to know that light is an essential agent in the preservation or restoration of health. Now, a person clad in black is surrounded by an atmosphere wanting in light by just so much as is extinguished by his black dress, and the constant wearing of black deprives the wearer and all who come near him of certain elements necessary to physical and mental well-being; which fact, sooner or later, manifests itself in a deteriorated condition of both body and mind.

Black was for ages worn almost exclusively as a symbol of mourning. It denotes sorrow and sadness; it was intended to keep before the mind unpleasant thoughts, and it is fit for this and this alone, for it inevitably exerts a depressing influence. In fact, it will engender physical conditions which have for their sequence unpleasant thoughts and feelings, born of the lack of light.

The present universal wearing of black was a concomitant of the war, which made everybody mourners, and when the grief was assuaged, black had become "the fashion"—more's the pity, for fashion's chains are so closely welded that it is almost impossible to break them, even though health be sacrificed at her shrine.

The immediate effect of black surroundings is upon the nervous system, and through it upon every tissue of the body and imagery of the mind. Men's clothing being less voluminous than women's presents a less surface for the extraction of light, and is proportionately less in its ill effects.

Color is an important agent in the cure of any disease in which the nervous system is involved. It is equally effective in the preservation of healthful conditions of body and mind; and when these facts shall have become known and appreciated, it is to be hoped that the wearing of black will be discarded, and its accompanying evils overcome.

Bright colors tend to enliven and elevate the spirits; but constant contact with them will exhaust the nervous force by over-stimulating effects. The light, neutral tints soothe and quiet the nervous system, and are best for constant wear, particularly among our American people, who are given to both excitement and depression; while black and very dark colors tend to depress, by depriving the nerves of their proper and legitimate nutrition, which is light in all its purity and beauty.—*Science of Health.*

Dangers of Breathing by the Mouth.

Dr. Gaye, in the London *Medical Record*, directs attention to the evils of breathing by the mouth. To appreciate these it must be remembered that the functions of the nose in respiration are threefold.

1. The olfactory sense secures it against the entrance of impure air.

2. The moisture of the nasal passages gives a certain degree of aqueous saturation to the inspired air, the contact of which is thus rendered less irritating to the mucous membrane of the throat and larynx.

2. The inequalities of the organ retain solid particles suspended in the air, which is proved by the quantity of dust sometimes found accumulated in the nostrils. These functions are all lost in breathing by the mouth. Further, the contact of dry air soon produces circulatory troubles in the pharyngeal region, and even an habitual catarrh, susceptible of easy transmission by continuity to the eustacian tube and cavity of the tympanum. Granular adenoid pharyngitis often has this origin. Niemeyer believed that attacks of pseudo-croup in children have their origin in dryness of the glottis produced by oral respiration. To enable the patient to breathe through the nose we must restore the nose to its proper condition, and then in children stop the mouth by an impervious respirator. Many cases of catarrhal deafness were cured in this way alone.

Fruit for Worms in Children.—Dr. M. L. Holbrook, a good while ago, in speaking of fruit as food said: There is one other value in fruit which I cannot pass over in this connection without notice. One of the common diseases of children is worms in the bowels. If a child's digestion become impaired and the gastric juice become weakened or defective in quantity by overeating or bad food, the whole alimentary canal becomes clogged up and filthy, and furnishes nests for such worms as will breed there. In this weakened condition of the system, they cannot be destroyed by the process of digestion, and hence great harm comes from them. Now, it is an interesting fact that fresh ripe fruit is the best preventive for this state of things. Dr. Benjamin Rush pointed this out a hundred years ago. He made a series of experiments on earth worms, which he regarded as more nearly allied to those that infest the bowels of children than any other, with a view to test their power of retaining life under the influence of various substances that might be used as worm medicines. The results proved that worms often lived longer in those substances known as poisonous than in some of the most harmless articles of food. For instance, in watery solutions of opium they lived 11 minutes; in infusion of pink root, 33 minutes; in claret wine, 10 minutes; but in the juice of red cherries they died in 6 minutes; black cherries, in 5 minutes; red currants, in 3 minutes; gooseberries, in 4 minutes; whortleberries, in 7 minutes, and raspberries, in 5 minutes.

From these experiments Dr. Rush argued that fresh, ripe fruits, of which children are very fond, are the most speedy and effectual poisons for worms. In practice this theory has proved to be correct.

Remedy for Lockjaw.—Dr. John Imray reports most favorably on the effects of the simultaneous use of opium and chloral hydrate in cases of tetanus, both idiopathic and traumatic. In the tropics this disease exhibits a frequency and a violence unknown in more temperate regions, and with the sole exception of hydrophobia, there is perhaps none so unsatisfactory as regards treatment, or so painful to witness (and usually so fatal) as tetanus. Hence the doctor's mode of treatment promises to be of great value. Three cases were treated successfully by the new method—namely, keeping the patients almost continually under the combined effects of chloral hydrate and opium tincture until all tendency to the recurrence of tetanic spasms had disappeared. As it generally happens that all power of digestion is lost in this disease, it becomes necessary to administer both the medicine and food by means of an enema. The power of these combined drugs in controlling and repressing the tetanic spasms is indeed very remarkable, and Dr. Nicholls, who had the patients under his charge, likens it to the action of a heavy weight on a spring, which if the pressure yielded, the spring began to rise, but being continually maintained, the morbid nervous phenomena gradually gave way, and the disease was finally vanquished.

MINING AND SCIENTIFIC PRESS.

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San Francisco:
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NEW ADVERTISEMENTS.

Averill Mixed Paint, California Paint Company, S. F.; Single Track Railway, David B. James, Visalia, Tulare County, Cal. Cincinnati Gold and Silver Mining Co.—Assessment; Stock Broker, James Patterson, S. F.

THE MINDELEFF PROCESS.—The Mindeleff reduction company advertise for refractory gold and silver ores and also invite mine owners to forward them such ores, in lots of not less than three tons, in order that the practical value of the process may be demonstrated. This company unquestionably has the utmost confidence in their enterprise, as they have erected complete works in this city at an expense of not less than $25,000, and are now in the market for rebellious gold and silver ores. We understand the works of the company are open so that either experts or persons interested in the ore being treated may be present and see the entire manipulation. All we need say is, if the process is a success the company have "struck oil."

LARGE FIRE.—Again are we called upon to record a terrible catastrophe in the shape of fire. A whole block, bounded by Brannan and Townsend streets north and south, and Third and Fourth streets east and west, was almost entirely destroyed, leaving hundreds houseless, and throwing 90 sick out into the night air from the German hospital, which was destroyed. Loss is variously estimated from $600,000 to $1,000,000. The fire commenced in the Pacific box factory, and high wind and scarcity of water caused the great destruction. Three lives were lost.

THERE is a great deal of crime in Pennsylvania, chiefly caused by the "Molly Maguire" organization, which has systematized outrage and murder. A blow has been struck at them by the conviction of nine of the desperadoes, at Pottsville, Pennsylvania, of murder. The Molly Maguire prisoners—Manley, McGeehan, Carrol, Roarity, and Beiley—recently convicted of the murder of a policeman at Tamequa, Pa., have been sentenced to death.

Comstock Papers.

NO. 5.

A Hard Winter and its Results.

The winter of 1859 commenced early, as much as a foot of snow having fallen at Virginia City on the 2d of November; and, although this storm was succeeded by several weeks of pleasant weather, the winter that followed was a severe one. As yet not more than a dozen comfortable houses had been put up at Virginia City and Gold Hill; wherefore the several hundred adventurers who had gathered at the mines were compelled to live and lodge in tents, canvas houses, and stone built huts and such other temporary abodes as could be constructed from the rude and scanty material at hand, there being very little lumber to be had. Some, whose means were not very abundant, borrowed Indian fashion in dirt-covered holes dug in the ground, while a few even found shelter in the mouths of the tunnels that had been started for opening up the mines. The public lodging houses were well patronized institutions, every inch of space, even to the floors, being pressed into use for sleeping purposes. In these places rows of bunks, reaching from floor to ceiling, one above the other, ran around the sides, with a double tier extending through the center of the building, each of these shelf-like bunks being furnished with a coarse hay mattress and a limited supply of woolen blankets. Of nights, chairs, tables and counters were made to do service as bedsteads. For this sort of accommodation one dollar per night was exacted, lodgers being charged half price for the privilege of spreading their blankets on the floor.

Huddled into these miserable dormitories, the weather much of the time stormy and intensely cold, a good deal of suffering was experienced before the winter was over; nor were the unhappy lodgers permitted always to enjoy even this sort of shelter without interruption and disturbance. Frequently the gales that came careering down the sides of Mount Davidson would, in the middle of the night, when all were wrapt in sweet slumber, dreaming of rich croppings, black sulphurets and wire silver, rend to tatters their canvass dormitory, or taking it up bodily turn the thing inside out, leaving the hapless sleepers exposed to the pelting of the pitiless storm. To aptly describe the scenes that attended the sudden uncovering of these embryotic silver miners, howling and swearing as they sought to screen their half-naked persons under the fluttering fragments of their disrupturned tabernacle or hastened off through the storm in search of shelter elsewhere, would require the pen of a Dickens.

A Hopeful Crowd and a Winter Emigration.—High Prices of Provisions and Provender.

But notwithstanding their miserable situation few of these sojourners in the new El Dorado grew disheartened or sought greater comforts by a return to California. On the contrary, such was their confidence in the mineral wealth of the country, that they resolved to hold out at all hazards till spring, when they believed they would be able, on the disappearance of the snow and the advent of good weather, to verify all that had been said of the richness of the mines and realize their fondest expectations. The high hopes entertained by those already over the mountains had the effect to so stimulate the excitement in California that quite an emigration was kept up throughout the winter, the population collected at the new mines having amounted by the end of April to about 2,000.

By this time the condition of things had become decidedly rough. The winter had proved to be one of unusual length and severity. The early settlers in Carson valley, a shiftless people at best, not having expected such a large influx of population nor anticipated so hard a winter, had failed to provide for these contingencies by gathering more hay and raising more farm produce than usual. Having their attention absorbed by mining matters, they had, in fact, made hardly as great provision of this kind as in ordinary years. The consequence was, there soon began to be a dearth of these commodities, the prices advancing to enormous rates before spring. Hay, for example, sold at the rate of four and five and barley at six and eight hundred dollars per ton, provisions of all kinds being also excessively scarce and dear. Many of the horses and two-thirds of the cattle in the country died from starvation. The simplest fare, such as hardly more than sufficed to keep life in his body, cost the miner three-fold more than the most luxurious living would do in California. Believing, however, that relief would come with the spring, all bore these burdens and deprivations bravely. Knowing that supplies of all kinds would be rushed in from California as soon as the mountains became passible to pack trains, there was little murmuring or complaint.

Things Get a Set-Back—An Indian War Foolishly Begun and Disastrously Ended.

While all were thus hopeful and patient and were even in the best of spirits, there occurred one of those foolish and fatal events which, through the want of a little forethought and practical sense on the part of the multitude, result often in disaster alike to individuals and the community at large. There were living on Carson river, 20 miles below Virginia City, three brothers named Williams, who there kept a sort of public house, their reputation for square dealing being none of the best. Among other evil practices imputed to these men was that of cheating the Indians and grossly abusing their squaws, on which account the Pah Utes cherished towards them a deadly animosity, awaiting only a favorable opportunity to be avenged upon them. Accordingly, one night, early in the month of May, 1860, a small band of savages attacked the house of these brothers and slew the occupants, four in number. It so happened that three of these were strangers, merely stopping there over night, only one of the Williamses having been among the slain. However much the brothers themselves might have deserved the fate that had overtaken one of their number, this butchery of innocent parties was not to be overlooked, nor would it do to allow the savages to redress their wrongs, fancied or real, in this summary way, anyhow. As soon, therefore, as

The News of the Massacre

Reached the settlements, it was determined that the guilty parties should be sought out and punished. As the Indians, before leaving, had set fire to and burnt up the house and all that was in it, the names of the strangers killed were never ascertained, they probably having been miners prospecting in the neighborhood. It was well known that only a small number of Indians had been engaged in the killing and that the head men and great mass of these people know nothing about it. Wherefore the older settlers in the valley advised that a few of their own number should visit the principal camps of the Pah Utes, and consult with the chiefs about the affair, offering a reward for the apprehension and surrender to the whites of the guilty parties and threatening the whole of them with punishment if the offenders were not found and given up. Had this course been adopted the criminals no doubt would at little expense and trouble have soon been secured and properly dealt with. But there had by this time collected in the new mining region a good many young men, brave and chivalrous but impulsive and inconsiderate, who were not inclined to pursue this wise and considerate course, believing and advocating that an armed force should at once be fitted out and sent to inflict upon the savages instant, severe and indiscriminate punishment. Endorsing this view were a few men of a different stripe—men of ruffianly proclivities, who, believing that an Indian war would furnish them employment at the public expense, and possibly afford opportunities for securing Pah Ute ponies at a cheap rate, did all they by in their power to promote a scrimmage of this kind.

The Avengers Go for the Savages but Meet With a Repulse.

The party of violence being thus in the ascendant, a company of something over a hundred men was raised, armed and mounted, and, under the command of Major Ormsby, of Carson City, started down Truckee river intending to first clean out the Indian rancheria situate on the border of Pyramid lake, at the mouth of that stream. The Indians, however, having got wind of their purpose, entrenched themselves behind the rocks on either side of a narrow gorge along the river through which their foes had to pass. The whites, ignorant of their presence, marched into this defile and when half-way through it were fired upon so suddenly that they were thrown into confusion and obliged to retreat precipitately, not being able to make any effective resistance. The Indians making pursuit killed some ten or fifteen of their enemies, wounding as many more, Major Ormsby having been amongst the slain. Only after they had drawn them from their covert did the whites succeed in killing any of the Indians, the number of the fallen having been about equal on both sides.

A Big Scare and a Bad Business Altogether.

When the discomfited survivors reached Virginia City, great was the excitement that at once ensued, it being generally supposed that the savages, emboldened by their success, would instantly march upon that place in overwhelming numbers. Consternation everywhere prevailed. Nothing was thought of but defense against the approaching foe, whose movements were watched by scouts sent out for the purpose. The approaches to the city were guarded and sentinels stationed on the hills around. The women and children were gathered into places of safety, the most of them having been corralled in a large half-finished stone house put up by Peter O'Reilly, which was then strongly barricaded. Couriers were dispatched to California, advising the people and authorities there of the critical situation and imploring them for aid; arms, troops, ammunition, grub and whisky having been hurried over the mountains in response to this call. Arriving, these auxiliary forces joined the veterans already in the field, and soon between three and four hundred men, well equipped and officered by Jack Hayes and other experienced Indian fighters, were on their way to give battle to the dread Pah Utes, every man of them fairly bloated with valor and a fixed determination to exterminate the hated race, leaving not so much as a papoose or a mehela behind. But the hated race had got well out of the way, having run off into the northern deserts, where the whites, finding they could not reach, decided not to pursue them. The Indians had, in fact, retreated north immediately after the fight on the Truckee, having been running in one direction while the whites were running in another. Nobody was therefore killed on either side during this second expedition, which returned to the abodes of civilization and the pursuits of peace without scalps or glory.

This scars, which had, as we have seen, so little foundation in fact, proved a serous detriment to all the leading interests of Washoe. To say nothing of the heavy public debt entailed by it, the country was set back fully a year through the alarm created and the check put upon enterprise and the influx of capital and population. Had the writer consulted his feelings alone he would have ignored the story of this miserable business altogether; but a sense of duty has constrained him to allude to it thus briefly, that a lesson so instructive might not be wholly lost to the future.

Cordage Manufacture.

In the center of the main floor of the Pavilion, almost immediately on entering, the visitor comes to the exhibit of the San Francisco Cordage Co., the rope makers of the Pacific coast par excellence. The display consists of several coils of baling rope and some thirty coils of three strand rope, from one-fourth inch clothes line up to three inch hawsers. Some are beautifully white, made from the fiber of the maguey of Mexico. Some of darker hue of Manila, and some tarred hawsers for use in mines where water is abundant. Surmounting the whole is a large mass of the raw material from which the rope is manufactured, waving like the blonde tresses of the rustic Saxon wench, and at a masquerade would do duty as such quite creditably.

Their factory is located at the Potrero, not far from the Southern railroad depot, and is very extensive, employing about 100 hands in all, and being the largest factory of the kind on the Pacific coast. Their office and salesroom is at 611 and 613 Front street, where they have a large two story building filled with a well assorted stock, and by telegraph can order from the factory any special kind required, and have it manufactured and shipped within 24 hours.

Messrs. Tubbs & Co are making considerable of the light colored rope on exhibition for inland use. It is not quite so strong as the Manila, but the material is much cheaper, and for ordinary uses it is sufficient, and is in general use in the East. They have completed arrangements for the direct importation of the raw material from the Mexican coast, which is called Sisal hemp, and, as we before stated, is the fiber of the maguey, a species of aloe. Manila is the fiber of the plantain, which much resembles the banana tree.

The capacity of the factory is about five and a half million of pounds per annum, but it is not run constantly, as the supply would exceed the demand. They could easily manufacture all that would be required in our market, but are content to take the largest share of the patronage, and leave the balance to others. Their display is worthy of inspection, and so also is their factory.

MINING ACCIDENTS.—Six men were killed at the Benton mill tunnel, Mariposa county, by a premature explosion in the face of the main tunnel. A set of holes, 18 in number, had been loaded and were ready for explosion, when Mr. Ethelridge Hunt, to whom the management of the battery was entrusted, attempted, as usual, before firing, to test it—that is to send a current through the wires to see that everything was in order and readiness for the explosion. If the connections are all perfect, this test current rings an alarm bell, and all hands clear away to places of safety in the cross drift. It seems that on this occasion the bell failed to ring, indicating a break in the wire between the battery and the face. As customary in such cases Mr. Hunt took the battery up to the face in order to test the wires back from joint to joint, as that is deemed the most expeditious way of finding a break. The wires had been again connected with the battery, and it is supposed that Mr. Hunt, at this time, being in a state of slight confusion, as men are apt to be when anything goes wrong about Hercules powder, touched the wrong key, sending the current directly through the several explosive in the face, instead of back down the wires as intended.

An accident occurred at the Ophir mine on the 29th, which damaged the machinery about $1,000. The cage caught in the shaft and the rope was let down in it. This cable fell over into the central compartment and fouled the other cage, which was coming up, bringing a heavy strain on the machinery and causing the damage mentioned.

A miner named John Welsh was killed at the Centennial mine, Virginia, on the 29th, by the explosion of a box of powder.

THOMPSON & FERGASON are running their shingle mill at Camp 16, near Truckee, night and day. They have 15 men in their employ, and have manufactured and sold over 8,000,000 shingles this season. They calculate on making in the neighborhood of 7,000,000 more before the heavy snows come and compel them to shut down.

THE crowded state of our columns necessitates the postponement of our usual "Notices of Recent Patents," until next week.

A REDUCTION of 20 per cent. in printers' wages has been made by the typographical union in Baltimore.

An Improved One-Rail Railway.

The accompanying illustratioas sbow the details of oonstruction of a new aad improved car for siagle-rail railways, inveuted by David B. James of Visalia. The inveution consists of one liue of broad-faced wheels in tbe ceuter to carry the load, and guide-wbeels to raa each side of the rail oa vertical axles projecting down from the car, the wheels being to kaep tbe carrying wheels ou the track and to prevent tbe cars from overtnruiag, for which they are coatrived to gripe the rail with more or less force. The wheels ars conaected witb a platforai which is carried only enough higher tban the rail to clear it properly, and the car is mouated on pivots arraaged in tbe line of the wheels aad supported ou tbe platform so that the load is balaaced oa the wbsels and the ceuter of gravity ia lowered as much as possiblo to preveat overtaraing. The guide wheels rnniug against the sides of the rails are coatrived to move forward aud from the rail, aad provided with springs to keep them in coatact. In the locomotive they may be geared with tbe power, aud bave a lever coutrivance for grippiag tbe rail tigbtly for treotiou on steep grades.

Figure 1 of the engraviugs is a longitudioal sectional elevatiou of the improved railway car, showiag the guide wheels, ridged aad ruuniag in a groove in the striager. Figure 2 is a horizontal sectiou, giving an ead view of the car and track, striager aad ties, with side wbeels, tbe ridges ia which fit into the groovo in tbe stringer. Figare 3 sbows tbe arraagement of the side or gaide wheels with the set screws sud spring to regalate the force agaiust the stringer.

Iu the engraving, *A* is tbe siugle rail, of wood, whicb may he of a single timber, or it may be sbod on top with another, to be removed from time to time wben worn, the removable oue being, say from two to tbree inches thick. *B* represeats the ties, whicb may he of any snitable kind. *C* represents the carrying wheels of the car; *D* the wheels for guiding it, and preventing it from overturning, the latter wheel s being mounted on vertical axles, *F*, projecting down from the car body or supports, *I*, so thet tbe wheels ruu agaiust the edges of the rail while the wheels, *C*, ruu on top. Tbe axles, *F*, are mouated iu bearings, *G*, which aro movable toward and trom the rail, aud have springs to press them against it, by which they are accommodated to variations in the thickness of tbe rail, and allow the car to tnrn curves readily witboat requiring the wheels, *C*, to be mounted on a pivot, or fifth wheel.

The car body, *J*, is mounted on the pivots, *K*, supported on the platform, *L*, which is suspeuded from the axles of the wheels, *C*, the said pivots being arranged in the longitudiual plane of the wheels, *C*, so the ceuter of gravity of the load remaias more ou the wbeels thau it otherwise would, and the car is more certaia of keeping erect in case the load is not trimmed nicely, or the car is jarred or otherwise forced laterally. Bat to preveut the car from rockiug too muoh ou the pivots aud also to prevent it from striking too hard ou the platform in case it does rock, baffer springs, *M*, are attached to tbe under side of the car body so as to strike the platform, or tbey mey be applied so that the body may strike against them.

The platform will always ran level on accouut of using only oue rail and employing the guide wheels to direct the car, which avoids the necessity of tiltiug tbe car as on the curves of the roads of two rails, and thus the difficulty of carrying the cars upright on a single track is greatly diminished.

If considered necessary, the carrying wheels may be banded witb rubber to prevent weer of the wood rails and for ruuniug smoothly, but it is believed tbat the broad surfaces will wear so little as not to need it. By gearing the guide wheels of the locomotives with the driving wheels, aud employing levers to canse them to gripe the rails, very steep gradee may be asceaded. Very abrupt curves cau easily be overcome by meaae of this system, as ben, of course, steep grades. The engineering difficulties of a line in a mouutainous country could therefore be overcome by it, like a narrow gauge road overcomes the difficulties of a broad gauge under sucb circumstances. The stringer is fastened to the ties with irou knees. In figure 3, the spaces between the heavy spring, *H*, may be filled with rnbber wedges. The set screw, *P*, works against a plate that works against tbe upper and lower springs to regulate the force against the stringer.

As any oue cau see, the construction of a road such as this would be very simple aud cheap. In a well timbered country the whole road could be made of material near at hand. As branch roads from small towns, this system would be advantageous, as heavy loads cau be cerried witb a small expeuditure of power. Almost any one can see the advantages possessed by a road of this kind under certain circumstances. A model has been placed on exhibition at the Mechanics' fair, where it can be examined in detail. Those desirous of further information can address the inventor as above.

FIG. 1. ELEVATION OF JAMES' PATENT CAR FOR ONE RAIL RAILROAD.

Globe Mining District, Arizona.

EDITORS PRESS:—Globe miniug district was organized about twelvs moutbs ago. At that time it was confiaed to Piual coauty, bnt since tben a large tract of laad has been cut off from the Saa Carlos Indiau reservatiou and added to the district, said addition being in Maricope couuty, and inclades the great Apache monntaias, ia the northeast part of the district, formerly knowu as the sacred bome of the ancient red men, who have been heretofors tbe great bugbear that has retarded the developmeat of this section of country, wbicb has produced silver ores from the surface, witbin tbe last six months, second to uo others previously discovered in aay part of ths Wastern States and Territories, not only on account of their richuess in iatriasic value, but for their mineralogicel combiaations aud crystallization. In tbis article I refer priucipally to the

Northeastern Portion of the District,

Which is in Maricopa county. The great Apache mountaias run ia a uortherly aud soatherly course, the eastern slope of whioh form tbe gulches and creeks that constitute the headwaters of the San Carlos river, that empties into the Gila river at the San Carlos Indian agency, distance about 35 miles soutbeasterly course. From tbe western slope tbe waters from the canyons run into Piual creek, which latter forms a junction with Salt river about 15 miles from the apex of the great Apache mountains.

Tbe greater portion of the district surface is principally small, undulatiug hills, covered with luxuriant grasses the whole year. The

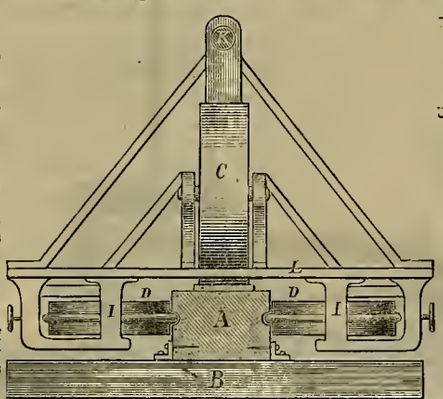


Fig. 2. End View of Wheels, Guide Wheels, etc.

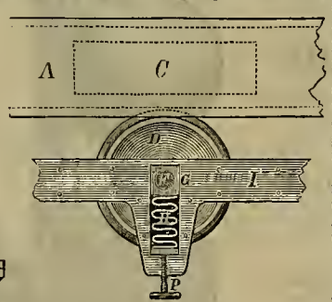


Fig. 3. Arrangement of Guide Wheels

mescal grows here very abandautly; I believe it to be

A Species of the Maguey,

Coutainiag a great amount of sugar. It formerly served the Apache Indians with the nourishment wherewith to sustain their diabolical vitality wbile raiding on the pale faces. The plants are cut down aud the thick leaves trimmed close to the butt, which varies from a few inches to a little more than a foot in diameter; they are then put into a mescal pit built of stones and earth (principally in the gulches and cauyons), where fire is applied and rocks heated. The plants are placed in the bottom and covered over with heated rocks and earth, where it is allowed to remain 48 hours to roast, and is tben ready to be used as food. Although they now draw their rations of provisions at the San Carlos ageucy, tbey are so habituated to use it that they procure passes from the Indian agent to allow them the privilege to burn mescal. Many Apaches have been engaged the last two months in this branch of their industry in a very peaceable manner among the miners, invariably showing their pass to be absent a certain number of days off the reservatiou.

Water

Is somewhat scarce, but tbere is sufficient for consumption aud to treat tbe ores of tbe district by steam power. Wood is also scarce in the vicinity, but plenty in the Pinal mountaias, about ten miles southwesterly. Salt is abundant on Salt river, within 15 miles, and at some parts of the district only 10 miles, which will facilitate considerebly the redaction of a certain class of silver ores found in this portion of the district, which require to be treated by the chloridiziag process in order to save a largo percentage of the silver the ore contains, i. e., silver glance, brittle sulpharet of silver, black salpbide and tennantite, all of which are here associated with blue and grey malachite.

The First Mine Discovered

In this part of the district is called the Champion, located late in 1875. The Champion company had 250 pounds of ore smelted at a rude Mexican furnace, which yielded 35 pounds of pure silver, and eight pouads of silver were afterwards taken from tbe slag.

It is situated on the southwestern slope of Chromo butte, (the reservation line now is marked out over the butte, leaviag the Champion about one-qaerter of a mile outside of the boundary,) and about 200 yards from the gap or gorge in said Chromo batte, which is somewhat isolated from the great Apache mountains. This mine is on the eastern border of tbe mineral belt which crosses the district in a northeasterly and southwesterly course. This course refers to a number of mammoth fissure lodes, ledges or veins that are traceable for several miles and pre-empted under different names, varying from three to fifty (and I might say more) feet wide, which I will classify separately, of which the Champion is the first. It is in the syenitio grauwacke gronp, inferior, stratified series, traasition rocks of the upper silurian or lower devonian of the geological systems. It is quite immaterial to which it belongs, as both of them abound in the precious metals. This group of rocks at

Ths First Mine Discovered

Ths Champion vein is about thrss feet wide, well defiaed, betwesa two walls of grauwacke, (syenitics) witb a dip about 10 deg. to 15 deg. from ths perpeudicular, northwesterly. The gangue or matrix is priacipally composed of sulphats of berya, silica, mixed with carboaate of lime aud ergillaceous earths. Near the surface the preseat workiags are about 22 feet, deep, opsn cut. The matrix is in a high state of crystallization, producing large aud beautiful specimens of crystallized chlorids of silver, associated witb argillaceous chloride of silver, brittle sulphnret of silver, silver glauce (ergentite), and the result of the decomposition of the two latter varieties, produced by surface inflaeaces, black sulphide of silver, after the upheaval aud infiltratious of salt water into the veiu, whiob undoubtedly produced the chloride by the natural process termed metamorphism. I will also state here that

Free Gold

Is fonnd in this fissnre vein, chiefly coafined to those rocks that are qnartzose in their character, interspersed with miaeralized brown gneiss, especially where white quertz, decomposed feldspar and chromate of iron predomiaate. This portion of tbe stratnm is to a certaia degree more or less auriferous. I believe it to have been deposited by iafiltration, the gold being in solntion in the salt water, while the stratnm was inundated aud subseqnent y precipitated in the gangue or matrix of the vein by the excess of iron in the same, assisted in their depositiou, (tbe chloride and free gold,) by the decomposition of one chemicel substance actiug on another with whioh it has aa affinity, conjointly produciag a kiud of electro-metallurgy, by the polar electric carrents. All nature is in process of growtb and decay. "We either gain or lose, or sink or rise, nor rests our struggliug natnre till she dies!" Which is only a state of transformation. The analogy holds good in the three different kingdoms; as electric enrreuts maintain the vitality of the animal kiugdom produced by the decomposition of certain chemical compounds introduced into the system, so the vegetable kiagdom also is entirely depeadiag for its vitality on the absorption of certain alkaliue salts extracted from the earth, aud moisture, which form the electric currents that maintain its vitality. The seme law governs the formation of differeat species of miueral combiaatious; it is the result of affinity or molecular attractiou, for, let it be naderstood that whether in the animel, vegetable or miueral kingdoms, there always exist kiudred associations—affiuities—"like loves like." Among minerals, atomic agglutination aud crystallizetion are constantly goiag on, and whether tbe snbstaaces uudergoiag these changes (pseudomorphism) are iron, silver, gold, etc., when in solntion tbe fiaal results—metallio or earthly solids—are the seme.

Followiag the course of the Champiou iu a northeasterly direction four miles, we have the same formation on the east slope of the Apaches, where the fissures agaiu crop out at the surface, several feet wide, the Stonewall, Haunibal and

Several Other Locations

Producing rich ore at the surface, while in their immediate vicinity many cross-courses (northwest aud southeast) intersected by counters, east, southeast aud west northwest invariably being their course. They were first discovered late in Februery, 1876, and meny toas of exceedingly rich ore have been taken from these counters and cross-courses, held under many locatious, as the Almaden, Little Mary Ann, St. Louis, Little Mac and many other. Specimens from these lodes are mostly kerargyrites aud argentite, marked nnmber 1, in the specimens I send you with this letter.

One fissure vein from tbis extreme northeast part of the district is located for five miles continnously in a southwesterly course. It crops out at the surface every few hundred feet, about half a mile southwest of the apex of the Apaches. It is known as the Sherman lode here. It is somewhat broken up, and many cross-courses aud counters iatersect, carrying silver ore, as per samples No. 2, coutaining chloride, iodide, bromide, brittle sulphuret of silver (stephanite), argentite[and a little malachite, worth over $10,000 per ton. I've seen qu ntities of this grade of ore taken from the Sherman, Chromo, Treasure Vault and many others in the vicinity, averaging over four tons of first class from surface workings not more than 12 feet deep; still the lodes when in place are still going down in rich ore, averaging from six inches to two feet between walls, with a dip about 15 from the perpendicular.

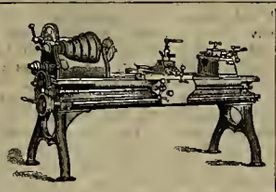
These mines were loceted early in February, 1876, but little development has been done on most of them, principally on account of the many disedvanteges the miners of this district are laboring under, of which I will illustrate

(Continued on]Page 164.)

ASHCROFT'S

Steam Gauges.

The very best in the country. A large stock at reduced prices.



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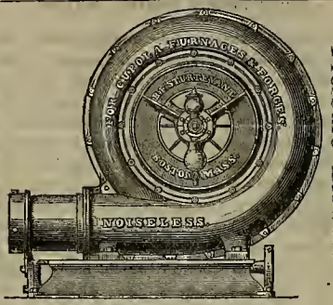

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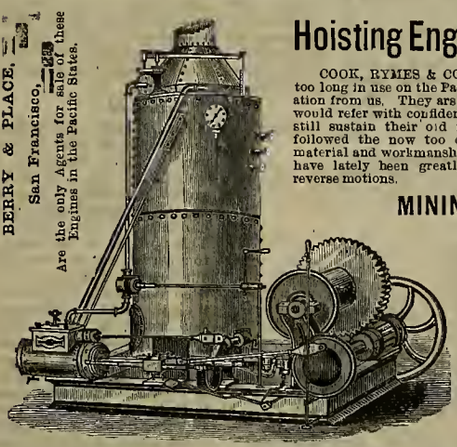

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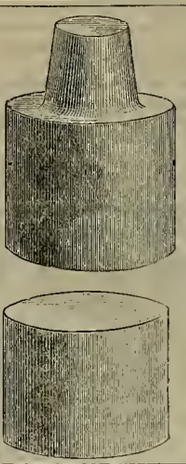

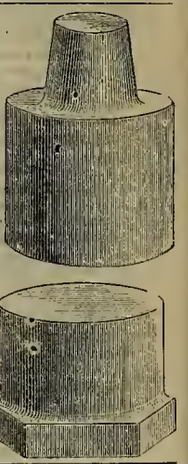

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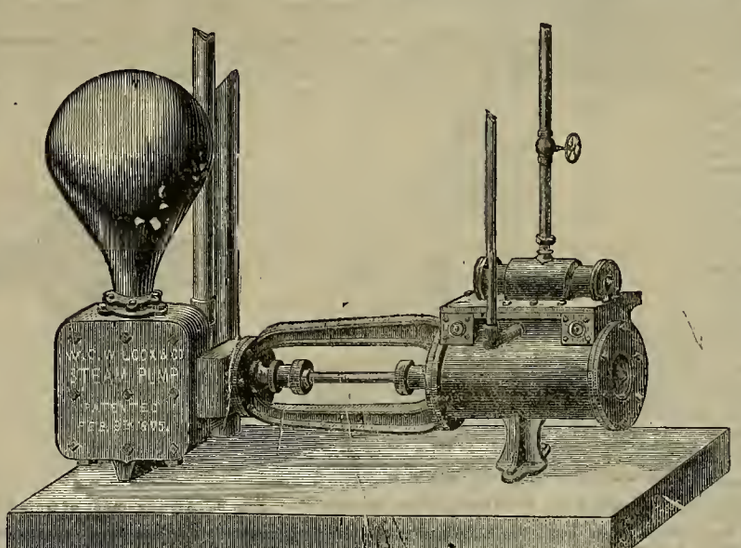

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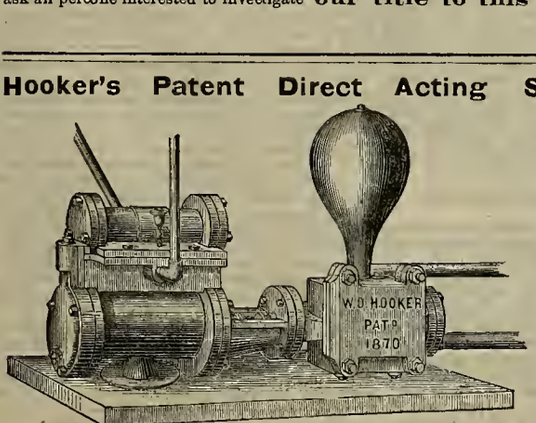

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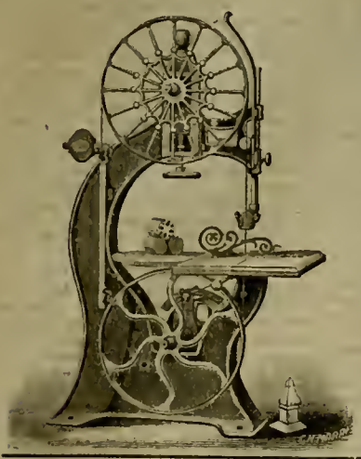

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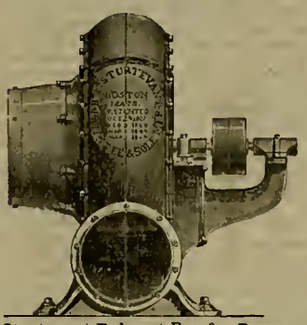

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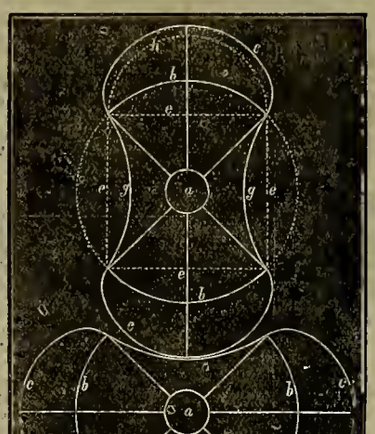

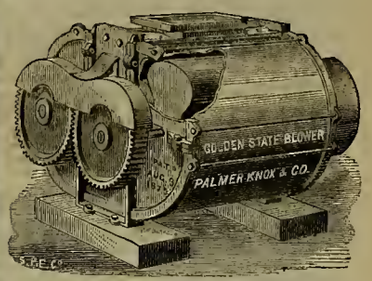

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(Continued from Page 158.)

Montana.

MILL ITEMS.—Butte *Miner*, August 19: The Dexter got steam up Friday morning and is running one pan and settler. The amalgamating is little behind the stamps and furnaces, and it is expected that by this means everything will be cleaned up and when a new start is made, all will work together. It has been decided to wait until Mr. Allen is ready to cast and have the new cog-wheel made there from the improved pattern. This involves a little delay in starting, but it will probably obviate any stoppages in future from similar causes. At the Centennial all is working well. Good results are being obtained from the Burlington ore. One silver brick was sent off Wednesday and another will be shipped to-day. The second Purvine pan arrived yesterday. This mill is doing good work and we hope soon to be able to record the fact that ten stamps are in motion. Work on the La Plata lode will be resumed Monday next with a full force of men. It is stated that a good vein of copper ore has been struck on the Aleck Scott lode. We saw a specimen from there this morning which shows very rich. A portion of the flume in the west fork of the Silver Bow mining ditch was carried away during the late rains, but is being rapidly replaced and work will soon be resumed. Work is progressing rapidly at the Butte foundry and it begins to assume a business-like air. The cupola shell is in place and Mr. Allen commences lining to-morrow. Both of the Phillipsburg mills are running on full time. The Quartz Hill mines, in the Upond district, are coming into favorable notice, and great expectations are indulged for them. An unusual quantity of gold dust was brought into Virginia City last week.

Oregon.

GRANITE CREEK MINES.—*Bedrock Democrat*, Aug. 23: From W. H. Thompson, who is just from the mines at Granite creek, we learn that everything is flourishing in that section. He informs us that S. B. Parrish bonded the Granite Creek mine on the following terms: They, the present owners, to work the same for the period of 60 days, at the end of which time Parrish pays the owners half of the amount, $36,000, for which said mine—the Monumental—was bought, the balance, $36,000, to be paid at the end of 90 days. The Beagle Bros.' pack train started from this mine last week with rich rock for Umatilla; the rock will be taken to Portland to be tested. The owners of this mine are Messrs. Klopp (two interests), Isaac Nail, W. L. Burnham, Thos. McDonald, Harvey Robbins, W. Moore and Harry McCann. Klopp and Nail have another mine equally as rich as this, situated in the same vicinity. Mr. Thompson and J. B. Gardner, of this city, started for Granite mining district yesterday morning. Next week we will call the attention of the people of Baker county to the wagon road which should be built to these mines from Baker City.

THE BURNT RIVER MINES.—From Ed. Parker, who has been on a tour of inspection to the Burnt river mines, we gather the following items: The Jasper mine is situated three miles northeast of Weatherby's ranch. The rock Mr. P. examined was very rich. This mine is owned by Judge L. O. Sterns, Wolf. Aucinger and Johnny Halpin. They also own another mine in the same vicinity called the Johnny Halpin. In three weeks time $90 was pounded (in a mortar) out of rock taken from this mine. The Bluna, McCord & Co. mine is situated in the same vicinity.

General News Items.

THE small-pox epidemic is on the decrease.

THE Indian campaign is considered at an end for the season.

THE Icelanders are emigrating from their country as fast as possible.

SOUNDINGS for the channel tunnel to connect England and France will be finished by the end of August. The engineers report that the result is very satisfactory.

NEW YORK city, with a population of about 1,000,000, pays taxes annually to the amount of $32,000,000; $10,000,000 of which is for interest on the city debt alone.

LETTERS from the U. S. fishery reservation on the McCloud river are very discouraging as to the prospect of obtaining a large quantity of eggs or young fish this season.

THE Delaware and Hudson canal company has issued a list of reduced prices for coal. The prices to contractors for coal discharged in carts in New York, per ton of 2,240 pounds, now stand: broken, $4 05; egg, $4.15; stove, $4 65; nut, $4 55. This is equal to about $1 55 per ton off from former rates.

A BANQUET was given in Paris to the independent delegates representing workmen who have just returned from Philadelphia. Des Moulines described their visit and others made speeches. Letters from Victor Hugo and Louis Blanc were read, and resolutions were adopted tendering thanks to their friends in America for the cordial reception given the delegates.

THE COUNSEL of Henry Ward Beecher, in the suit for alleged malicious prosecution, brought by F. D Moulton, have served upon the latter's counsel notice of an application for a change of venue, on the ground that the selection of an impartial jury in Brooklyn is impossible, because of the great division of opinion among those from whom the jury would have to be selected.

BULLION SHIPMENTS.—The bullion shipments of prominent mines since our last issue have been as follows: California, August 28th, $114,600; Leopard, August 29th, $6,200; Con. Imperial, August 26th, 10,000; Arizona, August 27th, $1,827; Northern Belle, August 24th, $7,577; Gen. Thomas, August 24th, $2,082.37; Northern Belle, August 27th, $9,468; Emigrant, August 28th, to date, $13,359; Ophir, August 23d, $44,353; Coso Con., August 24th, $1,250; Comanche, August 23d, $7,794; Con. Virginia has shipped up to August 25th, on August account, $220,653; California has shipped to same time $1,124,782; Ophir, August 25th, $20,030; Ophir, August 29th, $61,009; Chollar, August 27th, $13,936.

IN connection with the new aquarium now approaching completion in New York, will be an apparatus for fish culture, which will have a capacity of hatching from 50,000 to 100,000 trout at a single hatching.

[Continued from Page 161.

hereafter. These locations are about one mile and a half northwesterly from the Champion.

About a mile northwesterly from the Sherman is

Another Fissure Vein,

Also on the western slope of the Apaches, know as the "Lazy Bob"; the Meteor is the first southwesterly extension of the former. The vein at this point is well defined between two walls of syenitic graywacke, stratified, with a dip of 10 deg. to the northwest. The vein is here, where developed, three feet wide; its course is northeasterly and southwesterly, the matrix is principally quartz and brown spar; carrying ore from the surface composed of black sulphide of silver, malachites, siephanite and argentites; first class are worth over $2,000 per ton; second class, from 600 to 1,000 ounces per ton; pay streak about six inches. Specimens from this part are in package No. 3. About two tons of Lazy Bob ore have been sacked ready to be disposed of (at the owner's cabin) for more than three months; but there are no ore buyers in this district even at 50 per cent. discount. The Lazy Bob has a shaft developed 50 feet deep, showing a continuous well defined vein. It has been shut down over a month, with good pay ore in sight, for reasons which I will annex herennto before concluding. The Meteor has a shaft 85 feet deep, with a well defined vein. It was discovered early in February, 1876; it is now shut down. There is not a single break in the vein as yet as far as sunk on. Great credit is due to the owners of these mines for developing them under such terrible disadvantages as they have been laboring under in such short time. The Meteor is below water level, and with only a hide bucket to hoist with little draining if any could be effected. Several tons of ore are lying out on the dump from this mine, which is situated about the center of the mineral belt of this district.

About two miles northwesterly is the highest peak of the Apaches, which is about 1,500 feet above the Richmond basin.

A Spur of Mountains

Somewhat isolated from the Apaches runs westerly about three miles. Its base commences on the southeasterly portion of the Richmond basin. From the lithological combination of the rocks that constitute this spur, I am inclined to classify said spur as belonging to the azoic age on account of primitive granite accompanied with hornblend, being the rocks exposed for several hundred feet in hight along the course of said spur, through which passes several veins, of which the Helen is the most conspicuous. It was discovered February 10th, 1876. Its location is about six hundred feet above the Richmond basin, northeast and southwesterly course, almost a perpendicular vein about eighteen inches to two feet wide between walls of granite of the gray variety. The shaft is now 25 feet deep, with from three to six inches as per samples No. 4, of ore averaging over two thousand dollars per ton, composed of (on the surface) silica, sulphate of baryta, black sulphide of silver, chloride, brittle sulphuret of silver, argentite and malachite, the three last mentioned predominating at the bottom of the shaft.

At the base of this range many varieties of metamorphic rocks crop out at the surface; gneiss, mica-schist, syenite are the most predominating, while the general formation at the Richmond basin is quartzite. Porphyry, feldspar and chlorite in some places figure conspicuously, through which the Richmond vein passes in an easterly and westerly course, through rocks that were contormable to the silurian, thus accounting for the chlorides, bromides and iodides of silver produced by infiltration and decomposition (pseudomorphism) of the primitive minerals in these veins, such as brittle sulphuret of silver and argentite. At the same time the foothills within a mile are composed of limestone, conglomerates and crystallized sandstone, with occasionally some beds of shales of the primordial period. The conglomerates contain pebbles and boulders of quartz and jasper very firmly cemented, of various sizes (some over nine inches in diameter), which undoubtedly are derived in part from the subjacent azoic, and thus show their later origin.

The Richmond Vein

Is traceable for many miles. The first extension east has a shaft which is 25 feet deep, at which point the vein is over six feet wide, showing good mineral ore from the grass roots down, and improving as depth is obtained. Over 10 to 15 tons of ore are piled up close to the shaft (which was taken out of said shaft) that will average from 300 to 500 oz. of silver per ton, while the first-class, if sorted, would be very rich, as has been proved by a few sacks taken from the same, that run over 2,000 oz. Specimens from the Richmond, at the surface croppings and bottom of shaft, are in package No. 5. The ores from this portion of the district can be successfully treated by the chloridizing process, as the amount of base metal is very small.

On the Richmond flat, below the vein a few hundred feet off, is what is known as the Hoo-Doo

Placer Silver Mining Claim,

From which a few tons of silver nuggets have been taken out by stripping the surface ground to the bedrock where the ore is principally found, and in many instances where large deposits of float ore have remained (in statu quo) while the stratum was inundated in salt water, the sulphuret (stephanite) and silver glance has partially decomposed and produced the chloride of silver, not only in the float ore, but has, in many instances, penetrated the seams of the bedrock on which the nuggets have reposed undoubtedly for millions of years. I affirm that if the crystals of the float ore were placed under the microscope and examined by a crystallographer, they would be identified with those of the ore the Helen and Richmond veins contain.

Many scientific (so-called) miners, prospectors and millmen from California, Nevada and other parts, have pronounced the veins of this district surface coyote holes, and have affirmed that the formation is not here to produce true fissure veins. At the same time there was not one among them (that have made the above referred-to assertions) that knew crystallized chloride silver, while in many instances they picked up specimens of bromide and iodide of silver, containing over 30 per cent. of silver, and threw them away as worthless. In their ignorance they classified it as oxide of iron and chromate. I am but a despised pioneer, yet I challenge the accuracy of any man's statement who says that Globe mining district does not contain champion lodes. I have traced many of them upwards of eight miles. Of course where the heaves have been great, the veins are capped over. Notwithstanding this great disadvantage of horizontal strata the veins are so strong as to produce "iron hat" in many places along their courses in a northerly and southwesterly direction. About four miles southwesterly from the Richmond basin the syenite and gneiss again crop out at the surface, in which we have the Blue Bird vein. It is from three to four feet wide, running northeast and southwest, with a dip of 10 deg. from the perpendicular to the northwest. Said vein is traceable at the surface for several locations; it is opened out by a cut about 18 feet deep, and at two points northeast, showing good ore. The specimen forwarded, exhibit No. 6, was taken from a nine-inch streak of ore at the bottom of the cut, 18 feet from the surface. I judge it to be over 2,000 ounces of silver per ton.

There are

Many Other Good Mines

In this vicinity, as the Conquest, (see croppings of quartz and silver glance herewith forwarded and marked No. 7).

The Rhambo, Rescue and several other veins are very familiar to many California men, as they are owned by them. They have already spoken for themselves (the veins) through the rich mineral produced from them. I desire to be understood, that I do not classify any deposit of mineral in limestone as a true fissure; nothing beyond what I have examined is classified herein.

The history of all fissure veins proves that wherever large bodies of rich ore have been found they are certain to recur. I do not hesitate in remarking, as I've proved it by practical experience, that "large, true fissure vein lodes never die out; they are great main arteries of the earth, and are unfathomable by human agency. I know of mines in Mexico (the Veta Madre is worked continuously along its course over ten miles) that have been worked for centuries and are now several thousand feet deep; yet still the lode is going down, even more regularly than when within 500 feet of the surface.

According to Humboldt, a poor Spaniard selected a location upon this great vein or lode, which, up to that time, had remained unprospected. It is now known as the celebrated "Valenciana." After working for a long, long time with no returns, suffering from want and financial embarrassments, like many miners in this district, he came upon a large body of very rich silver ore, from which, from January, 1787, to June, 1791, a period of four years, nearly $15,000,000 were taken out by this poor, half-starved miner; and from being one of the poorest, he came to be one of the richest men in the world at that time. The whole vein, since its discovery, has yielded the fabulous sum of about $800,000,000.

This illustrates the certain

Success of Patience and Perseverance

In the working of mines; and as evidencing the richness of the mineral yield of this region. But a very small portion, however, of this great mineral belt of Globe mining district has yet been explored and prospected for its hidden treasures, and not one vein in 100 is occupied, or has any known owner; while of the mines opened, but few have been more than partially or superficially worked. This latter obstruction is caused by the miners having no market for their ores, and no reduction works in the district. The ores here are all amalgamatiog; there is not sufficient galena in the whole district to smelt one ton of ore per month; while I've lately seen 17 pounds of well squeezed dry amalgam produced by hand in a gold pan and camp-kettle from 20 pounds of bromo-iodides of silver ore. Specimens of several pounds weight of such ore can be seen at camp.

With such showings as the above, who shall say that the fissure veins of Globe mining district are second to any on the continent; and who shall say there are not any number of such mines with which to reward the persevering miner and prudent capitalist? But I advise all, come from whatever part of civilization they may, to bring their provisions and mining supplies with them, for we have a benevolent class of (so called) merchants within 100 miles of this camp, some of whom, at Florence, refused to sell flux to a Mexican smelter (who tendered money in hand) because he was going to use it in Globe mining district to smelt the silver which would not go to Florence. Small towns are capable of holding mighty small people, who are not worthy of the name of men. Such are the supporters of Globe district. They follow the example of their fit companions while swimming across a river—cutting their own throats. What animal does it?

We are indebted to the courtesy of a merchant at Gold City and Pinal creek, for several necessities he furnishes the miners with: Flour, $15 per 100 pounds; (frijoles) beans, $15 per 100 pounds; sugar, 50 cents per pound; coffee, 50 cents per pound; bacon, 50 cents per pound, and several other articles as cheap in proportion. These facts demand the attention of the capitalist, and afford him ample food for calm, deliberate reflection.

"Scientific men, so called, have made stupendous

Mistakes of Judgment,

But they have been surpassed by the mistakes of practical men, so called." The scientific man without practice, and the practical man without science, the honest man without the means and the smart man without honesty have done so much to destroy the mining interests of Globe mining district that the mere fact of its continued existence after such terrible proofs, is proof of its inherent vitality and future prosperity.

The writer has resided several years in Georgetown, Clear Creek county, Colorado, at which place there is competition among ore purchasers; the majority ship the ore to Swansea and Germany. They ship ore as low grade, as 300 ounces per ton; they pay a schedule price per ounce and ship the ors at their own risk. I see no reason why capitalists cannot do the same in Globe mining district. Where the ores are so rich they could ship from this point to San Francisco and get returns as soon or sooner than the former could to England. This would help the miners to develop their property until reduction could be established in the district.

While in Georgetown, Colorado, one day, a miner was seen with a fishing rod and line in hand. The fish-hook was baited with a three cent silver coin. He was jingling it against a justice of the peace's window (whose name was Fish). The 'squire asked him what he was doing. The miner said he was fishing for his (Fish's) soul and thought there was a good chance to catch it with the bait that was on the hook. If some miner of Globe district would try the same experiment on that whale-fish at Florence, who gobbles up all the little sardines that go near him seeking fluxes to smelt silver ores in Globe district, the probabilities are that with similar bait he might be successful.

The 17 pounds of amalgam from 20 pounds of ore heretofore alluded to were retorted to day in my presence, and produced the satisfactory results of $12,000 per ton, estimating silver at $1.18 per ounce. The ore was produced from a cross-course lode in the vicinity of the Sherman, and is owned by Messrs. Griffin & Webb, who worked the 20 pounds of ore referred to. They crushed the ore on a rock with another rock for muller and amalgamated it with the results as heretofore stated as an experiment.

The great success of those who have gone before is still inviting others to follow. An amount of money may here find the most profitable investment, without the prospect of failure.

DESPISED PIONEER.

THE Suisun *Republican* says: It is stated that 100 men can find steady employment by applying to the different stone quarries in Green Valley. If they know anything about quarrying rock they will receive good wages.

THE Sleeper quartz mine, situated at Coon Creek, Baker county, has ceased work. The last clean-up was a failure. This is very disastrous to the mining interests of eastern Oregon.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

SWISS M. CO.—August 25th. Location: Nye Co., Nev. Capital, $500,000. Directors—Bart Groce, Vincent Guscetti, Ambrogio Granini, Louis Twig and Joseph Twig.

CALIFORNIA PAINT CO.—Aug. 25. Object, to manufacture the Averill mixed paint, etc. Capital, $2,000,000. Directors—M. C. Jewell, George F. Belden, O. S. Prick, Tyler Beach and W. P. Bullard.

IDAHO M. & SMELTING CO.—Aug. 29. Location: Soda Mountain, Idaho. Capital, $10,000,000. Directors—P. Hotaling, S. Reinhart, M. Skelly, A. Bocqueraz and N. Dupern.

DELHI M. CO.—Aug. 30. Location: Mariposa Co., Cal. Capital, $5,000,000. Directors—J. Weightman, J. Rockwell, J. P. Mosher and A. H. Yeazell.

MADRAS M. CO.—Aug. 30. Location: Mariposa Co., Cal. Capital, $5,000,000. Directors—J. Weightman, W. Rockwell, E. B. Rogers and J. P. Mosher.

HARD ON THE PUBLISHERS.—Some of our subscribers when called upon by our agents insist that they have sent us notices through (perhaps) a neighbor, postmaster, or a letter, and we have taken no notice their orders, for which they feel hard towards us. Now, we never received such notices without responding to them. *It would be suicidal to our interest to ignore them.* The fact is that it too frequently happens that people misdirect their letters; too frequently forget to put the right (or any other) kind of stamps on their letters; they too often send a copy of the paper to a which may never reach our business office, or if it does reach us, may lack the name of the town and county in which the subscriber lives, in which case we cannot (if we have his name) tell what part of our list to send it, to cross it off or change it, without looking over some 10,000 names. Postmasters and their clerks make omissions and mistakes as well. ☞ When you have business with this office remember postal cards and letter stamps are cheap, and ask no one to do for you which you can well do yourself.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING AUGUST 22D, 1876.

SHARPENING MACHINES.—James O. McLaren and Charles B. Coventry, S. F.

PROCESS ROASTING, SMELTING AND CALCINING ORES.—James Duffy, S. F.

RETORTS FOR DISTILLING MERCURY ORES.—Frederick Gutzkow, S. F.

MINERS' CANDLESTICKS.—Dennis Quinlevin and Robert N. Linebarger, Ukiah, Cal.

SOLDER CUTTING MACHINES.—Ferdinand C. Smith and Charles E. Smith, Portland, Oregon.

STEAM MOVED VALVES FOR ENGINES.—Andrew J. Stevens, Sacramento, Cal.

METHOD OF FORMING EMBANKMENTS.—George Swift and William T. O'Neale, S. F.

TUYERES.—Isaac S. Van Winkle, S. F.

MACHINES FOR REGRIVING AND DRYING SHEETS FROM PRINTING PRESSES.—John D. Yost. S. F.

GAS APPARATUS.—Richard Dean, Virginia City, Nev.

LASTING APPARATUS FOR BOOTS AND SHOES.—David Morey, Watsonville, Cal.

WATER WHEELS.—William H. Rector and Henry C. Black, Santa Rosa, Cal.

LEATHER TAPERING MACHINES.—John Settle of Lebanon and George W Settle, Oakland, Oregon.

SOLDERING FURNACES.—Ferdinand C. Smith and Charles E. Smith, Portland, Oregon.

PUMP VALVES.—Charlotte Thomas, Secramento, Cal., Executrix of William H. Thomas, deceased.

The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

THE chances of the Sultan's recovery diminish daily. The ministers are seriously considering the question of an approaching change in the succession. The eventual successor, Abdul Hamed, has put himself indirectly in communication with the powers, notably Austria, for the purpose of preparing the way for a general understanding on the pending questions.

AMONG the most agreeable and gratifying qualities of OLENN'S SULPHUR SOAP are those which characterize it as an article of the toilet. It softens and smooths the skin, clears it of pimples and discolorations, and makes it look and feel natural. Sold everywhere.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

GENERAL MERCHANDISE.

WHOLESALE, } WEDNESDAY M., Aug. 30, 1875.

BAGS.

Eng. Stand Wht..	12¼@12½		
Neville & Co'a..			
Hand Sewed....	12¼@12½		
24x36.....	—	@	—
21x40.....	—	@	—
Machine do 24x36..	—	@	15½
" " 23x40.	14½	@	—
" " 22x40.	13	@	—
" " 22x36.	11½	@	12
Fionr Sacks ½s ..	9	@	11
" " ¼s.....	6	@	7
" " ⅛s.....	4½	@	5
Hessian Cloth.....	12¼	@	14½
do 45-in.....	10	@	—
do 40-in.....	8¼	@	—
Wool Sacks, ¾ lbs.	45	@	50
do 4"".	50	@	52½
Stand. Grannies...	11½	@	12
single seam no..	—	@	—
Bean Bags.....	7	@	8

CANNED GOODS.

Asst'd Pie Fruits			
in 2¼ lb cans.	2 75	@	3 50
do Table do...3 15		@	4 25
Jams & Jellies 4 25		@	—
Pickles ½ gl..	—	@	3 50
Sardines, qr box	1 65	@	1 90
do hf boxes	3 00	@	—

COAL—Jobbing.

Anetralian, ₹ton	8 75	@	9 00
Coos Bay.....	—	@	9 00
Bellingham Bay..	—	@	9 00
Seattle.....	—	@	9 00
Cumberland.....	14 00	@	16 00
Mt. Diablo.....	5 75	@	7 75
Lehigh.....	—	@	22 00
Liverpool.....	10 00	@	11 00
West Hartley....	—	@	14 00
Scotch.....	9 00	@	10 00
Scranton.....	13 00	@	16 00
Vecocuver's Isl.	10 50	@	2 00
Charcoal, ₹ sack..	75	@	—
Coke, ₹ bbl.....	—	@	60

COFFEE.

Sandwich Island..	—	@	21½
Costa Rica per ₹	22½	@	—
Guatemala.....	—	@	22½
Java.....	—	@	37
Manilla.....	—	@	21½
Ground Coffees...	25	@	—
Chicory.....	27	@	—

FISH.

Sac. Dry Cod. now	—	@	6½
cases.....	6	@	7½
do honeless....	8½	@	10
Eastern Cod.....	8	@	8¾
Salmon in bbls..	7 25	@	—
do ½ bbls	3 75	@	4 00
do 2lb cans..	2 00	@	—
do 1lb cans..	1 35	@	—
do Col. R. ½s..	5 00	@	5 50
Pick. Cod, bbls..	22 00	@	—
do ½ bbls	12 00	@	—
Mack'l, No. 1, ¼ bbls	11 00	@	—
" Extra....	—	@	12 00
" in kits....	1 90	@	2 25
" Ex mess..	3 50	@	4 00
" Ex mess, ½s	—	@	12 00
Pio'd Herr'g, hx..	3 00	@	3 50
Sos. Sm'k'd Her'g	40	@	50

LIME, ETC.

Lime, S'ta Cruz, ₹ bbl.....	2 00	@	2 25
Cement, Rosendale, do.....	2 75	@	3 50
do Portland do	4 75	@	5 50
Plaster, Golden Gate Mills....	3 00	@	3 25
Land Plaster, ₹ ton.....	10 00	@	12 50

MISCELLANEOUS.

Pulu.....	—	@	7½

NAILS.

Assorted size, keg	3 75	@	4 00

OILS.

Pacific Glue Co.			
Neat F't No. 1.	1 00	@	90
Pure.....	—	@	—
Castor Oil, No. 1..	—	@	95
Baker's A A.....	—	@	1 15
Cocoanut.....	—	@	60
Olive Flaml'd..	5 50	@	5 75
do Possel.....	4 75	@	5 00
Palm ₹.....	9	@	—
Linseed, raw....	—	@	62½
do boiled....	—	@	67½
China nut in ca..	65	@	—
Sperm, crude ..	1 60	@	1 65
do bleached..	1 90	@	2 25
Coast Whales ..	47½	@	50
Polar, refined..	—	@	50
Lard.....	—	@	1 20
Oleophine.....	—	@	28
Devoe's Brilt's..	25	@	27
Long Island....	—	@	25
Sneke.....	26	@	27
Kerosene Pet'm	25	@	27½
Barrel kerosene	23	@	25
Olive.....	—	@	3 50
Downer Kerose'e	—	@	37½
Elaine.....	38	@	—
Gas Light & Coal	23	@	25

PAINTS.

Pure White Lead	9¾	@	10¼
Whiting.....	—	@	1¾
Putty.....	4	@	5
Chalk.....	—	@	1½
Paris White.....	—	@	2½
Ochre.....	—	@	3½
Venetian Red...	—	@	3½
Red Lead.....	10	@	11
Litharge.....	10	@	11
Eng. Vermillion	—	@	1 25
Averill Chemical Paint, per gal.			
White & tints.	2 00	@	2 40
Green, Blue & Ch Yellow..	3 00	@	3 50
Light Red....	3 00	@	3 50
Metallic Roof't	30	@	1 60

RICE.

China No. 1....	—	@	6
Hawaiian, ₹ ₹b..	7½	@	7¾
Carolina, ₹ ₹b..	10	@	—

SALT.

Cal. Bay, per ton	10 00	@	14 00
do Common..	5 00	@	7 00
Carmen Island..	12 00	@	15 00
Livernool fine..	22 50	@	25 00

SAP.

Castile ₹ ₹b....	10	@	11¼
Common brands..	4½	@	6
Fancy do ..	7	@	9

CANDLES.

Grant's.....	16	@	16½
Mitchell's....	18	@	20

SPICES.

Olovee ₹ ₹b.....	45	@	47½
Cassia.....	23½	@	26¾
Citron.....	28	@	30
Nutmegs.....	35	@	87½
Whole Pepper...	14¾	@	14¾
Pimento.....	16	@	17½
Gr'nd Allsp'r dz	—	@	1 12
do Cassia do...	—	@	1 50
do Cloves do...	—	@	1 50
do Mnatard do	—	@	1 00
do Ginger do..	—	@	1 00
do Pepper do..	—	@	1 00
do Mace do....	—	@	2 00
Bowen's Pure Ground ₹ ₹b	—	@	50

SUGAR, ETC.

Cal. Cube per ₹b..	—	@	12¾
Chrole A crushed	—	@	12
Powdered.....	—	@	12¼
Fioe ornshed...	—	@	12
Granulated.....	—	@	11½
Golden C.....	—	@	10½
Hawaiian.....	10	@	11
Cal. Syrup in kgs	—	@	62½
Hawaiian Molasses.....	25	@	27½

TEA.

Oolong, Canton, ₹	19	@	25
do Amoy...	28	@	50
do Formoaa	40	@	80
Imperial, Canton	25	@	40
do Pingauey	45	@	90
do Moyune..	50	@	1 00
Ounpo'der, Cant.	75	@	1 00
do Pingauey	50	@	90
do Moyune.	65	@	1 25
Yng Hy., Canton	28	@	40
do Pingauey	40	@	70
do Moyune..	65	@	85
Japan, ½ ohesta, bulk.....	30	@	75
Japan, lacquered hxs, ½ and 5 lbs	45	@	67
Japan do, 3 ₹b hxs	45	@	90
do pl'n bx, 4½ ₹b	35	@	65
do ½ & 1 ₹b paper	30	@	55

TURPENTINE.

Eastern.....	51½	@	55

METALS.

[WHOLESALE.

THURSDAY, M., Aug. 31, 1876.

American Pig Iron, ₹ ton	32 00	@	—
Scotch Pig Iron, ₹ ton	31 50	@	32 00
White Pig, ₹ ton	30 00	@	30 00
Oregon Pig, ₹ ton	31 50	@	32 50
Refined Bar	—	@	4½
Boiler, No. 1 to 4	—	@	5½
Plate, No. 5 to 8	—	@	5½
Sheet, No. 10 to 14	—	@	5½
Sheet, No. 16 to 20	5½	@	—
Sheet, No. 22 to 24	6	@	—
Sheet, No. 26 to 28	6½	@	—
Horse Shoes, per keg	7 00	@	8 50
Nail Rod	10	@	—
Norway Iron	8½	@	9½
Rolled Iron	4	@	8
Other Irons for Blacksmiths, Miners, etc.	—	@	4½

COPPER.—

Copper Tin'd	37	@	40
Sheathing, ₹ ₹b	24	@	40
Sheathing, Yellow	21	@	22½
Sheathing, Old Yellow	19	@	11
Composition Nails	21	@	—
Composition Bolts	24	@	—

STEEL.—English Cast, ₹ ₹b..... 20 @ — 25
Anderson & Woods' ordioary size..... — @ 15
Drill..... — @ 16½
Flat Sar..... — @ 16
Plow Steel..... 8½ @ 9

TIN PLATES.—

10x14 I C Charcoal	11 00	@	—
10x14 I X Charcoal	13 00	@	—
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	24	@	—
Australian	25	@	—

ZINC....By the Cask..... — @ 11
Zinc Sheet 1x3 ft, No. 7 to 10 ₹b..... — @ 11
do do 1x3 ft, No 11 to 14 ..... — @ 11½
do do 8x4 ft, No 8 to 10 ..... — @ 12½
do do 8x4 ft, No 11 to 10 ..... — @ 13
NAILS Assorted sizes..... 3 60 @ 3 75
QUICKSILVER, per ₹b .... 43 @ 45 —

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, Aug. 30, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 91¼ to 91⅝. Silver 5½@5⅝.

GOLD in N. Y. 110@110⅜

GOLD BARS, 880 90. SILVER BARS, 11@21 per cent. discount.

EXCHANGE on N.Y., 50-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, ½ per cent. discount.

LONDON — Consols, 93⅛; Bonds, 102¼

QUICKSILVER in S. F., by the flask, per ₹b. 45c

BOUND VOLUMES of the MINING AND SCIENTIFIC PRESS from Jan. 1st, 1864, are for sale at this office at $5 per volume, two volumes a year. Unbound at $3 per volume.

KUSTEL'S CONCENTRATION OF ORES (of all kinds), including the Chlorination Process for Gold-bearing Sulphurets, Arseniurets, and Gold and Silver Ores generally, with 120 Lithographic Diagrams. 1867. The most complete treatise. Published at this office. Price $5. Postage, 60 cts. extra.

New "T" Rails.

Fifty-five tons, fifty pound, fish bar pattern, Tredegar make; also, 85 tons Erie pattern, Crawsbay make, for sale cheap, or would exchange for old material, by

DANT, W. RICHARDS & CO.,
Iron and Metal Dealers, 88 to 104 Maagin St., N. Y.

Amusements.

WADE'S OPERA HOUSE, Mission Street, near Third. Open every evening with first-class Dramatic Company. Box Office open from 9 A. M. to 10 P. M. Doors open at half past seven. Commence at eight o'clock. TONY DENIER.

CALIFORNIA THEATER, Bush Street, above Kearny. Open every evening with the best Dramatic Company in the United States. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance. Doors open at half past seven. Monday, September 4th, EDWIN BOOTH.

W. T. GARRATT'S

BRASS and BELL FOUNDRY

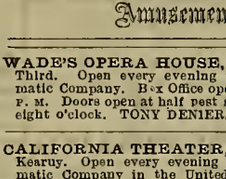
SAN FRANCISCO,

MANUFACTURER AND IMPORTER OF

Church and Steamboat BELLS and GONGS,
BRASS CASTINGS of all kinds,
WATER GATES, GAS GATES,
FIRE HYDRANTS,
DOCK HYDRANTS,
GARDEN HYDRANTS.

A General Assortment of Engineers' Finding.

Hooker's Patent Celebrated



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☞The Best and Most Durable in use. Also, a variety of other

PUMPS

For Mining and Farming Purposes.

ROOT'S BLAST BLOWERS,
For Ventilating Mines and for Smelting Works.

HYDRAULIC PIPES AND NOZZLES,
For Mining Purposes.

Garratt's Improved Journal Metal.

IMPORTER OF

IRON PIPE AND MALLEABLE IRON FITTINGS.

ALL KINDS OF

WORK AND COMPOSITION NAILS,
15-tf AT LOWEST RATES.

Mining and Other Companies.

Persons interested in incorporated eharee will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Antilles Mining Company—Location of

Principal place of business, San Francisco, Cal. NOTICE.—There are delinquent upon the following described stock, on account of assesament, levied on the seventh day of July, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Blow, W W	381	50	$ 10 00
Blow, W W, Trustee	377	2250	450 00
Blow, W W, Trustee	378	375	75 00
Cox, A P, Trustee	394	1125	225 00
Giezler, I & Co, Trustees	373	300	60 00
Hunt, D B	347	100	20 00
Hunt, D B, Trustee	345	450	90 00
Hunt, D B, Trustee	346	125	25 00
Hunt, D B, Trustee	361	150	80 00
Blinkle, Philip	374	300	60 00
Haynes, John W	355	150	30 00
Hotaling, A P, Trustee	356	750	150 00
Hosmer & Bourne, Trustees	363	150	30 00
Hosmer & Bourne, Trustees	364	75	15 00
Hosmer & Bourne, Trustees	379	150	30 00
Kendall, C W	357	150	30 00
Landers, John, Trustee	371	375	75 00
Reeves, C F, Trustee	391	1125	225 00
Reeves, C F, Trustee	392	1125	225 00
Singleton, M A, Trustee	350	150	30 00
Twing, D H & Co, Trustees	375	300	60 00
Turner, John	360	750	150 00
While, T A, Trustee	393	1125	225 00
Wade, A P	348	825	165 00
Wade, A P	395	3000	600 00
Wade, A P, Trustee	367	2000	400 00
Wade, A P, Trustee	368	500	100 00
Wade, A P, Trustee	369	250	50 00
Wade, A P, Trustee	370	250	50 00

And in accordance with law, and an order of the Board of Directors, made on the seventh day of July, 1876, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the company's office, on Friday, the eighth day of September, 1876, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

H. M. MORGAN, Secretary.

Office, 207 Sansome street (third floor), San Francisco, Cal.

Cincinnati Gold and Silver Mining Co.—

Principal place of business, San Francisco, Cal. Location of works, Kelsey Mining District, El Dorado Co., Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 29th day of August, 1876, an assessment, No. 6, of ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 535 California street, San Francisco, Cal

Any stock upon which this assessment shall remain unpaid on the 29th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 16th day of October, 1876, to pay the delinquent assesament, together with costs of advertising and expenses of sale.

WM. SMALL, Secretery.

Office, Room 2½, No. 535 California street, San Francisco, Cal.

Mariposa Land and Mining Company

of Californie. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assesament (No. 6), levied on the sixth day of July, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

COMMON STOCK.

Names.	No. Certificate.	No. Shares.	Amount.
Adems, Thomas	A 4	50	50 00
Brumagim, J H	unissued	750	750 00
Brumagim, J H	426	25	25 00
Brumagim, J H	427	25	25 00
Bound & Co	unissued	300	300 00
Castano & Co, A V	60	100	100 00
Castelano & Co, A V	61	100	100 00
Castelano & Co, A V	65	100	100 00
Collins, C A	1240	100	100 00
Colbron, W T	473	100	100 00
Colbron, W T	474	100	100 00
Dunnell, T L	unissued	25	25 00
Durbrow, Lamont	unissued	100	100 00
Elston, W A	unissued	150	150 00
Haligarten & Co	unissued	50	50 00
Harriott & Noyes	1249	100	100 00
Harriott & Noyes	1251	100	100 00
Hedges, Allen	1161	100	100 00
Kennedy, Geo H	1157	100	100 00
Kendy, Geo H	1158	100	100 00
Rathborne, R Wm	121	100	100 00
Rathborne, R Wm	146	100	100 00
Rathborne, R Wm	156	100	100 00
Rathborne, R Wm	177	100	100 00
Rathborne, R Wm	179	100	100 00
Rathborne, R Wm	280	100	100 00
Rathborne, R Wm	287	100	100 00
Rathborne, R Wm	307	100	100 00
Rathborne, R Wm	318	100	100 00
Rathborne, R Wm	319	100	100 00
Rathborne, R Wm	334	100	100 00
Rathborne, R Wm	335	100	100 00
Rathborne, R Wm	336	100	100 00
Rathborne, R Wm	337	100	100 00
Rathborne, R Wm	338	100	100 00
Rathborne, R Wm	339	100	100 00
Rathborne, R Wm	340	100	100 00
Rathborne, R Wm	343	100	100 00
Rathborne, R Wm	344	100	100 00
Rathborne, R Wm	345	100	100 00
Rathborne, R Wm	381	100	100 00
Ryce, A Thorndyke	1235	100	100 00
Smith, Morris H	unissued	200	200 00
Stone, Geo F	unissued	100	100 00
Stern, Chas	unissued	100	100 00
Taylor, W & J	unissued	100	100 00
Towar Learned	unissued	200	200 00
Thorpe, William	431	1	1 00
Vibbard, Ohauncey	unissued	1	1 00
Van Schaick & Co	unissued	1000	1000 00
Van Schaick & Co	69	100	100 00
Van Schaick & Co	70	100	100 00
Van Schaick & Co	71	100	100 00
White, Morris & Co	unissued	300	300 00
Wollberg & Co	unissued	200	200 00
Weeks, W A	unissued	1500	1500 00
Woodman, Cyrus	unissued	100	100 00
Watson, A W	467	10	10 00
Weil, Henry	1245	100	100 00
Weil, Henry	1245	100	100 00

PREFERRED STOCK.

Ambleman, Edgar M	unissued	200	200 00
Baldwin, J C	A 13	16	16 00
Bloomingdale, M	unissued	202	202 00
Bernhcimer, I & S	unissued	135	135 00
Brumagim, J H	unissued	305	305 00
Block, Henry	A 31	67	67 00
Block, Henry	A 32	63	63 00
Block, Heory	A 33	5	5 00
Block, Henry	A 34	1	1 00
Block, Henry	1243	100	100 00
Block, Henry	1244	100	100 00
Block, Henry	1245	100	100 00
Block, Henry	1246	100	100 00
Block, Henry	1247	100	100 00
Block, Henry	1248	100	100 00
Block, Henry	1249	100	100 00
Block, Henry	1250	100	100 00
Block, Henry	1251	100	100 00
Block, Henry	1252	100	100 00
Block, Henry	1253	100	100 00
Block, Henry	1254	100	100 00
Block, Henry	1255	100	100 00
Block, Henry	1256	100	100 00
Block, Henry	1257	100	100 00
Block, Henry	1258	100	100 00
Block, Henry	1259	100	100 00
Block, Henry	1260	100	100 00
Brumagim, D W	1228	100	100 00
Chesbrough, Mrs Sarah D	unissued	185	135 00
Cranford, Geo R	unissued	100	100 00
Connett, W H	128	100	100 00
Clarke, J P	A 36	50	50 00
Girdlor, Chas A	unissued	100	100 00
Heinnemenn, Payem & Morgan	unissued	70	70 00
Hollins, Harry B	unissued	100	100 00
Harriott & Noyes	A 37	25	25 00
Harriott & Noyes	A 38	100	100 00
Hay, Frank	A 45	26	26 00
Hoyt, Ann A	A 11	14	14 00
Holmes, Philip W	88	100	100 00
Kellogg, Chas	unissued	14	14 00
Monroe & Co, E S	unissued	100	100 00
Moore, Silas H	A 26	28	28 00
Olcott, Horatio L	207	100	100 00
Rathborne, R Wm	175	100	100 00
Rathborne, R Wm	223	100	100 00
Rathborne, R Wm	255	100	100 00
Rathborne, R Wm	256	100	100 00
Rathborne, R Wm	258	100	100 00
Rodwell, C M	1120	100	100 00
Scott, Wm B	1109	100	100 00
Scott, Wm B	1110	100	100 00
Scott, Wm B	1111	100	100 00
Scott, Wm B	1112	100	100 00
Scott, Wm B	1113	100	100 00
Scott, Wm B	1114	100	100 00
Scott, Wm B	1115	100	100 00
Scott, Wm B	1116	100	100 00
Scott, Wm B	1117	100	100 00
Smith, Morris H	unissued	100	100 00
Scott & Co, Wm B	A 9	6	0 00
Scott & Co, Wm B	1102	100	100 00
Scott & Co, Wm B	1103	100	100 00
Scott & Co, Wm B	1104	100	100 00
Scott & Co, Wm B	1105	100	100 00
Scott & Co, Wm B	1106	100	100 00
Scott & Co, Wm B	1107	100	100 00
Scott & Co, Wm B	A 12	45	45 00
Van Schaick & Co	unissued	47	47 00
Woodman, Cyrus	unissued	106	106 00

And in accordance with law, and an order of the Board of Directors, made on the sixth day of July, 1876, so many shares of each parcel of said stock as may be necessary will be sold at public auction, at the office of the Company, room 33, Nevada block, 309 Montgomery street, San Francisco, California, on Saturday, the second day of September, 1870, at the hour of one o'clock, P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

LEANDER LEAVITT, Secretary.

Office, Room 33, Nevada block, 309 Montgomery street, San Francisco, Cal.

Mariposa South Mining Company—Loca-

tion of principal place of business, San Francisco, Cal. Location of works, Spanish Belt Mining District, Nye county, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the eighth day of August, 1876, an assessment, No. 1, of ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, 418 California street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 19th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the seventeenth (17) day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

W. CLARK, Secretary.

Office, Room No. 2, 418 California street, San Francisco, Californoia.

Northerly Five Cent Hill Gravel Mining

Company. Location of principal place of business, San Francisco, Cal. Location of works, El Dorado Co., Cal.

Notice is hereby given, that at a meeting of the Directors, held on the ninth day of August, 1876, an assessment of five cents per share was levied upon the capital stock of the corporation, payable immediately, to the Secretary, at the office of the company, room 33, Merchants' Exchange, California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Monday, the 11th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 28th day of September, 1876, to pay the delinquent assessment, together with costs of advertising and expensea of sale. WARREN BRYANT, Secretary,

Room 33, Merchants' Exchange, San Francisco, Cal.

Sierra Iron Company—Location of prin-

cipal place of business, San Francisco, Cal. Location of works, Sierra and Plumas counties, Cal.

Notice is hereby given, that at a meeting of the Trustees of said company, held on the 18th day of August, 1876, an assessment of $1 per share was levied upon the capital stock of the corporation, payable immediately, in gold coin of the United States, to the Secretary, at the office of the company.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 26th day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

CALEB T. FAY, Secretary.

Office, No. 9 Halleck Block, 318 Sansome street, San Francisco, Cal.

Taylor Mill and Mining Company—Prin-

cipal place of business, city and county of San Francisco. Location of works, Garden Valley Mining District.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 10th day of August, 1876, an assesment of forty (40) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at his office, No. 607 Montgomery street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 13th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the fourth day of October, 1876, to pay the deliquent assessment, together with costs of advertising and expenses of sale.

SAMUEL S. MURPHY, Secretary.

Office, No. 607 Montgomery street, San Francisco, Cal

Tintic Milling and Mining Co.—Notice

to Stockholders. In accordance with a resolution adopted at a meeting of the Trustees of the Tintic Milling and Mining Company on the 14th day of August, 1876, a special meeting of the stockholders of said company is hereby called, the same to be held at the office of the company, No. 310 Sansome street, San Francisco, Cal., on Monday, September 18th, 1876, at two o'clock P. M., to decide upon the proposition to increase the capital stock of said company from $3,000,000, divided into 30,000 shares, being the present capital, to $10,000,000, divided into 100,000 shares.

JOHN F. MILLER,
WM. H. PATTERSON,
O. H. LAORANGE,
N. HAMILTON,
O. C. MILLER,
} Trustees.

San Francisco, Cal., August 14th, 1876.

Union Stone Company of California—

(Sorel Patcot).—Location of principal place of business and works, city and county of San Francisco, Cal.

Notice is hereby given, that at a meeting of the Board of Directors of this company, held on Tuesday, the 22d day of August, 1876, an assessment (No. 4) of 20 cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 19 First street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Tuesday, the 26th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 11th day of October, 1876, to pay delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors.

R. F. KNOX, Secretary.

Office, No. 19 First street, San Francisco, Cal.

Iron and Machine Works.

WM. HAWKINS. T. G. CANTRELL

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Near Howard, - - - SAN FRANCISCO.

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Wm. Norris,	Wm. H. Taylor,	J. B. Haggin,
	James D. Walker.	

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary

24v17-1y

THOS. PENDERGAST. HENRY S. SMITH.

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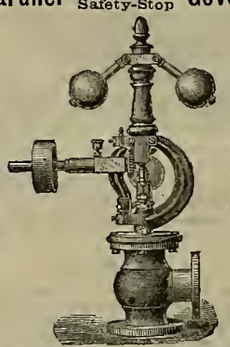

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Wear of shoes and power	1.50
Cost for 15 tons	$44.00
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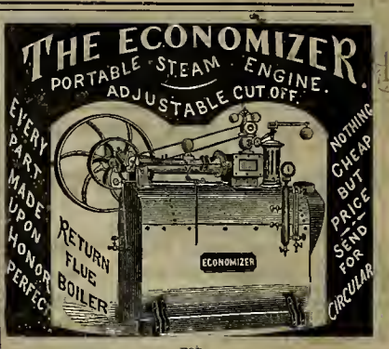

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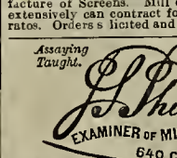

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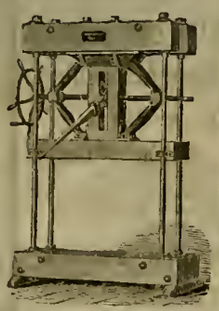

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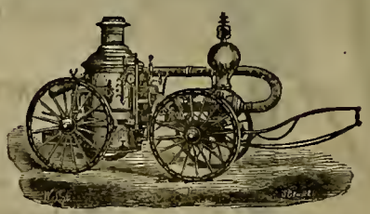

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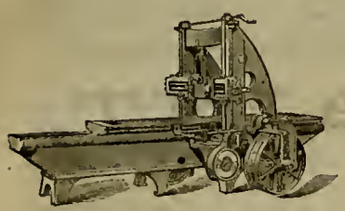

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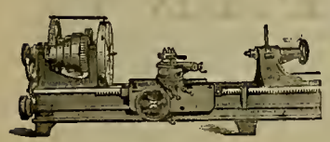

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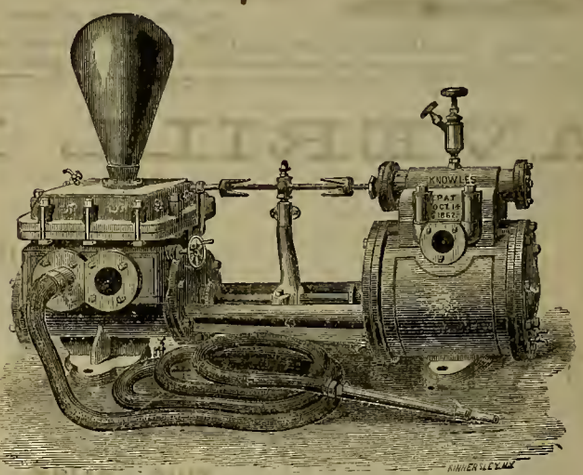

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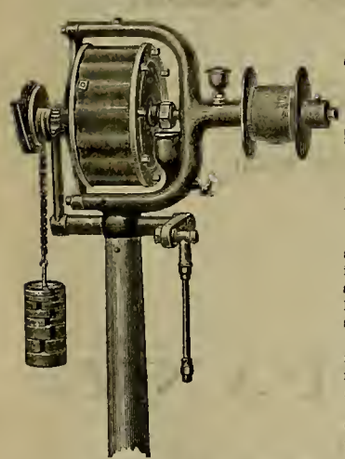

Fig. 1. For Variable Cut-Off Engine.

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The peculiar action of the Governor, which allows the use of a valve of large area, thereby admitting to the Engine cylinder the greatest possible boiler pressure at each stroke of the piston, has produced astonishing results by being attached to old engines, greatly increasing their power or effecting a direct saving of fuel, and in hundreds of instances doing both. In running an engine with the Allen Governor with high or low pressure of steam and with all variations of power, the throttle is opened wide in the morning and remains so until closed at night, thus relieving the engineer from all labor and care except keeping the engine oiled, and giving him a great deal of time for other duties.

Allen's Patent Governor Valve is constructed with a double disc in a tubular frame, and is perfectly balanced, there being no spindle as in the ordinary throttle valve to interfere with its equilibrium. The valve is moved by means of a lever, and is opened and closed by a rocking motion of a steel spindle, which is covered with brass, insuring the greatest possible durability.

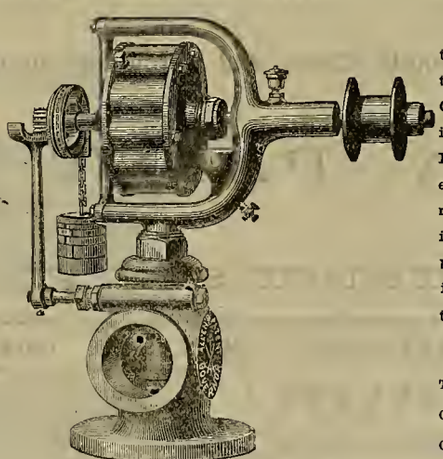

Fig. 2. Allen Governor and Valve.

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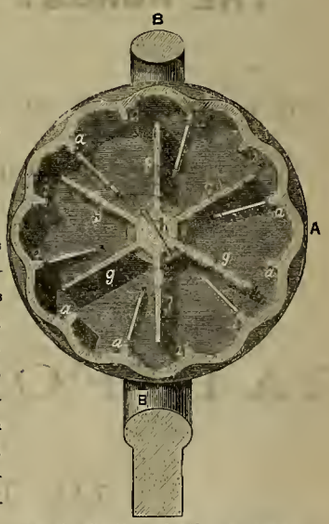

Fig. 3. Section of Allen Governor.

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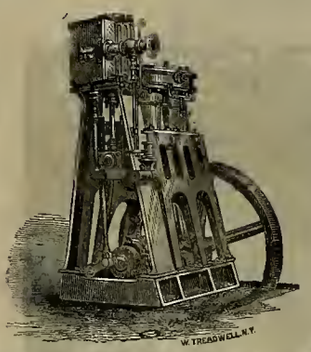

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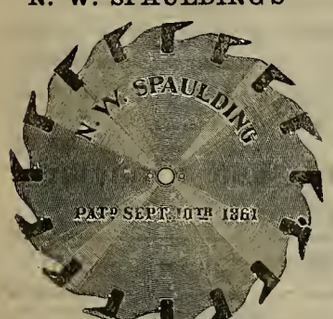

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I have received the patent for my invention in wagon brakes, which you prosecuted for me; patented May 11, 1875—No. 163,046. Thanks to you for your prompt attention to the case; you will hereafter be my attorneys in such cases. I recommend all inventors on the Pacific coast to give you a call, which I think they will never have any cause to regret. Very truly yours,

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BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, SEPTEMBER 9, 1876.

VOLUME XXXIII. Number 11.

Levake's Improved Car Wheel.

Many attempts have hesn made at various timss to improve car wheels and sxles so as to permit ths train to pass cnrves in the road with more ssss and a lsss friction than is the case with the system in vogus. With whssls rigidly fixed to the axles so that thsy must nscessarily tnrn with exsctly the same velocity, there is great friction when rounding a curve, as in that case of conrse the outsids wheel has to travsl over more ground than ths inner one in ths sams space of time. This occasions ths groaning and screeching noise made y a train in rounding a curve. Sinos the wheels are fixed to ths axle, ons can go no fsster than the other snd must slide or slip along the track. As befors stated, msny sttsmpts have besn mads to rsmedy this objection. Most of these have been tried with one loose wheel arranged in some manner, bnt when one wheel ie mounted upon a sleeve which turne npon the axle or when thie wheel is divided and it is attempted to unite the parts by flangee or bolts, they are not safe. The axle has been made in two piecee with a sleeve passing over thie, but theee, with many other devicee of similar character, have hesn discardedby railroad men ae too complicated, extensive or nnsafe.

A devico which bide fair to remedy the defect, however, has heen patented through the MINING AND SCIENTIFIC PRESS Patent Agency, by Aneon S. Levake of 2517 Bueh etreet, thie city, and an engraving descriptive of this improvement is herewith given. The invention coneiets in a novel method of nniting the two parts of a divided car wheel so that the inner and outer parts shall be firmly held together while sufficient motion ie allowed between them to allow them to accommodate themselves to cnrves.

By reference to the cuts, the details of the construction of these wheels may be seen. Figure 1 is a complete wheel, and figure 2 is a section. On the axle of a pair of wheels the rigid wheel is pnt on tight at one end and the inner part *B*, of the other wheel also made tight at the opposite end. The outside of the rim *A*, of this wheel fite closely to the part *B*, but sufficiently easy to allow it to move upon the inner part when the strain of turning a curve is brought upon it.

One or more groovee are made in the meeting facee of the outer and inner part of the wheel. The groove e in the outside part of tbe wheel is made twice tbe depth of the groove in the inner part. A ring, *C*, of eteel or iron is made that will exactly fit the groove on the outer part of the wheel, when forced In with clamps. The inner part of the wheel ie then pushed in far enough to hold tbe ring in its place, when the clamps are taken off and the inner part pushed through to its place; then the ring will spring into the groove of the innér part of the wheel, thereby letting the center of the ring come where the faces of each meet. The ring has grooves cut on each side of it so that Babbitt hrase or any running metal can be run in to fill np the space each eide of tbe ring, thereby decreasing the friction. The place where the parte come together are protected by a flange, *D*, on each eide, which may be cast on to each part. Thie will also gnard against any lateral motion and serve to keep out dust or dirt.

In ordinary running the whole wheel turns ae one piece, and it is only when turning a curve that the outer part revolvee faster than the inner, on account of the increased friction. A model of thie wheel ie now on exhibition at he fair.

THE last mile of track between San Francisco and Los Angeles was completed Tuesday last. A golden epike wae driven with appropriate ceremonies.

THE Chinese government is to have a mint of ite own, and fnll plans for mint operations and coinage have been submitted by the Minister of the United States.

LADIES of the Jewish congregations are raising subscriptione for a new Hebrew orphan asylum, in consequence of a necessity for enlarging the present establishment.

A Successful Home Industry.

Manufacture of Brass Goods and Pumps by W. T. Garratt.

Probably the handsomest display at the Mechanics' fair, withont sxception, of Csliforsia made goods, is ths exhibit of brass ware, pumps, etc., mads hy W. T. Garratt. An elegant large show case against the wall is filled with tsstefully arranged articles, brilliant with their new polish. On the floor in front ars arrangsd the heavier articles msnnfactured, includiug laige bells, valves, nozzlss and pipes, ingot copper, Bsbbitt and Garratt mstal, etc A lsrge line of Hooker pumps is also exhibited, some ten of them of different sizss being at work pnmping watsr. In this sxhibit is an almost sndlsss variety of articles made of brass, such as church and steamboat bells, gongs, stesm whistles, stsam gsugss, indicators, lubricators, low water detectors for steam boilere, eteam cocks and valvee, hydraulic nozzles and pipss, faucets, and in fact all sorts of articles such ae are usually made of brass.

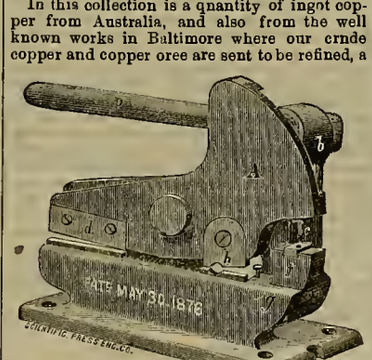
In this collection is a qnantity of ingot copper from Australia, and also from the well known works in Baltimore where our crnde copper and copper oree are sent to be refined, a large portion of which finds its way back to thie establishment for the menufacture of the articles above enumerated. In the same case with the hurnished braes goode are three small bars of refined copper for the alloying of gold and silver, and aleo one square plate of Japanese copper. This latter piece differe entirely in color from the ordinary commercial article, being of a bright scarlet in some places and running into a dark bronze, the former predominating. The bright peculiar color is obtained by a chemical procees which the Japanese have kept as a secret for yeare. However, Mr. John Feix, an attaché of the U. S. branch mint in this city, who ie a refiner of copper for alloying, hae eucceeded in discovering thie procees, or at leaet producee an exactly eimilar color in hie copper.

A prominent feature in thie display is ths collection of Hooker pumps, manufactured by W. T. Garratt. Six of theee pumps in ordinary working drees, ae turned out at the factory, are kept husy throwing streams varying with their capacity. Thsy are calcnlated to throw, the smallest 2,000 gallons, and the largsst 20,000 gallons, per hour. Nssr by thess are four handsomely finished pumps of similar pattsrn, with nicksl-plsted bright work and nozzles, sll in sctivs operation. Bsck of them is a collection of thsse pumps of all sizes, from the littls boiler fssder up, just as they come trom ths shop. These pumps are in use all ovsr this coast, and are so wsll known as to nesd no special description. The working parts are covered and protected, they occupy smsll spscs, will run vsry fast or very slow, and in fsct, their rsputation is snch thst they need no spscial commendation from us. They have bsen tried at sll kinds of work, mining and evsrything elss, and practical experienes over a psriod of years has established thsir superiority.

These pumps are mannfactured at Mr. Garratt's establishment in all sizss and for all kinds of work. He has one large room devoted exclusively to their manufactnre, with all the most approved mechanical appliancee for doing good and rapid work, Dnring a visit there thie week, we saw the first trial of an immense Hooker pump for the Santa Cruz water works. Thie is the lsrgest ever made here, having an 18-inch steam cylinder, 10-inch water cylinder, with 24-inch stroke, tbrowing about eight gallons of water at a stroke. It is to raise water 200 feet, to a reeervoir to supply the city of Santa Cruz. Another large pump is slso being mede there. This ie of tbe same size except that the water cylinder is twelve inches; it is for a mining company. Besides the mining pumps, this establishment manufacture tank pnmps for irrigating, deepwell pumps, double acting euction and force pnmps, and a large number ot others.

Mr. Garratt'e establishment is quite extensive, and is situated in a large three-story brick bnilding on the corner of Fremont and Natoma streets. Not only brass but iron work is done here, all the different parte of the pumps being made in the building. The toole nsed are of the most approved character, and about a hundred men are conetantly employed in the different departments. It wonld be difficult to enumerate all the articles mannfactured, so great ie their vsriety and style, but anything in the brase line can be made there, from a cannon or church bell to the simplest article desired. Hon. W. T. Garratt's connection with manufacturing enterprises en this coaet datee back as far ae 1850, and although during his business career he hae euffered heavily from fire three timee, these reverses did not prevent his carrying on his establishment to its preeent succeesful etandpoint. It is now the largest one of ite kind on thie coast and doing an extensive business in all directions. A single glimpse at the variety of goods displayed at the Pavilion will give an idea of the extent of manufacture, although only a emall portion of the varieties made are exhibited.

Levake's Improved Car Wheel, with Section of Car Wheel for Turning Curves.



VanWinkle's Metal Punch and Cutter.

THE indiscriminate scattering of poisoned grain, to kill squirrels, is resulting in the death of immense numbers of quail and other birds in eeveral eections of the State. May not the remedy be worse than the diseaee?

THE Pennsylvania coal companies have reduced the wages of employeee 10 per cent., and the workmen accept it.

An Improved Machine for Punching and Cutting Metals.

We illustrate on this page an improved machine for pnnching and cntting mstals, recently patentsd through the MINING AND SCIENTIFIC PRESS Patsnt Agency, by Issac S. Van Winkle, of 412 Market strset, in this city. The arrangement of punch and cutters in this machine necsssitates a somewhat psculisr conformation of frame work or snpport—tbat shown in the prssent instance being excsedingly simple, viz: the part *b*, affords a bearing for the shaft of the cam movement and for the swinging head, *A*, and also serves as a guide for the ssme. The extension or block, *f*, has a bsd for the punch *c*, and upon the part *g* are the lower knives or jaws, *d*, of the cutter, of which the end cutsr is designed for cntting sheet metal, and the cutter, *h*, for rods or bars.

The swinging hsad piece, *A*, is preferably receesed for tbe reception of the several operative parte of the cam movement, which consists of an involute or heart-shsped cam, secured npon the shaft and provided with cogs which gear with corresponding teeth npon the eegmental cam gesre pivoted to the ewinging head piece. The coge arranged upon each of these cam shaped snrfaces are in width equal to about one-balf the width of said enrfaces, and of such depth that all pressure comes entirely upon the smooth bearing surfaces of the several cams, and the gearing eerves for traveling purpoees only. The cam segments are arranged to gear with the heart-ehaped cam gear, so ae to travel in opposite directione dnring the movement of said cam, wherehy the pnnch and cutter may be alternately operated at pleasure. The shaft, *a*, hae a square or snitably ehaped end for engaging with an independent weigbted handle, *p*. This handle hae conaiderable weight for the following important purposes: It being desired to operate the punch by a single operator and in casee where considerable force ie required, the handle is fitted on the shaft in an elevated position and by reason of ite weight can be easily depressed and the punch brought down upon the metal.

If it is now desired to raise the punch and close the cutting jaws, the bandle ie taken off and again fitted on to the shaft in a reverse position corresponding to the one aseumed in order to depress the punch.

It will be observed that in the operation of the machine the line of preeenre in the cam movement is on a right line between the axial bearinge of the eegmental cam, by reason of which the shaft may be made of minimum size if desired. Also the preesure being npon plain bearing eurfaces, the cogs are not liable to he hroken. The featnre of tbe handle heing made adjustable for greater power, either made as ebown or with a sleeve eockct npon the cam, and the punch, which may be placed nearer the fnlcrum for heavier work, render the device universal in its application.

GLOBE DISTRICT.—Since the pnblication of the description of Globe district, Arizona, in our last issue, we have additional information of interest from that locality. The two wagon loade of ore shipped to Silver City, N. M., from the northeast part of the district, prodnced such satisfactory results that several parties have come into the district from that place. Williamson'e lot of ore worked $3,986 per ton. Mr. Breman of Silver City visited the district with the view of putting np a stamp mill at the forks of the creek, a little above the junction where the "Blue Bird" intersecte Pinal. The mill ie at Silver City all ready to ehip. He also intende to put up a saw mill in the Pinal mountains at the same time. The mill wae expected on the ground on the 1st inst., and will be running in 60 days. A rich firm from Santa Fe will accompany Mr. Breman with abundant snpplies for the camp. Our informant seems to think that Eastern men have more nerve and enterprise than San Francisco capitalists who have made their money by mining. Globe dietrict is next door neighhor to San Francisco, yet ite rich silver oree and bullion will eoon pass throngh the hands of Eastern men, and the snpplies also. The charges for milling ore at the new mill are expected to bs about $50 per ton.

CORRESPONDENCE.

Mines of Humboldt and Lander Counties, Nevada.

The further one travels in this State the more deeply is hs impressed with its immeuse minersl wesith. If it did not requirs s fortune to turn it into bnllion, the country would soon be so flooded with the precious metals as to render them almost valueless. It will be regnlated by the law of supply and demaud. The greater the cost of prodnction, the less will he extracted. Depreciation in value from an overaupply will have the same effect, or drive the miner to greater economy, or to the invention of cheaper processes. There is no effect without an adequate cause. For reasons best known to the owners, there are a large number of mines found in almost every district, although considered valuable, whioh now lie idle, with merely sufficient work done from time to time to hold them. Some of them have many of the base metals to contend with, the ores being too rebellious to be profitably reduced by the ordinary processes, and the inquiry comes up on every hand: "What has become of the Fryer procesa? Is it a success? Will it work on a large scale?"

Some have asked for information who had had small lots of ore worked to their satisfaction at Grass Valley. These and other anxious inquiries have been relnctsnntly turned away from want of personal knowledge, or any reliable accounts from other sources. If the MINING AND SCIENTIFIO PRESS hsa answered these questions in its editorial columns, it has been overlooked.

Some account of mines of Humboldt county is now resumed. There is a very large ledge of

Argentiferous Galena,

Situated in Eden Valley district, 500 miles from San Francisco, and 25 miles north of Golconda, a station on the C. P. R. R., ou which two locations have heen made, and tested by working process to tne satisfaction of Mr. M. Meader, the principal owner. The vein matter is said to be not less thau 200 feet in width, and easily mined. Ten tons worked at the Humholdt reduction works yielded $38.50 per ton, smsller lots working up to $86, with assays as high as $400. A mill will probably be erected and the ores concentrated and shipped.

The Golconda,

Owned by a New York company, is at present not runniug, although represented as having turned out in the course of two or three years about $100,000. It lies about ten miles south of tne station and on a ledge that can be traced for many miles.

The Golden Eagle, on the same range, has a large ledge, mostly of a rather low grade ore, running from $40 to $80 per ton, and represented to be well thought of by experts.

The Bona Fide company, in the same vicinity, have a three-foot ledge, the ore at the bottom of the shaft giving assays as high as $400 per ton—ore somewhat refractory, needing both mill and furnace. At the south end of this range, 18 miles from Golconda, there are three mines at this time in operation. The ledges are narrow, but contain some very rich ore. The

Agnew & Sterling

Mine averages ouly from eight to ten iuches of good paying ore. With a little assorting it yields about $500 per ton in silver. It is a sulphuret ore that can be milled, aud it is geuerally believed that it pays very good wages. Mr. Picard, on the same ledge, is reported as doing equally well, while his neighbor had done but little the past year owing to loss of pay streaks, after having realized withiu the last few years from $40,000 to $50,000 from the mines.

Some of the

Mines of Lander County

Will next receive attention.

Finding, on arriving at Battle Mountain station, that the Lewis mines were 15 miles away, and no direct communication by public conveyance, on an invitation from Mr. A. Robertson, the accommodating agent of the stage line of Tuller & Clogage, (who, by the way, put passengers through in qnick time and in easy going coaches from this point to Belmont), five minutes' time fonnd us on the road behind a fast team, thoroughly enjoying the trip, the details of which, however pleasant to remember or interesting to recount, might not be very appropriate for a dignified journal such as yours, treating mostly of facts relating to mines, mechanics and science. So let us plunge with the old historians *in medias res*, snd resume the thread of our narrative without further preliminary.

The fine ten-stamp mill of

The Eagle Mining Company

Was soon reached, as slso the mines a short distance above, to find, to our disappointment, that both had recently been shut down. A large body of water had been encountered, and there was a rumor afloat that the superintendent was in your city for the purpose of making arrangements to pnt on the necessary pnmping machinery to handle the water. However this may be, judging from its standing in the vicinity and from soms fscts given below, it csnnot long lis idls.

There is a two and a halt foot vsin of antimonisl silver ors, snd from ststemsnts desmed wholly reliable, some of ths first class worked up to $600 per ton, second class to $223, and unssorted, or just ss it came from ths ledge, from $110 to $136. Unless thsrs sre serious drawbscks (and nons were observed or heard of) such s prospect wonld be considered flsttering in any district.

The Henry Logan,

Further south on the same hslt, had recently passed into the hands of Mr. A. M. Stsrr, of San Francisco. When visited there was a full force of men at work making further developments or taking out ore for reductiou at Winnemncca. The ledge in places was from four to eight feet in width. Being near the surface, portions were somewhat broken up, or barren. Different bodies of ore were pointed out by Mr. Groves, the superintendent, tbat would work from $40 to $100 per ton. Ten tons from one point had yielded as high as $182, and the highest assay heard of reached $3,600 and upward. The Defiance No. 2, an extension in the same belt and locatsd between the Eagle and the Henry Logan, had been opened by a tnnnel 200 feet in length, finding some rich ore, hut not in quantity to pay for extracting; assays reported ss high ss $2,000. Depth is required, as in all the mines of the district, before its value can be determined.

Since last writing some additional facts were obtained in regard to the Jersey. It has been leased to J. B. Meader, of Salt Lake; 26 men are employed; about 70 tons of concentrated ore shipped to Omaha per month. Shaft now down 200 feet, where a good body of ore is said to have been struck. A new whim is being put up for further sinking, the debts are being paid off and all things promise well for a valuable and permsnent mine.

Some encouraging accounts were brought in to Battle Mountain in reference to the mines of Tuscarora, which must be "boiled down a little" on account of accumulating notes.

The Young America

Had found, on 200-foot level, gold ore milling from $125 to $175 per ton. The first extension north gives sample asssys of $139 in gold; 30 tons of ore on dump first sonth, 60 tons out, assaying abont the same.

The Grand Prize

Had had 30 tons worked that yielded $1,300 per ton, with 100 out and much more mined, valned at $1,000 per ton, besides a large body of rich ore in sight. The Ophir, Navajo and Horuet all had similar ore. Messrs. McDonald and Grayson, of San Francisco, had purchased large interests in mines and other property. It is said that it is their intention sooner or later to erect a 20-stamp mill.

A promising tunnel site had been located by Mr. C. S. Perkins of this place and by Messrs. Brown and Hanoum, of Etko, and there was a more than ordinary interest excited in regard to the recent developmeuts. Further facts will be given, after a personal inspection, I hope some time in the fall.

The White & Shiloh Consolidated M. Co.'s

Mines, at Galena, 13 miles from Battle Mountain station, have average veins from eight to 20 feet, dipping east. Shaft on the White, 200 feet, with preparations now making to put up heavy hoisting works to sink 800 feet deeper, three levels in 200-foot shaft running north and one adit level, little stoping having been done. From these, $400,000 worth of ore have been taken out and shipped, the ore assaying $260 per ton silver and about 25 per cent. lead. The adit level, 600 feet in length, will be extended as much further. The character of ore is galens, gray ores, ruby and wire silver. Shiloh shaft, 160 feet and one level, from which 300 tons have been taken, averaging $100 in silver, with 50 per cent. lead. Have good hoisting works on this shaft. There is also here a complete Krom concentrating mill, with capacity for 50 tons per day, costing $60,000. These mines are looked upon as among the best in this locality, and are owned by Mr. John O. Earl, of San Francisco; Mr. S. W. Knowles, Superintendent.

The Tembey Bros.' Mine,

A late discovery, and worked only two months, has been laid open by shaft 60 feet, showing a good large ledge, 20 feet or more in width, trom which 60 tons of argentiferous galena, all good concentrating ore, have been extracted, with average assays from $150 to $200, with some running much higher.

The Revenue Mine,

Owned solely by Capt. Taylor, of Galena, and better known as the "Way Up," from its location on the summit of a high ridge to the west of the village, bas a shaft on the main ledge. A tunnel has been run that cuts the ledge at a depth of 100 feet, and a shaft sunk 40 feet in the main tnunel, exposing a three-foot vein of good milling ore, running from $60 to $80. The mine has been further prospected by four different levels, all showing the same width of vein and the same promising ore.

The Butle,

Owned by Mr. J. A. Blossom, of Battle Monntain, an old claim that paid the first owners well, is now rnn under lease by Mr. W. A. Goodwin, of Galena, with good prospects so far as tested. He is preparing to concentrate the ores as fast as taken from mine before shipping; is not running on the chlorides, but giving his attentiou to the black sulphurets and argentiferous galeua, and thinks, from his knowlsdge of ths ores in this district, he will sventually be sble to mske it pay. Hs clsaus the ore of all the gsngue, blends or black jack snd iron by means of a cheap mods of concentrstion, first met with here, in order to save freight in shipping.

His method is similsr in some respects to thst of the Copper Canyon mines, which sre opersted by machinery instead of hy hand, and on a much grander scale, and the ssme as that adopted in the

Small Experimental Works

Put up at Galena by Mr. John Rsndohr, with the view of proving to the miners thst he con'd not only work smsll lots of rich ore to great advantage, bnt make use of his screenings at an outlay not to exceed $75, separating about two tons per day with the aid of one man. The principle of this jigging process is both simple and heautiful, in full sccord with the laws of natural science.

By means of a plunger, worked by a lever, the ores are forced upward and held in suspension by the water long enough for the heavier ore to get the start of the lighter in the race, thus forming separate layers, and in the order of their specific gravity.

The Battle Mountain Mining Company.

The mines of this compauy in Copper canyon, three miles south of Galena, have been worked for seven or eight years, producing copper ore of very rich quality in red oxides, greeu and blue carbonates snd oopper glance. There are three main workiog shafts, 113, 135 and 400 feet respectively, and drifts have been extended from 100 to 600 feet, from whioh and the stopes, betweeu 4,000 and 5,000 tons of ore ranging from 17 to 47 per cent. have been extracted and sold, the ore gradnally improving to the lowest levels. At the foot of the 400-foot level a large body of water was struck, in consequence of which the compauy are now contemplating the erection of machinery for hoisting and pumping.

During the last six months there have been erected on Willow creek, two and a half miles west of the mine,

Concentrating Works

Run by wet process and alluded to above, which were so novel, ingenious nnd successful in their operation as to call for a somewhat detailed description. It is only the secoud and third class ores that have heen accumulating at the mines, which are manipulated at the mill. The ores are first passed through one of Blake's rock breakers, aud thence fall between Cornish rolls to be further reduced.

Tbey are now carried by a stream of water into perpendicular sizers, containing four screens with meshes of different sizes, the uppermost and largest three-eighths of an inch square, the secord one-fourth of an inch, the third one-eighth and the smallest one-twelfth, the screenings of each falling into a separate hopper snd thence conveyed to jigs especially adapted for their concentration. The jiga are cubical in form, with three compartments, each two feet square, and are operated by a plunger in tbe center, the stroke of which is regulated hy a slotted crank, and on each side are the sieves of the proper dimensions for the separation of the different sizes of ores. Owing to the fact that these ores contain a large amount of slime, an ingenious method has been resorted to for its separation from the ores which would otherwise render their treatment impossible. All the slime is carried into a small sizer, acted on hy a column of water which throws the finer particles into a tank, afterwards to nndergo a huddling process, and the coarser portions into another tank for the purpose of going through a process called in miners' parlance "tying," whilst the finest slimes are operated upon by a mode of manipulation styled "tossiog," with the view of saving any of the rich ore which may have been very finely pulverized. Capt. Nancarrow, one of tbe directors, who had just returned to Battle Mountain, expressed himself as very highly plessed with the mill and all the appliances for sizing, jiggiug and the treatment of ores, the construction and arrangement of which from mill down to the minntest and most interesting details may be said to he due to the supervision of Capt. Jos. Richards, the Superintendent of mine and works. A. C. K.

Battle Mountain, August 29, 1876.

Facts About Peat.

[Written for the PRESS by SAMUEL PURNELL.—No. 4.]

Prices.

In Paris air dried peat is sold for 20 francs ($3.75) per ton; peat charcoal at 100 francs ($18.75), about the same as wood charcoal. In Dublin peat sold at ten shillings ($2.50) per ton. Tbe price of peat charcoal iu Bavaria was 12 shillings nine pence ($3.18) per ton; at the same time coal was selling at 14 shillings five pence per ton. Iu France, on the Loire, peat is worth two francs and 50 centimes ($0.47) per cubic meter. At Ravenna, Ohio, in 1869, compressed peat was sold at the bog for $4 50 per ton. At Lexington, Connecticut, a few years ago, a limited quantity of peat was sold for $5.00 per ton, but the Pennsylvania anthracite coal soon banished it from the market altogether, although the manufacturer claimed to be able to produce his peat for $2.00 per ton. In Germany it appears that the cost of producing one ton of peat is from $1.50 to $1.75. In England the average cost appears to be about $2.00 per ton for dense or compressed peat. The cost of peat in Causda is reported at six shillings six penos ($1.62), but thsy did not seem to be able to sell it for less thsn $4.00 per ton. The cost of making condsnssd peat in Ireland is reported st $2.00 per ton; in Bohemia about the same. Its cost in California could scarcely fsil to be at least $2.50 per ton? In England a complets plant for prsparing, comprssing and air drying by the Clayton process, (sbout as chesp ss any,) 120 tons of pest psr dsy, at a cost of eight shillings ($2.00) per ton, ia estimated to cost about $100,000, and require the services of 130 persons iu all.

Peat for Locomotives.

There is no question among practicsl men that peat is an excellent fuel for locomotives. There is no troublesome amount of clinker or ash from a good article. It burns with hut little smoke, throws no spsrks and steams easily. As in other cases, the real objections hsve been to the cost; coal has been cheap, and peat could not be produced at a competitive price. In some parts of Europe peat is exclusively used for locomotives, snd on this continent some valuable experiments have been msde in this direction. The results vary greatly, ss various kinds and qualities of peat were used nnder widely varying circumstances, and it was slways in competition with the best English or American coals.

Gold and Silver Mining.

[For the PRESS by ALMARIN B. PAUL.]

It is now somewhat refreshing to see that gold and silver mining is assuming a respectable position among our industries, after the traducing it has had in years past, when a man was regarded as a "visionary" fool to stick to it.

The press, with but few exceptions, descanted on the advantages of agricultureal, mechanical or commercial pursuits as the all-profitable and elevating businesses, in fact, gave good cheer to all but mining—that was to be only taken up when there was nothing else to turn your hand to. The press now begin to talk of it as one of the great pursuits, and some begin to class it in point of legitimacy alongside of merchandizing and manufacturing—yes, farming. The fact is, statistics show that legitimate miuing (not speculative rohhery) exceeds in certainty and percentage of success either of the above businesses. The New York *Herald* even admits "that it gives a better showing than can be made by any other of the great indnstries of our country," and further says: "If we apply the test of $4.00 per day for labor, every other industry would have been proved a total failure." This heing so, why is it not a legitimate nsinsss? We of this coast are prosperous as a mining community, while the Atlantic coast is groaning under her financial pressure and crying for our gold.

New York begins to see the point, and aspires to have a share of the gold and silver wealth of the Far West, and is starting out with fresh ardor and more confidence. She will probably now go in more considerately, and without trembling for every dollar she puts out—cowardly dollars never made a cent out of mines. You must calculate well your work beforehand, then go ahead and do it.

Mining to-day, on this coast, is of more importance, in fact, I may say more certain, than in the past, and from the fact that *now* mining is going down into the bowels of the earth 1,000–2,000 feet, and the extracting of 500 to 1,000 tons of ore every 24 hours. It is getting to be a business. We are getting our heads accustomed to bigger works, bigger machinery, and the putting in of "big" money by consolidating capital. We have learned the business, can master it and can teach the whole world the art of profitable mining.

Instead of two men pounding away at one drill we drive our "heads" with machinery, and do one week's work in 24 hours. Instead of black powder to make a pop-gun shot we nse Giant or Hercules, and dislodge tons.

Instead of the slow tramp of stamps of 30 and 40 drops a minute, we drive them np to 90 and 100. Instead of taking from six to eight honra on every ton of silver ore we manipulate it on the run. Instead of handling a few bars monthly we load wagons. In other words, mining with us is a live, bold business, and it only wants coin, vim, brains and experience to make it profitable. Mining, really, is likely soon to enlist the attention of the people of all the States. And why should it not? We have learned the business. It has a life, a speculation, a vitality about it, well suited to the American character.

We have in the Union a vast idle capital, and we have in California, Nevada, Colorado, Arizona, Montana, Oregon, Idaho and Wyoming mineral fields expansive enough to absorb it all and open a mart for all the unemployed labor of every State To give to mining, as a people, the attention the pursuit merits, in less than a quarter of a century we could deluge the world with the precions metals. In California, Nevada, Colorado, Oregon, Montana, Arizona, Idaho and Wyoming large enough deposits exist to enlist all surplus capital and employ all surplus labor if attention was only given in that direction. The New York board will have a great tendency to create this interest. It only wants proper safeguards to protect capital from swindling harpies, and this should be their first great effort. Make adventures profitable—there is more money in it for everybody. The New York board, as I view it, is going to disappoint some of us; instead of playing second fiddle to San Francisco, she will lead us.

SCIENTIFIC PROGRESS.

A Veritable Salamander.

Our English exchanges describe experiments with a fire-proof suit of clothes which would withstand the "burning fiery" furnace itself. *Iron* tells the story of the experiments in a lively style: Mr. Oersberg, a Swedish mechanician, claims to have invented, and Captain Ahlstrom, a compatriot, to have matured and fitted for practical use, the dress which will enable the wearer to dash with impunity into the fiercest fire for the purpose of saving life or property. At the east end of the palace, between the circus and the banqueting hall, huge piles of old dried wood were heaped up, intersected by narrow avenues, and the wood was drenched with petroleum. The consequence was, that the moment a light was applied to the pyre the whole blazed up with a flame so fierce, and seading forth a heat so intense, that the thousands who had gathered aronnd to witness the scene were forced to retire to a more respectful distance. The sun's rays, which had hitherto been inconveniently felt from above, were quite forgotten in the glow which now flamed up from below, and it really seemed as if there was malice in the tongues of fire that spat ont on every current of passing air. Standing 40 yards to the windward of this fierce fire, the heat was all but intolerable, and even the firemen of the palace brigade, under the command ot Captain Archer, the chief officer, were fain to give a wide berth to the burning center. Then it was that Captain Ahlstrom, clad in a dress aot at all unlike that worn by Captain Boyton when he paddled himself across the Straits of Dover, made his appearance on the scene. His costume consisted, so far as it was possible to ascertain, of an overcoat of fustian, covering an inner garment of wool and felt. Between the two skins—so to say—is a network of veins, through which are pumped continuous supplies of air and water, the main air tube before it reaches the body being enclosed in a large water tube, and by such meane kept perfectly cool. The escape for the cool air is through orifices in front of the face, and the current so made forces back the flames, and leaves perfect breathing space. Assnrance was given that the clothing itself is in no way chemically prepared, and is simply protected against the action ot the flames by the torrents of water that pour over the man from head to foot. With the greatest possible nonchalance Captain Ahlstrom walked into and through the fiery furnace, not only free from discomfort, but apparently with enjoyment. After spending about ten minutes in about the warmest climate it is possible to imagine, enveloped so as at times to be hidden by the flames, he carried out a chair which was on fire, sat coolly down upon it, and, to the amusement and astonishment ot the spectators, smoked a cigar.

A New Nickel Ore.

Nickel, which of late is so much in demand, has been found always in the largest quantities in Sweden and Brazil, the yearly production ot the two countries amountiag to about 250,000 pounds. Germany also produces 50,000 to 80,000 pounds yearly.

Considering the present demand for that metal, this yield ie much too small, especially since Germany has determined to replace her smaller coins ot silver and copper by nickel. Much interest is therefore felt in the report of French travelers, as to a deposit of nickel in New Caledonia (Australasia).

The discoverer ot this new source was the French geologist, Jules Garnier, who traveled through the island on behalf of the Department of the Marine and Colonies, as far back as 1864.

Concerning the samples and report sent in by him, the State geologiet ot New South Wales, the American geologist, Dana, and Protessor Livesidge, of Sydney, have published an article and given the new mineral the name of garnierite.

In it the nickel amounts to 16 per cent., and with other analysee as high as 19 per cent. The eparation of the metal from its ore is much simpler than in the ordinary ore—known as nickel speise.

In 1869, Garnier says, "the serpentine, and in general, all the minerals accompanying it, are covered with a beantiful green coating, which ie a silicate of aluminum, niokel and magnesium. Nickel occurs so frequently in this way in the serpentioe minerals of New Caledonia, that one hopee to find a new source ot thie exhausted metal, which in Belgium is worth 12 francs, ($2.40) tor every kilogramme (about 2½ pounds)."

The kilogramme of nickel solle now not for 12, but 40 francs, eo that it can be easily understood that the French Colooial Ministry has many petitions for the control of the mining of niokel in New Caledonia. Some ot these have been accepted, as we hear of the arrivel in France of the first ship load, some 500 tons, of garnierite.

If the present expectations ure verified, the oonsumption of nickel will increaee, und it will be removed from fluctnations in price, which will be established near to that of silver, whoee place it takee and so much resembles.—*From the Chicagoer Handel-Zeitung.*

Shooting-Stars.

As the period for meteor gaziag is approaching, we take trom an article by Prof. C. A. Young, in the *Journal of Chemistry*, the following paragraphs: "Metsors are very small, for the most part, as Newcombe and Herkness have shown, weighiag certainly not more than a few grains, and possibly only some thousnndths of a grain, mero particles or cloudlete of dust, which are traveling in space nuder the same laws as those whioh govern the motione of the planets and comets, and with u velocity as great; varyiag in different cases from eight or 10 milee per second lo 40. The least velooity named is more than 30 timee that of a cannon ball. When they enconnter our atmosphere this velocity is destroyed hy the resistance, aad, according to well-knowu laws, their energy of motion is converted into heat ot intensity sufficient to render them incandescent, and even to dissipate any solid portions in vapor.

It is the amount of light thoy give which furnishes the evidences as to their minuteness, but it would take too loag to show just how the conclnsion is arrived at.

Their numbers are very great. It is found that one observer will on the averuge see from four to six per hour at any given place, and careful experiment shows that a siagle person sees about one-eighth of all that could he aeen by a sufficient number of observers so placed as to watch minutely every portion of the sky. About 40 per hour is therefore a fair average for one station, or nearly 1,000 each day. If the calculation is carried out for tho whole earth, allowing that at eaoh station all are observed which come within a circle 200 miles in diameter, we fiad that the total nnmber which reach the earth daily is about 5,000,000; indeed, Prof. Newcombe, who is perhaps the highest authority on this subject, sets the number still higher, at 7,500,000. A curious fact is that the hourly numbers inorease from sunset to snarise by some 50 per cent. The reason is simply that in the evening we are, so to speak, behind the earth as it rushes through space, and see only those which overtake us; in the morning, on the other hand, we are in front, and see all we meet, as well as those we overtake.

Of course, it meteors are thus perpetually entering the atmoephere, it is natural to ask, What becomes of them? Do they reach the earth? Probably, as impalpable dust. Nordenskiold, dnring the recent arctio expeditioa, examined with great care quantitiee of snow from regions apparently beyond the reach of all human adulteration, and on meltiug the snow and evaporating the water he always found a residue consisting largely of iron and its oxides. This he considers to be of meteorio origin, and it is not improbable, considering how important a constituent iron is found to be in those larger masses, the aerolites, which from time to time fall upon the earth and are collected into our oabinets.

How Spontaneous Combustion may Occur.—In writing upon this subject *Iron* says that, taking the broadest view of the subject, it may be assumed that spontaneous fires—that is to say, the taking fire of substances by the evolution of heat through the chemical activity ot their own elements, without contact ot the burning objects with flame, spark, or heated combustion products, and without human intervention—may originate as follows: First, by the accidental contact of two or more substances that possess the quality of actiog chemically upon each other. Second, by the slow combustion (eremacausis) of porous substances, such as lampblack, charcoal, powder, coal, and especially masses of wool, tow, cotton or rags when saturated with various oils or grease. Third, by the spontaneous ignition of explosive and other compounds. Spontaneous fires originating from the first cause ure of rare ocourrence, for which reason but little importance attaches to it; nevertheless it is safe to assert that its influence is not adequately appreciated, and that it may reasonsbly be held responsible for many fires of which the origin has been called mysterious. From the nature of the case, it may be inferred that most accidents ot this character are confined to the lecture room or laboratory ot the chemist, or to the workshop of the manufacturer of fireworks and chemicals. A few caeee in point may he given. Spontaneous combnstion of this kind can readily be illustrated hy permitting a drop of strong sulphuric acid to drop upon a mixture ot chlorate of potassa and white sugar, or upon caustic baryta, or a drop ot water on a fresh surtace ot metallic potaseium, or a mixture of etrong nitric and sulphuric acids on turpentine, or hy the contact ot phosphorus and chlorate of potasea, or by the evaporation of a solution of phosphorus in bi-sulphide of carbon or other volatile solvent. In eaoh of these oeses, and many more that could be enumerated, the effect produced is quite striking.

Prize Offered by the Netherlands Scientific Society, Haarlem, 1876.—Prizes are offered tor essaye on the following subjects: (1) Complete experimental etudy of the possibility of decomposing water by a Daniel's cell. (2) The meteorological and magnetioal phenomena which can be shown to be in connection with the solar spote. (3) Mixtures of hydrogen and carbouic oxide being ignited in the eudiometer with a quantity of oxygen insufficieot for complete combustion, there remaine a part ot the two combustible gasee, and the quantities ot water and of carbonic dioxide formed are in the ratio of simple multiples of their molecular weights. Repetition and investigation of these experiments is asked for. (4) The society asks that the researches ot Mr. Lockyer concerning the difference of the spectrul rays of calcium he extended to the other elements. (5) Collection of the experiments relating to the existence of *bacteria* in contagious diseases, with original researches. (6) Constraction of a simple instrument tor measuring temperature ahove 350 degrees C. in degrees of the air thermometer. (7) Investigatioa into the influence which the different colors of the spectrum exert on the lower animals.

MECHANICAL PROGRESS.

Fine Points in Mechanism.

It is pleasing to u mechanio to read to what a point of accuracy work can be brought. At the recent exhibition of mechanism at South Kensington museum, Sir Joseph Whitworth described his method for obtaining a true plane and for accurate measurements. The *Colliery Guardian* describes them as follows: He first described his true planes, as a true plane is the source and foundation of all truth in mechanism. The manner of obtaining true planes is thie:—Three hexagonal steel plates are taken, each planed as true as it can be. One is then rubbed against the other with u thin smearing of ronge and grease over each. The slightest elevations take away the coloring matter, and this indicates where the hand tool is to he worked to cut them down. They are thus tested with one aaother and cut down till a perfectly smooth surface is produced. The object of having three plates is that it two only fitted one might be slightly concave and one convex. Thie cannot be the case with three. Every plate ie now made with three points of snepension instead of two, as with two hendles it has been found that perceptible alterations occur. So true ere the surfacee produced that when one plate was put on another it was seen to glide about as if it were floating, aad when one was dropped on another a "cushion" of air deadened the metallic sound, while when once the air was squeezed out the contact was so close that the lower adhered to the upper when it was raised. Then was shown the workshop measuring machine tor making difference geuges from correct cylindrical stsndards of size. With this, Sir Joseph demonstrated how rapidly it was possible for a workman to make the measurement ot 1-40,000th of an inch. This is of importance in making hearings for sxles of the exact size wanted, since heated axles often occur where the exact size is not obtained. Boxes of standard lengths of end measures and of external and internal standard cylinder gauge were shown. Difference gusges, each varying hy .005 inchee in diameter in the series, enable a workman to feel his way, step hy step, so as to make the bore of any number of barrels or tubes exactly the same diameter. The machine tor measuring to the millionth ot an inch was next explained, and with it Sir Joseph made a measnrement of 1-200,000th of an inch. The millionth he did not attempt, because it needed a temperature ot 62 degs., that being the degree at which it was arranged to work. The screw of this machine has 20 threads to the inch, the screw wheel 200 teeth, and the micrometer wheel is divided into 250, thorefore each division represente the one-millionth of an inch. The end of the fast headstock, and the end of the movable headstock, are true planes, parallel to eech other; the ends of the piece to be measured must also be parallel true planes; the feeling piece is a piece of steel about 2-10th thick, its eides being parallel true planes, and is introduced between the standard to be meaaured end the true plane at the end ot the fast headstock, when the proper adjustment has been made, the movement of the miorometer wheel one division—viz., one-millionth of an inch—will cause the feeling piece to be suspended—friction overcoming gravity.

A New War Vessel.—Mr. W. Pollexfen has invented a war vessel which he claims is "unsinkable." He proposes to construct the hull of solid timber in longitudinal and transverse layers alteroately, with the butts properly shitted, bolted together, and all calked watertight; outside he propoee to have 4-inch thick oak or teak planking running fore and aft, and this sheathed with copper or yellow metal plates. In the center of thie eolid arm will be formed compartmente large enough for machinery, coals, ammunition, stores, crew space, etc.; all these compartments, as well as screw shaft tunnel, to he plated with 12-inch thick armor inside, and all passages for suction and diecharge pipce to and from the enginee to be also armor-plated. The necessary provisione are made for protecting the structure from annihilation by fire and from damage by the enemy'e shells. To judge from the drawings contained in the pamphlet there ie much to justify the inventor's belief that "thie type of vessel will be the man-ot-war ot the future."

Underground Telegraph Lines in Paris.—C. Bontemps writee that the total length of the nnderground lines in Parie is 116 miles. Of this total, 35¼ miles are laid in trenchee and 80¾ miles in the eewers. The cables are composed ot one, three, five and seven wires, mostly the latter, and the wiree heve un aggregale length ot 2,266¾ miles.—*Jour. of the Telegraph.*

Points About Grinding.

In the course of an article ooncerniag grindstones, a writer in the *Iron Age* has the following on the action of the stone on the metal: Edge tools ure fitled up hy grinding, very much as a plank would he reduced in thickness wers a lerge plane employed in which were set a hundred or more of very small gouges, each outting a narrow groove. The sharp grit ot ths grindstone being harder thau the iron or steel, cuts very small channels in the surface of the metal, and the revolving disk carries away all the minute particles that are detached by the grit. If we were to examine the surfacs of a tool that has just heen removed from a grindstone, under the lens of a powerful microscope, it would appear, as it were, like the rough surface of a field which has been recently scarified with some implement which formed alternate ridges and furrowe. Hence, as these ridges and furrows run together from both sides at the cutting edge, the newly ground edge seems to he formed ot a system of minute teeth rather than to consist of a smooth edge. For this reason a tool is first ground on a coarse stone, so as to wear the surface of the steel away rapidly. Then it is polished on a wheel of much finer grit, and finally, in order to reduce the serrature as much as possible, a whetstone of the finest grit must be emoloyed. This gives a cutting edge having the smallest possible serration. A razor, for example, does not have a perfect cutting edge, as one may perceive by viewing it through a microscope. and yet the serrations are actually so much smaller than a human hair that the minute teeth out the hair in twain, but when the serrations on the edge of the razor become so battered np and dull that they will not sever a hair or cut a man's heard off, the edge must be honed and strapped until the system of minute teeth will he so much smaller than a hair that several of them will take hold of the smallest hair at once. These suggestione will furnish something ot an idea of the operation in grinding and whetting edge tools. Beginners ure sometimes instructed when grinding edge tools to have the stone revolve toward the cutting odge, and sometimes from it. When the first grinding is being done, this is a matter of indifferenoe, but when the finishing tonches are applied near and at the very edge, a grinder can always complete his task with more accuracy if the periphery of the grindstone revolves toward the cutting edge, as the steel that is worn away will be removed more easily. Whereas, when a stone runs in the opposite direction, the grinder cannot always tell exactly when the side of the tool is fully ground up to the edge. Thie is more especially true when the steel has a rather low or soft temper. The stone when ranniag away from the edge will not sweep away every particle of the metel that hangs as a "feather," but when the stone revolves toward the edge, there will be no "feather edge" to deceive the eye of the grinder.

Hardening Steel with Mercury.—The Indianapolis *Mechanics' Journal* notes that as the hardness of steel depends on the quickness with which it is cooled, there are better materials than water, which besides givss an unequal temper, the steam bubbles developed interruptiag contact: another thing, water is a bad conductor of heat, and if the bubbling and heat did not put it in motion, it would be unfit tor herdening. Water with plenty ot ice in it gives a harder temper; small tools may be stuck into a piece ot ice as jewelers and watchmakers insert them in a piece ot sealing wax. Oil is also used by them as being better than water, as it does not evaporate so easily. The Damascus steel blades are tempered in a strong current of cold air, passing through a narrow slit; this gives a much more uniform and equal temper than water. But the most effective liquid is the only liquid metal—mercury; this being a good oonductor of heat, in fact the very best liquid conductor, and the only cold one, appears to be the best liquid tor hardening steel-cutting tools. The best steel, when forged into shape and hardened with mercnry, will cut almost anything. We have seen articles made from ordinary steel, which have been hardened and tempered into a deep straw color, turned with comperative ease with cutting tools ot good tool-steel hardened in mercury. Beware of inhaling the vapor while hardening.

A Crane to Lift 160 Tons.—An English company has lately made a hydraulic crane for the Italian goverament which will lift 160 tone. The pletform of this crane revolvee upon a livo roller frame of 43 feet diameter. At the rear of the platform ie a counter-weight box, carrying about 350 tons, to counterpoiee not only the weight of the crane itself but of the load, so thut no lifting strain is brought upon the central pivot. The crane stande upon a masonry and concrete pedestal, 20 feet high and 50 feet diameter, the outer wall of which carries the path on which the live roller riug rnns, the center being hollow, and serving as a house for the hoiler and pumps empplying the water-pressure tor working the crane. The work of hiting is done by an inverted hydrnulic press, hung in gimballe, on a system invented by Mr. Rendel. The pumps are arranged to act direct upon the lifting press and turning engine of the crane, without the intervention of an accumulator. The crane ie revolved by an hydranlio rotary engine, which also drives a winch connected with a chain paceed over a pulley on the head of the jib, and available for lifting light loads. The rake is 65 feet, so that the crane commands a very large surface.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to Aug. 17.		1 W'k to Aug. 24.		1 W'k to Aug. 31.		1 W'k to Sept. 7.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	....	....
Advance	....	....	....	....	....	....	....	....
Alpha	49	41½	53	47½	53	51½	55½	45
Alta	3½	3	3	2¾	3	....	....	....
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	....	....	1	....	1	....	1	....
Andes	2½	....	2½	2½	....	....	2½	2¼
Alpe	50c	....	50c	....	50c	....	62½c	50c
Amazon	....	....	....	....	....	....	....	....
Balt'm'e Con	1½	1½	2½	2½	2½	2½	2½	2½
Belcher	25	20½	23¾	....	22½	25	23¾	23½
Belmont	3¾	2½	3¾	....	3¾	2¾	3½	....
Best & Bel	49½	40	50¾	48¾	50½	47¾	51	46½
Buckeye	....	....	....	....	....	....	....	....
Bullion	47	44½	55	49	55	49	47	42
Caledonia	8¾	7¾	8¾	7½	9	8¾	8¾	8
California	61½	55⅞	60	58½	60¼	58	61	58¾
Challenge	4¾	4¼	4¾	....	4¾	4¾	4½	....
Chollar-P'tsi	94	87	97½	94	100	95	96	91
Confidence	19	17¾	19¼	18¼	20	18¼	18	17
Con Imperial	5½	5	5¾	5¼	6¾	5½	5¾	4¾
Con Virginia	54	51¾	54¾	52¾	53¾	52½	53½	51¾
Crown Point	13⅜	11¾	12¾	11	13	12	12⅜	11¾
Coso Con	35c	25c	70c	30c	30c	25c	25c	20c
Daney	....	....	....	....	....	....	....	....
Dayton	....	....	....	5½	5	6	5¼	....
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka(G V)	....	....	....	....	....	....	....	....
Eureka Con	12	11	11½	10¾	12¾	11	13¾	12½
Exchequer	17¾	16½	21	17¾	21	18¾	18	16
Kureka	....	....	....	....	....	....	....	....
Gila	75c	1	75c	1	90c	90c	90c	75c
Globe Con	16c	10c	15c	....	20c	....	17c	15c
Golden Gher	1.10	87½	1.15	....	1.15	1	1¾	1.05
Gould & Cur	15¾	14	14¾	14½	15¾	14½	15¾	14¾
Hale & Nor	11	9½	11	10½	13¾	11¼	12¾	11½
Ida Elimore	....	....	....	....	....	....	....	....
Jefferson	1	15c	1	87½	1	....	90c	....
Julia	9¾	8	9¾	7½	8¾	8¾	8¾	8¾
Justice	24	20¾	28	24½	26½	26	28¾	25½
Jackson	3¾	3	3¾	....	4	3¾	5	3
K K Con	....	....	2¾	1½	3¾	3	3	2¾
Kentuck	13¾	12	13¾	12	14¾	13¾	14	13
Knickerb'k'r	62¾c	....	75c	75c	80c	62½c	50c	....
Konsuth	1½	....	80	75	1	80	1¼	....
Lady Bryan	1¼	80c	1.25	72½c	65c	50c	45c	40c
Lady Wash	3	2½	3	2¾	3½	2¾	4	3½
Leo	....	....	....	....	....	....	....	....
Leopard	12	10½	13¾	10¾	11¾	9¾	9¾	8¾
Leviathan	87½c	75c	....	57½	87½c	71c	....	....
Mahogany	....	....	....	....	....	....	....	....
Mansfield	....	....	22½c	....	25c	....	37½c	22½c
Meadow V'y	50c	37½c	....	25c	1	75c	1	81½c
Mexican	33½	31½	36¾	34½	35¼	33⅜	36	34
Midas	....	....	....	....	....	....	....	....
Mint	25c	....	25c	15c	25c	....	....	....
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	....	....	75c	87½	....	87½c	75c	75c
Niagara	....	....	....	....	....	....	....	....
Northn Belle	25½	20	23½	18¾	23	21¾	21¾	21
New Coso	2½	2	3¼	....	2¾	2	2½	1½
Occidental	3½	....	3¾	....	3¾	3¾	3½	....
Ophir	52¾	47¾	56¾	51½	56¾	53¾	61	57½
Or Gold Hill	....	....	....	....	....	....	....	....
Overman	79	74¼	77½	74¾	77½	75	73	72½
Pacific	....	....	....	....	....	....	....	....
Phil Sheridan	75c	....	50	....	....	....	....	....
Pioche	....	....	....	....	....	....	....	....
Poorman	60c	30	60c	50c	50c	40c	50c	40c
Prospect	6¾	5¾	6	5¾	7	5¾	7¼	2¾
Prussian	....	....	....	....	1	....	....	....
Ray & Ely	8½	8	8¾	....	8¾	8	8¾	5
Rock Island	2	1¾	2	1¾	2	1.70	2	1¾
Rye Patch	....	....	....	....	....	....	....	....
Savage	20	18	20¼	19	22¾	21	21¾	21
Seg Belcher	88	78	....	80c	85	80	....	....
Sierra Nev'da	15¾	14¾	14¾	14½	15¾	14¾	15¾	14¾
Silver Hill	7¾	7½	9½	8¾	11	10	10¾	9¾
Sth Chariot	25c	....	2 c	20c	15c	....	100	6c
Succor	75c	55c	....	....	75c	60c	87½c	62½c
Union Con	14¾	13¾	15	14¾	14¾	15	15	14¾
Utah	23¾	19½	22¾	20	22	20½	....	....
Wells-Fargo	28c	17½c	30c	....	30c	....	25c	....
Woodville	2	1¾	1¾	1½	1¾	1½	1¾	1½
Yel'w Jacket	31¾	29½	24½	22	35¼	30¾	30¼	26½

Sales at S. F. Stock Exchange.

FRIDAY, A. M., SEPT. 1

435 Alpha.....52@52½
405 Best & Belcher...51@50½
180 Bullion.....47
715 Belcher.....49
40 C Point.....12¾@12½
1215 California.....59@59½
210 Confidence.....18
1490 Con Virginia.....54
400 Caledonia.....8¾@8¾
4085 Con Imperial...5¼@5½
240 Exchequer.....17¾@18
1490 Gould & Curry...16@16½
555 Hale & Nor.....12@12¾
185 Julia.....8¾@8¾
390 Justice.....28½@28½
120 Kentuck.....14@13¾
200 Lady Bryan.....15c
2800 Mexican.....36@35½
1770 Overman.....13@12¾
2650 Ophir.....61@58½
305 Sierra Nevada...15@15¼
1455 Savage.....21¾
380 Succor.....60@70c
160 Utah.....22
920 Union.....15@14¾
3155 Yellow Jacket...30@30¼

AFTERNOON SESSION.

50 Alpa.....50c
1105 Alpha.....50½@49½
4 0 Andes.....2½ @2¾
390 Baltimore Con...2¼@2½
10 Belmont.....2¾
100 Belle.....4c
10 Challenge.....4½
500 Co-o Con.....0c
160 Cosmopolitan.....3
800 Cromer.....2½
1650 Con Imperial.....5
755 California.....59½@59
885 Con Virginia...59½@58¾
2180 Eureka Con.....13
50 Exchequer.....17½
370 Gold Chariot.....1.05
200 Gila.....75c
240 Gen Thomas.....2¼@2½
250 Hussey.....7¾@7½
340 Hale & Nor.....11¾@11¾
50 Jefferson.....90c
650 Jackson.....2¼@2½
190 Justice.....27¾@27½
315 Kossuth.....1
60 Knickerbocker.....80c
475 K K Con.....2¾@3
150 Lady Wash.....3¼@3¼
1445 Leopard.....9¾@9¾
195 Manhattan.....18½@18
800 Mansfield.....35@34½c
240 Maryland.....15c
420 Modoc.....5@5½
500 New Coso.....2½@2
200 Northern Belle...21@22
915 Nth Con Va.....13¾@14
75 New York.....75c
300 Occidental.....3¾
915 Ophir.....58½@58
140 Overman.....73@72½
1500 Poorman.....5 @40c
800 Prospect.....7¼@6¾
50 Phoenix.....81½@2
40 Rapid & Ely.....6¾
25 Rock Island.....1¾
245 Savage.....21@21¾
120 Silver Hill.....10¼@10
280 S Barcelona.....4
500 Trojan.....1
730 Union.....14¾@14¾
600 Virginia.....2¾@2¾
50 Ward.....1¾
100 Wells-Fargo.....25c
100 Woodville.....1¾
410 Yellow Jacket...25¾@25½

SATURDAY, A.M., SEPT. 2.

1055 Alpha.....47½@48½
500 Baltimore Con.....2¾
315 Best & Belcher...49½@50

300 Bullion.....47@45
165 Belcher.....23@23¼
255 Caledonia.....8¾
10 Challenge.....4½
110 Confidence.....17¾@18
6 0 Con Virginia...57¾@58¾
100 Chollar.....85@86
260 Crown Point.....12@12½
545 California.....58¾@59
1135 Con Imperial.....4¾@5
1135 Exchequer.....16½@17
935 Eureka Con.....13
400 Globe.....15c
105 Gould & Curry...15¾@16
315 Hale & Nor.....11¾@12
3205 Justice.....24¾@24¾
405 Julia.....8¾@8¾
10 Kentuck.....13
2155 Lady Bryan.....45c
680 Mexican.....34½@35
400 Meadow Valley...9¾@9¾
620 Ophir.....59@59½
110 Overman.....72½@73
100 Raymond & Ely..6¾@6¾
345 Savage.....21
815 Sierra Nevada...15¾
250 Succor.....65@70c
110 Sil Hill.....9¾@9¾
35 Utah.....22
30 Un Con.....14½@14½
1355 Yellow Jacket..28½@28¾

MONDAY, A. M., SEPT. 4.

780 Alpha.....46@45½
150 Andes.....2¾@2¾
145 Best & Bel.....49½@49¾
300 Baltic.....41c
265 Belcher.....23@22½
394 Bullion.....43
240 Baltimore Con...2¾@2½
10 Confidence.....17½
135 Crown Point.....12 @11½
4230 Con Imperial.....5@4¾
1235 California.....58¾@58½
1455 Con Virginia...57¾@58
15 Chollar.....85
100 Cosmopolitan.....35c
100 Cromer.....2¼
385 Exchequer.....16½@16
105 Gould & Curry...15¾@15¾
320 Jackson.....4½@5
100 Jefferson.....90c
910 Leopard.....9¼@9¾
250 Meadow Valley..9¾@9¾
25 Manattan.....18¾
1158 Mexican.....34¼
400 Mansfield.....30c
20 Modoc.....5½
120 Northern Belle...21¾@22
200 Panther.....1
2055 Poorman.....50@45c
20 Seg Belcher.....80
1490 Yellow Jacket...31@30¾

Pacific Board—Latest Sales.

WEDN'SDAY, A. M., SEP. 6.

120 Alpha.....50½@51
100 Andes.....2¾
520 Atlantic.....3¾
30 Best & Bel.....49¾@49¾
65 Belcher.....23@22¾
80 Bullion.....4
80 Baltimore.....2½
6900 City of Rest.....2¾
35.0 Con Imperial.....5¼@5
30 Chollar.....96¾@97
505 Con Virginia.....59½@59¾
270 Crown Point.....12¾@13
420 California.....60½@60¾
150 Cosmopolitan.....35c
200 Dardanelles.....1¼@1½
320 Exchequer.....17¾
925 Eq Justice.....60c@1¼
300 Erie Con.....22½c
355 Gould & Curry.15½@15¾
100 Mansfield.....22½c
175 Mexican.....35¼@35½
200 New Coso.....2
380 Northn Belle.....24
50 Panther.....75c
900 Poorman.....45@40c
60 Raymond & Ely....5½@5
200 South Chariot.....10c
500 S Barcelona.....2½
755 Yellow Jacket..28¼@28¾

WEDN'SDAY, A. M., SEPT. 6

520 Alpha.....50¾@51
210 Andes.....2¾
420 Am Flat.....2½
50 Atlantic.....3
520 Baltimore Con...2½@2¾
350 Belcher.....22¾@22¾
300 Baltic.....45c
245 Best & Belcher.....49
120 Bullion.....47
1050 Con Virginia...59@58¾
220 Crown Point.....12¾@11¾
710 California.....60¾@61
100 Con Imperial.....5@5¼
40 Chollar.....95
20 Confidence.....17
210 Caledonia.....8¾@8¾
200 Cromer.....2¾
285 G & Curry.....15¾@15¾
400 Globe.....17@15c
220 Hale & Nor.....11¾@11¾
140 Julia.....8¾@8¾
150 Justice.....25½@25¾
10 Kentuck.....13¾
350 Lady Bryan.....40@42½c
100 Lady Wash.....3¼@3¼
190 Mexican.....35½@35½
25 Maryland.....15c
140 New York.....62½c
60 North Con Vir.....1¾
615 Ophir.....58¾@58½
1520 Prospect.....5@4¾
495 Savage.....21¾@21¾
175 Silver Hill.....9¾
1515 Sierra Nevada...13½@13¾
100 Succor.....62½c
500 Trojan.....90@87½c
10 Utah.....21¾
3000 Union Con.....15@14¾
245 Wentsville.....1¾@1¾
120 West Belcher.....2½
690 Yellow Jacket...29@28¾

AFTERNOON SESSION.

30 Alps.....62½c
650 Alpha.....51¾@50¾
785 Belmont.....2½@2¾
40 Best & Bel.....48¾@49
185 Bullion.....47@44
210 Con Virginia...58¾@55¾
1260 Con Imperial.....5@5¾
15 California.....60½@60¾
100 Eureka Con.....12½@13
1240 Exchequer.....16¾@16¾
325 Gen Thomas.....2½
450 G Chariot.....1¾
260 Hussey.....6¾c
680 Hale & Nor.....11¾@12
500 Jackson.....4¾@5
1045 Justice.....27@27¾
1610 Leopard.....8¾@9
475 Modoc.....5½
580 Meadow Valley.....9¾
60 Mexican.....34¾
680 Manhattan.....18½@18
520 Northern Belle.24¾@24½
500 New Coso.....1¾@1¾
60 Ophir.....60¾@60¾
50 Overman.....73
410 Prospect.....3¼@3¾
50 Panther.....75c
50 Ray & Ely.....8
1400 South Chariot.....60
270 Crown Point.....11½@11¾
615 Exchequer.....16¾@16¾
650 Caledonia.....8¾@8½
1384 Con Imperial.....4¾@5
50 Confidence.....17¾@17½
400 Cromer.....2½
100 Gould & Curry...15¾@15¾
115 Gould & Curry...15@15¾
260 Hale & Nor.....11¾@11½
575 Julia.....8¾@8¾
2410 Justice.....22@22¾
25 Kentuck.....13
1980 Lady Bryan.....40@45c
500 Leviathan.....85@87½c
355 Mexican.....34½@34¾
200 Mansfield.....21c
40 Maryland.....15c
160 Monumental.....8c
490 New York.....45@75c
440 North Con Va...1¾@1¾
615 Ophir.....59¾@59¾
80 Overman.....72½@73
1770 Prospect.....2¾@3
40 Rock Island.....1¾
220 Savage.....21¾@21¾
125 Sierra Nevada...15@15¾
20 Silver Hill.....9
500 Trojan.....80@85c
83 Utah.....21
1345 Union Con.....14¾@14¾
1430 Y Jacket.....27¾@25

AFTERNOON SESSION.

175 Alps.....50c
525 Alpha.....47½@46½
50 Bullion.....48@48½
495 California.....59¾@58¾
150 Con Virginia...57@57½
300 Coso Con.....20@19c
85 Eureka Con.....12
260 Hale & Nor.....80@75c
490 Gen Thomas.....2¾@2¾
405 Golden Chariot..1.20@1¼
175 Hussey.....70@65c
3340 Justice.....27½@22¾
375 Julia.....8¾
5 K K Con.....2¾
830 Leopard.....8¾@9
50 Meadow Valley.....9¾
100 Manhattan.....16¾@18
1000 Mexican.....34¾@34¾
100 Northern Belle24¾@24½
700 New Coso.....1¾@1¾
460 Ophir.....58¾@58¾
60 Overman.....72½
100 Panther.....87½
3400 Poorman.....50@40c
1435 Prospect.....2¾@3
100 Raymond & Ely...5½@5
170 Savage.....21¾@21¾
1100 Trenton.....5¾@4
300 Trojan.....85@9 c
200 Twin Peaks.....75c
200 Union.....14¾@14¾
100 Wells-Fargo.....28c
150 Ward.....1¾
680 Yellow Jacket..23½@23¾

AFTERNOON SESSION.

100 Alps.....60c

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Shs.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business.
Alps S M Co	Ely Dist	9	50	Aug 6	Sept 12	Oct 4	O D Squire	Stevenson Bldg
Alta S M Co	Washoe	4	50	Aug 17	Sept 21	Oct 13	W H Watson	302 Montgomery st
Amazon Con M Co	Washoe	3	15	Aug 8	Sept 9	Sept 30	J A Reichert	320 Pine st
Calcdonia S M Co	Washoe	18	1 00	Aug 28	Sept 30	Oct 20	R Wegener	414 California st
Con Imperial M Co	Washoe	1	25	July 25	Aug 29	Sept 19	W E Dean	419 California st
Coso Con M Co	Cal	1	15	Aug 30	Oct 7	Oct 28	R H Brown	426 California st
Crown Point S M Co	Washoe	27	1 00	Aug 15	Sept 19	Oct 10	J Newlands	419 California st
Daney M Co	Washoe	2	15	July 26	Aug 31	Sept 21	Geo R Spinney	320 California st
Dardanelles M Co	Washoe	4	1 00	Sep 5	Oct 6	Oct 24	W S Duval	402 Montgomery st
El Dorado South Con M Co	Nev	10	2 00	Aug 2	Sept 6	Sept 26	W Willia	309 Montgomery st
Geddes & Bertrand M & M Co	Nev	1	50	July 24	Sept 22	Oct 23	J A Vance	Stevenson's Bldg
Gila S M Co	Nev	1	25	July 10	Aug 19	Sept 14	W A Knapp	309 Montgomery st
Glasgow G & S M Co	Washoe	3	15	Aug 8	Sept 9	Sept 30	J A Reichert	320 Pine st
Gold Mountain M Co	Cal	6	25	July 25	Aug 26	Sept 28	W Aug Knapp	309 Montgomery st
Gould & Curry M Co	Washoe	27	1 00	Aug 11	Sept 15	Oct 5	A K Durbrow	309 Montgomery st
Hale & Norcross S M Co	Washoe	51	1 00	Aug 8	Sept 12	Oct 3	J F Lightner	Nevada Block
Insurance M Co	Washoe	3	25	Aug 30	Oct 2	Oct 23	M Landers	309 Montgomery st
Kossuth M Co	Nev	7	50	Aug 15	Sept 19	Oct 12	E F Stone	419 California st
Lady Washington M Co	Washoe	8	50	July 26	Aug 29	Sept 16	D L Thomas	419 California st
Meadow Valley M Co	Ely Dist	12	75	July 21	Aug 29	Sept 75	T W Colburn	418 California st
Mexican G & S M Co	Washoe	2	50	Sep 5	Oct 11	Oct 31	C L McCoy	419 California st
Mides G M Co	Washoe	1	20	Aug 15	Sept 18	Oct 5	L Kaplan	Merchants' Ex
Mint G & S M Co	Nev	14	10	Aug 9	Sept 12	Oct 5	D A Jennings	401 California st
Newark S M Co	Ely Dist	13	25	July 26	Sept 1	Sept 23	J A Fairweather	306 Pine st
New York M Co	Washoe	10	25	Aug 1	Oct 21	Oct 21	D L Thomas	419 California st
North Con Virginia M Co	Nev	4	25	July 27	Aug 30	Sept 18	J Mantire	419 California st
Phil Sheridan G & S M Co	Nev	5	50	Aug 9	Sept 11	Oct 2	W R Townsend	Nevada Block
Sierra Nevada S M Co	Nev	45	1 00	Aug 22	Sept 25	Oct 12	W W Stetson	309 Montgomery st
Silver Hill M Co	Washoe	8	1 00	July 19	Aug 22	Sept 12	W E Dean	419 California st
South Chariot M Co	Idaho	18	25	Aug 28	Sep 29	Oct 20	W H McClintock	419 California st
Wells Fargo M Co	Nev	5	15	July 6	Aug 26	Sept 11	O H Bogart	328 Montgomery st
Yellow Jacket M Co	Washoe	23	1 00	July 18	Aug 22	Sept 22	G W Hopkins	Gold Hill

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Accidental Con M Co	Nev	1	10	Aug 21	Sept 24	Oct 12	O Metchke	428 Montgomery st
Alahama M Co	Nev	1	10	Aug 14	Sept 19	Oct 11	W H McClintock	419 California st
Almaden Con Quick M Co		1	30	Aug 15	Sept 25	Oct 16	O C Finkler	628 Montgomery st
Badger M & M Co	Cal	3	10	July 20	Aug 30	Sept 21	O H Spencer	408 California st
Barcelona Con M Co		1	1 00	Aug 21	Sept 25	Oct 16	J P Moore	426 California st
Beach & Paxton G & S M Co	Nev	2	25	Aug 30	Oct 3	Oct 24	M Landers	309 Montgomery st
California Water Co	Cal	18	30	July 27	Aug 30	Sept 18	Geo P Thurston	315 California st
Cincinnati G & S M Co	Cal	6	10	Aug 29	Sept 29	Oct 16	W Small	539 California st
Coquille Black Sand M Co	Oregon	3	20	June 24	Aug 6	Sept 21	F P Reynolds	111½ Leidesdorff st
Defiance M Co	Coeo Dist	Cal	1	50	July 17	Aug 26	Sept 16	W G Hughes	314 Montgomery st
Enterprise Con M Co	Cal		9	25	Aug 12	Sept 18	Oct 10	F W Hermann	418 Kearny st
Excelsior Quicksilver M Co		Nev	5	10	Aug 8	Sept 19	Oct 10	A Hisey	312 Montgomery st
Gen Thomas M & M Co		Nev	2	50	July 29	Sept 1	Sept 21	W Willis	309 Montgomery st
Glencoe Con G M Co		Cal	2	5	Aug 29	Oct 2	Oct 23	L Leavitt	309 Montgomery st
Greene M Co		Cal	2	1 50	Aug 16	Sept 19	Oct 6	W R Townsend	309 Montgomery st
Green Valley M Co		Cal	6	40	July 20	Aug 22	Sept 11	A D Carpenter	608 Clay st
Hayward Con M Co		Nev	1	5	July 24	Aug 27	Sept 18	J Gilroy	27 Drumm st
Kearsarge Con Quick M Co		Cal		15	July 1	Aug 28	Sept 16	Jas McHafee	Stevenson Block
Lee G & S M Co		Washoe	1	5	Aug 10	Sept 16	Oct 5	C J Eaton	Express Bldg
Mariposa South M Co		Nev		10	Aug 19	Sept 19	Oct 17	J W Clark	418 California st
McClellan Con M Co		Nev	1	10	Aug 21	Sept 24	Oct 12	O Metchke	426 Montgomery st
New York Hill M Co	Grass Valley		1	70	July 29	Sept 4	Sept 23	F J Hermann	418 Kearny st
Northerly Five Cent Hill G M Co				75	Aug 9	Sept 11	Sept 28	Warren Bryant	Merchants' Ex
Occidental R. R & M Co		Cal	2	25	July 22	Aug 24	Sept 11	A C Hammond	401 California st
Ocean View Quicksilver M Co		Cal		50	Aug 2	Sept 8	Sept 29	D Buck	Nevada Block
Pina M Co		Arizona	1	10	Aug 28	Sept 4	Sept 14	O H Bogart	328 Montgomery st
Rattlesnake Quick M Co	Sonoma Co		4	5	Aug 4	Sept 5	Sept 25	A Baird	304 California st
San Jose M Co		Nev	12	5 00	June 13	Aug 16	Sept 11	A Corrigan	107 Front st
Santa Rosa G & S M Co		Washoe	22	25	July 16	Aug 22	Sept 14	J M Gillam	113 Davis st
Sierra Con Co		Cal		1 00	Aug 18	Sept 30	Oct 18	Ogden T Fay	318 Sansome st
South Barcelona M Co		Nev	1	1 00	Aug 21	Sept 27	Oct 18	J P Moore	426 California st
Taylor M & M Co	Garden Valley Dist			40	Aug 10	Sept 13	Oct 4	S S Murfey	607 Montgomery st
Vulcan Coal M Co	Santa Cruz Co		1	15	Aug 2	Sept 7	Sept 28	J Greif	638 Washington st
Welch Con Quick M Co		Cal	1	4	Aug 21	Sep 30	Oct 23	J P Forbes	408 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Booth G M Co	Cal	Geo R Spinney	320 California st	Annual	Sept 19
Cole S M Co	Nev	Called by Trustees	Nevada Block	Special	Sept 28
Coquille Black Sand M Co	Ogn	F P Reynolds	111½ Leidesdorff st	Annual	Sept 18
Eureka M & Smelting Co	Nev	A U Ryce	309 California st	Annual	Sept 29
Fresno Quick M Co	Cal	R Wegener	414 California st	Annual	Sept 20
Magna S M Co	Nev	W R Townsend	309 Montgomery st	Annual	Sept 26
Pease M & M Co	Nev	T L Bibbins	402 Kearny st	Annual	Sept 14
Pioche S M Co	Nev	F V Smith	419 California st	Special	Sept 15
Tintic M & M Co	Utah	Called by Trustees	310 Sansome st	Special	Sept 18
West Belcher M Co	Washoe	J P Moore	419 California st	Annual	Sept 11

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	O D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	June 19
California M Co	Washoe	O P Gordon	Nevada Block	2 00	Aug 5
Consolidated Amador	Cal	F E Latham	426 California st	25	Aug 9
Con Gold Hill Quartz M Co	Washoe	R Wegener	414 California st	25	April 17
Coso Virginia M Co	Washoe	A W Havene	Nevada Block	2 00	Sept 11
Comanche M & M Co	Nev	W W Traylor	Nevada Block	25	Aug 25
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	2 00	April 11
Empire M Co	Sierra Co Cal	Chas Collishonn		7 50	Aug 16
Empire S M Co	Washoe	W E Dean	419 California st	25	April 17
Imperial S M Co	Washoe	W E Dean	419 California st	25	April 17
Northern Belle M & M Co		W Willis	309 Montgomery st	1 00	Aug 15
St Patrick M Co	Cal	D F Verdenal	409 California st	30	Mar 10
West Comstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Feb 24

The Mining Share Market.

There are no special features of the Stock Market to report for the past week, bnainesa heing characterized hy a dnllnesa wbich has continned some time. A little spurt occasionally in one atock or another bas given a temporary animation, hut ontaide of thia there is notbing of special interest.

The honanza mines are showing an abnndance of ore of the finest character, and in the California tbe breasta are looking nnnsnally well in all directiona. The ore hodiea on tbe several levels of the Ophir are looking well, and the new eaat body on the 1600-foot level appears to be stea dly improving, while in the Mexican the cbances for finding a paying deposit of ore are conaidered excellent. The Hale and Norcrosa and Savage pumping machinery will soon be draining those mines; tbe new milla of the California and Conaolidated Virginia companiea will soon be in operation, and, in short, there will soon be seen great activity everywhere on the nortbern part of the lead.

At a meeting of tbe Trnstees of the Golden Chariot mining company, tbe old Board of Trnstees resigned and the following gentleman were elected to fill tbeir places: J. W. Shaw, President; John Rosenfeld, Vice-President; R. T. Carroll, Archie Borland, Joseph Clark, Geo. W. Grayson, and J. H. O'Brien. We hope that thia move will he of some advantage to the Idaho mines, wbich have for ao long been in a depressed condition under the management of men who did not seem to care a cent outaide of stock jobbing operationa. Miners remained unpaid and mines were shut down. If the new directory of the leading mine take the proper course, probably it will he of great benefit to the Owyhee minea. We hope ao, at least.

California Board—Latest Sales.

WEDN'SDAY, A. M., SEP. 6.

90 Alpha.....51@52
50 Best & Bel.....49¾
1450 Baltic.....47½@49c
100 Crown Point.....11¾
50 Con Virginia.....59
70 California.....61@60¾
170 Con Imperial.....4.90
100 Cosmopolitan.....30c
400 Coso Con.....20c
450 C Comstock.....60@50c
325 East Crown Pt...65@67½c
10 Exchequer.....17
200 Globe.....11c
40 Gould & Curry.15¾@15¾
445 Julia.....8½@8¾
90 Justice.....25¾@2 5c
100 Knicker.....65c
10 Leopard.....8½
300 Monumental.....6c
135 Mint.....22c
70 Mexican.....35½@35¾
10 North Con Vir.....1½
200 N Carson.....20c
40 Ophir.....60¾@60
300 Panther.....15c
100 Phil Sheridan.....30c
100 Prospect.....5@5½
2300 Rising Star.....30c
100 Rock Island.....1¾
100 Republic.....10c
500 S Chariot.....4@3½c
20 Sierra Nevada.....15½
98 Succor.....60c
500 Superior.....8½@10c
150 Trenton.....8¾@5¾
1600 Trojan.....80@81½c
450 Union Flag.....1@1¼
300 Wells-Fargo.....26@28½c
100 Woodville.....1¾
10 Yellow Jacket.....29½

AFTERNOON SESSION.

10 Alpha.....50
200 Amazon.....58@57½c
20 Alps.....60c
5 Belcher.....22½
Banderet s.....3¾
50 Con Virginia.....60¾
30 Crown Point.....11¾
13 Con Imperial...5.10@5½
400 Coso Con.....21@.0c
15 California.....61
4 4 Globe.....15@10c
100 Gould & Curry...15¾
150 Hussey.....68@70c
500 International.....1
175 Julia.....8½@8¾
750 Jenny Glynn.....2¾@2½
15 Lady Bryan.....40c
1100 Lone Tree.....32@10c
5 M Valley.....81½c
450 Newark.....50c
100 Ophir.....59¾@59¾
100 Phil Sheridan.....38c
2+5 Prospect.....3¾@4¼
10 R & Ely.....5½
1000 Rising Star.....27@25c
100 Superior.....8c
50 Senator.....50c
1400 South Chariot.....40c
150 Trojan.....85c
20 Union.....14½
20 West Belcher.....2½

SEVEN deatbs from yellow fever occurred at Savannah, Georgia, on Friday.

A NUMBER of miners have been killed by the Indians in the Black hills.

GEORGE SMITH, the Assyrian explorer, is dead.

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR.

New Discovery.—Amador *Ledger*, Sept. 2: A new mining claim is about to be opened up adjoining the northern boundary of the Gover mine at Amador City. We are informed by one of the owners that rich rock has been taken from the claim, and that the ledge may be traced for a long distance. A meeting of the owners was held a few days ago, at which it was decided to incorporate and proceed to level work forthwith. The mine has been christened the North Gover, and hopes are entertained that it will eventually compare with its neighbor and namesake in productiveness.

Hubbardsville Mine.—The work of taking out the water is being vigorously prosecuted on this mine. The water line is now more than 100 feet from the surface. It is a curious circumstance that the timbers of the shaft, placed there over 15 years ago, and which have been under water ever since, are in as perfect a state as when put there. Some rock has been taken from the 100-ft level, which looks remarkably well.

Gover Mine.—The Gover mine continues to develop splendidly. In the 500-ft level north, a very rich body of ore has recently been struck, and every part of the mine is looking well. A new shaft is being sunk and new hoisting works erected. A contract has been let to put up a new 20-stamp mill. Everything is in readiness for the foundation. Knight & Co., of Sutter Creek, are doing the work. Appearances favor the conclusion that the Gover will rival the leading mines of the county in the yield of precious metal.

The Phenix Mill.—The work of adding 20 more stamps to the Phenix mill at Plymouth is now being pushed ahead. It will perhaps be two months before the full 80 stamps are in running order.

Struck Rock.—G. W. Kling struck a promising looking ledge the other day on his claim at Amador City, adjoining the Keystone.

CALAVERAS.

Sheep Ranch.—Calaveras *Chronicle*, Sept. 2: The Wallace & Ferguson mine is looking splendidly. Levels have been run east and west from the shaft a distance of 150 feet. Distance between the upper and lower levels, 110 feet. The claim is 1,600 feet in length, the ledge averaging about 20 feet in thickness, and the rock is good for $50 per ton all the way through. A claim 1,600 feet in length, 20 inches wide and 110 feet in depth! Can there be an estimate of the dollars in it? A mine started seven miles in the woods, without money, and yet it has paid all working expenses in addition to building a mill and hoisting works with a 50-horse power engine, sunk a shaft 125 feet below the old works and declared something like $50,000 in dividends. If that showing doesn't evidence a good claim and superior management, then your correspondent is no judge of such matters. W. Knight is superintendent, and, under his mercurial, watchful eye, everything runs like clockwork. The mine is now owned by Ferguson, Wallace & Early.

Gwin Mine.—The Gwin mine shaft is being straightened and repaired, and as the work necessarily interferes with hoisting rock the mills have been temporarily shut down. The shaft has been in an unsatisfactory condition for some time past, and it was thought prudent to take the "kinks" out of it and put it in good shape before the rainy season sets in. The contemplated improvement will probably consume a month or six weeks' time, during which the mills will have to remain idle. The sinking for the 1200-ft level is completed, and when the shaft is fixed the mine will be in better shape than ever before.

Mill at the Duryea Claim.—We learn that the five-stamp battery being put up at the Duryea gravel claim, in Chile gulch, is so nearly completed that it will probably be ready to run the first of next week. As soon as the battery is in readiness, Messrs. Rigney, Kelly & Co., who have contracted to take 5,000 car loads of gravel from the claim, will commence work and operations will be vigorously pushed.

Gravel Mining.—There is no decrease in the activity with which gravel mining operations are conducted in this vicinity, although the water supply is not quite so abundant as it was earlier in the season. All the great hydraulics are in full blast and the tunnel claims, without exception, are running full handed. The prospects are good that there will be an adequate supply of water throughout the entire season, rendering the present year the most prosperous, in a mining point of view, we have experienced for a decade.

Glencoe Con.—Three weeks ago the Glencoe Con. mining company commenced work on their mine in Glencoe district. The property contains two strong parallel veins, some 60 feet apart laterally, each showing heavy croppings of low grade ore of considerable linear extant, and high grade ore near the central portion of the mine. The company are evidently merely testing different portions of the veins with the view of selecting proper localities for future extensive operations. Levels are now being run in an incline some 80 feet in depth, the ore in which will mill $40 per ton.

Upper Country Mining Notes.—We have the following intelligence from mines in the West Point district: Champion, sinking. The shaft is down 320 feet, at which depth the ledge shows larger and richer than at any point near the surface. A crushing of rock from the Champion is now being put through Carlton's mill. Splendid ore is being taken from the Mina Rica. The ledge averages about 20 inches in width, all good milling rock. The prospects of the Mina Rica are encouraging. Active operations are in progress at the Josephine. The new mill belonging to the mine is running and work is being vigorously pushed. There are no better mines than the Josephine. Fields & Co. continue taking excellent ore from their mine. Good rock has lately been discovered in the "Deuteronomy," owned by Reed & Co., and rich ore has also been struck in the "Smokestack," the property of Steger & Co.

EL DORADO.

Work to be Resumed.—El Dorado *Republican*, Aug. 31: Some two weeks ago Mr. Hodge, superintendent of the Kelsey mine, went to San Francisco to report to his company, taking with him a sample of the ore at the present terminus of the tunnel. We learn that the company were so well satisfied that arrangements have been made to continue the tunnel, and work will be resumed next week. The tunnel will continue alongside the ledge, and a cross-cut made about every thirty feet, until it is satisfactorily demonstrated that there is ore enough in sight to warrant the building of a mill, when the ore will be taken out. All who have examined the mine speak highly of it.

FRESNO.

The Mines.—Fresno *Expositor*, Aug. 31: The late reports from the mines are not so favorable as those previously received. We met two or three gentlemen last week, who claimed to be old miners, and who had visited the Centennial mining district. They pronounce the new golconda a fraud. They say that gold does not exist, and if it did, the mines could not be profitably worked.

INYO.

Lee District.—*Coso Mining News*, Sept. 2: On the 31st instant we paid a visit, in company with Prof. Thomas Price, of San Francisco, to Lee district, and found the Emigrant company's mines looking splendidly, the dumps being filled with the finest kind of free milling ore. At present the work is being prosecuted entirely on the Cactus mine, in which there is ore enough in sight to permit the extraction of 15 to 20 tons per day for several months to come. The ore will mill at least $100 per ton, it being entirely free milling, with the exception of a slight percentage of lead, but not sufficient to interfere with its successful working, as is shown by the fact that they are now working it up to 80 and 85 per cent., without roasting. The mine improves in appearance as depth is reached. The ores which have been worked for the last two weeks have averaged nearly $1,50 per ton.

We now go to the mines of the South Emigrant company, which are extensions of the Cactus and Valentine, the two prominent mines of the Emigrant company. We find them sinking on the Twilight, the northwesterly extension of the Cactus, and the shaft has reached a depth of about 20 feet, being sunk directly on the vein, all the way in good quartz and ore exactly like that in the Cactus. On the Revenue mine, the southeasterly extension of the Cactus, the shaft is down to about 40 feet, with the very finest indications of striking ore at no great depth. While the Emigrant company are reducing their ores under the greatest difficulties, still they are turning out bullion to the amount of $500 per day with a five stamp mill, which can only run three days in the week for want of water. A sad mistake was made by somebody in placing the mill where it is—some nine miles from the mine, to which all the ore must be hauled, and from which water must be hauled to the mine. At the time the mill was located at the present point, it was supposed that no other water short of Owen's lake could be had, but subsequent research has disclosed the fact that water for all practical purposes of a 40-stamp mill can be had by piping some a distance of eight miles, with a pressure of over 1,000 feet. There is at least a dead loss to the company of $25 per ton, over and above what it would cost to work the ores at the mine. In other words, a 10-stamp mill could be run constantly for one-third less money than it is at present worked, and only three days in a week. Where the company are now turning out $500 per day with the present mill, with a 10-stamp mill at the mine they could turn out $1,500, and at one-third less expense. An abundance of out pine wood for fuel can be had within three miles of the mines, sufficient for years to come. Our opinion is corroborated by Prof. Price and other experts and geologists, who have examined them, that the mines of Lee district are not liable to give out, but, on the contrary, they are true fissures, carrying quartz for their entire length, the ore chimneys being regular and of great extent. The foundation is very solid, has not been misplaced in the least, and if true veins do not exist in Lee district we do not know where we can look for them.

Furnace Started.—Inyo *Independent*, Sept. 2: The upper Cerro Gordo furnace started up yesterday for another one of its long runs. The lower one is being refitted, or rather rebuilt, with a new water jacket. The new hoisting works are in steady operation, the shaft being at a depth of 351 feet in ore when our informant left.

Lookout District.—Cor. San Joaquin *Argus*, Sept. 2: A project is on foot to carry 500 tons of ore to the Defiance furnaces at Darwin, and see how it works preparatory to erecting furnaces. A mill will hereafter be determined on. The hauling to Darwin will cost $25 per ton, and $30 for smelting. One furnace will reduce 30 tons daily, of say $100 ore, profits $45 per ton, or a total of $1,350 daily. Our various dumps are now loaded by about 1,000 tons of ore that will average over $100 per ton: in other words over $100,000 worth of ore lying loose on the ground.

The Kearsarge.—We see by the Inyo *Independent* of the 26th inst., that the Kearsarge mill, near Independence, after having had a thorough overhauling, is about to start up, and since they have a Bruckner furnace for preparing their ores for proper amalgamation, there is hardly a doubt but that the mill will make a very successful run. The richness of the ores are well known, and it has only been from want of their proper manipulation, heretofore, that this property has not made good returns for the investments made by the owners.

Incorporated.—The Inyo *Independent*, of the 26th, says: The Rex Montes mining company has just been incorporated with a capital of $3,200,000, in 32,000 shares of 100 each. This is the same property Mr. J. H. Holt is at work upon on Kearsarge mountain, and which is developing in the most satisfactory manner. We have not learned the names of the officers or incorporators.

NEVADA.

Sparrow-Hawk.—*Foothill Tidings*, Sept. 2: This mine, situated on Woodpecker ravine, north slope of Osborne hill, is attracting considerable attention of late. It is owned by a lot of working miners of this place, who have been running a tunnel to open it up for some months past under rather discouraging circumstances—the ground having been against them—but within the last few days such indications have been struck as tends to shorten up the faces of all concerned. They all feel good, in fact, and think they have the biggest thing in the country. The tunnel is now in 278 feet and a shaft down about 60 feet. In the bottom of tha shaft the ledge is about four feet thick and the rock is of a peculiar character, showing splendid sulphurets and some gold. The tunnel is expected to cut the ledge within 20 or 25 feet, and will give them nearly 100 feet of well drained "hacks." The boys have stuck to this work nobly and are deserving of the bright reward now apparently assured them.

The Alaska mine, out on the Colfax road, beyond Payne's ranch, is looming up as one of the regulars. A new hoisting works is going up over the shaft, now down something like 80 feet. The size of the building is 24 by 60 feet on the ground, and two engines, one for hoisting and the other for pumping, with all the necessary machinery for a first-class works, are going into place under efficient managers and workmen.

The Idaho is said to be looking splendid at this time, the pay chute having been met in the drift from the 1000-ft level much nearer than was expected, showing either that the chute has taken a turn down or, what is better, that it has swelled out in bonanza form. The old Idaho is surely a good thing to have around, not only on dividend days, to the stockholders, but pay-days, to the workmen. Long may she continue to pan out.

The Franklin, Allison ranch, cut the ledge again this week with their incline—it has flattened off away from the incline for a time, but came down on pitch again—and so much water came in that the large 10-inch pump had to be put in. We understand also that the ledge is very rich at this point.

The Washington mine, out east of the Idaho, has a ledge over three feet thick in the shaft and the rock looking well. Pumping is done by water power, and the company have very encouraging prospects.

The Greenhorn mine is turning out some very satisfactory rock of late. Several loads recently crushed, we understand, gave $23 per load, without counting sulphurets. Another crushing is soon to be heard from.

The Fryer Process.—*Foothill Tidings*, Sept. 2: Fryer, and his last attempt to make his "process" work, down at the Prospect mine, had nearly passed out of mind until yesterday, when we happened to ask a Prospect stockholder how the thing was getting along. "Fryer he hanged," said he, "we are losing all this season and nothing done. If we had put on a mill, Prospect would have been all right now." It seems the octagon stamp-pan-barrel crusher-pulverizer-amalgamator don't perform all it's agreed to and resort is had to stamps some miles away, which makes it slow work testing the "process." Some little change is understood to be necessary in order to make it a success. There is no use that we can see of holding back any longer the expression of our candid opinion of the "process," which is that as a "process" there is nothing in it. The roasting may partially desulphurize the ore, but this kind of roasting, it is our honest conviction, can be better, easier and more cheaply done in a common "draw" limekiln than in the tilt-bottom one of Fryer. The subsequent treatment by Fryer, which was claimed at one time to be the important part of the process, always appeared to us child's play. On the principle that there is room for much improvement in the manipulation of our ores, both silver and gold, more especially those which contain these metals in combination with minerals of a baser nature, we never condemn a "process" at first, as some do on general principles, for we believe some good may come of any experiment, but there certainly can be no use in winking at this attempt any longer, and thereby keeping mine owners in suspense in regard to the kind of works they ought to put up.

PLACER.

Fine Specimens.—Placer *Herald*, Sept. 2: Mr. H. Adams showed us some specimens of quartz gold, a few days ago, worth from $1 to $3 each, which he had recently taken from his claim, located about a mile and a half west of Clipper Gap. The claim is of gravel formation and seemingly there is a vein through it that is very rich. This lead was first struck by Mr. Adams a year ago last winter, when he took out, in a few weeks, over $3,000. Having got this much, he lost the vein, and, not finding it readily, he, for the time being, abandoned operations. A short time ago he concluded to renew the search, and these specimens are evidence of the result.

PLUMAS.

Good Prospects.—Plumas *National*, Sept. 2: The work done on the Smith claims, at Gopher Hill, is developing some valuable ground and proving that the claims are rich as well as extensive. The company owning the claims have run a fine large working tunnel 350 feet in length through the rim-rock. At the end of the tunnel two chutes have been raised into gravel, which at this point is some 12 or 15 feet above the tunnel. The gravel prospects look well and the workmen are now taking out good pay. The main tunnel will, after a while, be run back, and will strike through, as the rock pitches back from the rim. Only six men are at work at present, but the force will be increased as soon as more room can be made for more hands to work to advantage. There is an abundant supply of good gravel for years to come, and the owners can congratulate themselves that they have one of the finest drifting claims in this section.

SIERRA.

Keystone Mine.—*Mountain Messenger*, September 2: This mine, after a series of mishaps, owing principally to the pumping machinery being too light for the work required of it, is now under the management of Geo. W. Hughes, free from water, and the prospects are that considerable good rock will be taken out, the influx of surface water having subsided to such a degree as to warrant the belief that it can be safely handled. Hoisting of ore will be commenced to-day (Friday), and the mill will be started as soon as 250 tons of ore are above ground. A contract for 300 cords of wood has just been completed, and a contract for 400 cords more has been let, which, it is calculated, will run the west drift, hoist the quartz and mill it. To complete this west drift and mill the ore, will take until the 10th or 15th of December, barring accidents. After this work is done, it is proposed to work chimney No. 1, 330 feet above the main tunnel and known as the "Mexican shaft." Should the company decide to put in stronger machinery this winter, about 700 cords more wood will be required. One good thing about this mine is, that when the company has been able to get out rock and work it, it has always paid.

STANISLAUS.

La Grange—Stanislaus *News*, Sept. 1: The La Grange mining company's works are being run to their full capacity. Some 75 men are employed by the company, and the claim is said to be paying large dividends. Some 1,300 inches of water are used in piping and running off the bed of the deep gravel on French hill. Had these mines a little more fall for running off the tailings they would, as at present worked, be the most valuable piece of property in the state.

SOLANO.

St. John Mine.—Vallejo *Chronicle*: The development of the St. John mine still grows more and more favorable. The product of the mine for August will be greater than that for any month previous in the history of the mine. The company have got well along with the erection of a third furnace, which will be larger than either of the present two. The hoisting works are now being run in the chamber at the end of the main tunnel. This chamber is about the largest of any in any mine in the State, being about 90 feet in length, 60 in width and 70 feet high. All of the ore from the upper levels is now chuted down into the main tunnel, from whence it is hauled to the dump and railroaded to the furnace. The railroading costs at the trifling rate of $1.50 per 100 tons, or a cent and a half per ton.

TUOLUMNE.

Soulsby.—Sonora *Democrat*, Sept. 2: Level No. 7 of the Soulsby mine promises first-rate prospects, having only recently been opened at a depth of 520 feet and uncovering very rich rock, containing free gold and sulphurets in varying quantities.

Nevada.

ELY DISTRICT.

Mining Notes.—*Record*, Aug. 27: During the past week $5,643 in bullion has been shipped by Wells, Fargo & Co. The hoisting works of the Meadow Valley having been finished, a trial of them was made on Monday last, the result being very satisfactory. They are now idle. About 40,000 pounds of pumping machinery have arrived during the past week, it being stored at the mine. A small amount of chloriding and other work is in progress. In the Raymond & Ely prospect work on the 8th, 10th and 11th levels is pushed ahead. Chloriding in some of the upper levels is still going on. The Pioche mine is not being worked at present. There is no change to note in the Alps mine, prospect work is continued and pushed on the lower level and the usual work of extracting ore from the upper levels. The mill has been running a portion of the past week, want of water compelling its stoppage occasionally. The Huhn & Hunt mine is now working six men, who are taking out a good quantity of ore. No other mining work of any importance is now in progress around Pioche, and what little is doing at present is not very encouraging, although the promise of the starting of the work on the Meadow Valley pump, if not delayed, will push up matters considerably. The election of the trustees of the Meadow Valley company took place on the 24th inst. The old board was elected with the exception of Robt. Morrow, Jno. P. Kelly being elected in his place.

TUSCARORA DISTRICT.

New Strike.—Pioche *Record*, Aug. 30: Elko and vicinity are just now being excited over a new strike west of Tuscarora, and already several parties have been started out to examine the locality. The lead recently located is situated about 12 miles northwest of Russell & Bradley's cattle camp, on Willow creek, and 14 miles west of Tuscarora. Some of the ore, which was taken from the surface and brought to this place, was assayed, and gave the most flattering returns. Another piece, which was hurried in a forge at Phillips' shop, showed silver in large quantities, the precious metal standing all over it in small globules. The ledge is traceable for about the distance of a mile and a half, and is said to be very regular and contains large amounts of mineral.

WHITE PINE DISTRICT.

Pretty Good Ore.—White Pine *News*, Aug. 30: B. B. Martin, the owner of the Tallahassee mine, on White Pine mountain, has just received returns from a lot of ore he sent over to the Richmond works, at Eureka, which assayed $137 in silver and 40 per cent. lead. The company allowed him $70 per ton for the ore. Mr. Martin was agreeably astonished to find that his ore would furnace so well, for the reason that he was never able to get any such assays from it. He immediately set a force of men at work in the mine, and will take a large amount of ore and send it to the Richmond works. Mr. Martin has been working alone in the mine since last June. Besides the ore sent to the Richmond he has 12 tons on the dump. There are a hundred just such mines as the Tallahassee lying idle in this district for the want of capital to develop them. Notwithstanding this, prospectors and capitalists are hunting all over the country for paying mines, when a small amount of capital will purchase properties here that are partly developed.

"Old Smoky" to Start Up.—After lying idle for three years, this mill is again to be set in motion. The owners of the Stafford mine, consisting of Sam Paul, Tim Shine and Johnny Flynn, have leased the mill property for one year. They are now putting it in repair, and expect to commence crushing rock by the 10th of the present month, and they hope to be able, weather permitting, to run right along all winter. They have some 200 tons of ore on their dump at the mine, and can take out enough daily to keep the mill constantly running. We are pleased to know that the "Old Smoky" is to start up again, for it looks like business, and we have no fears of its being a failure in the hands of practical men, such as now have it in charge. We look upon this as the forerunner of other enterprises that will soon be inaugurated in this district.

OREANA DISTRICT.

Bullion Shipment.—*Silver State*, Aug. 30: A dispatch from Oreana district informs us that the Hurricane company shipped a carload of bullion yesterday and another to-day. Each carload contains over 20 tons of base bullion. The Oreana smelting works, recently purchased by the company, are now in full blast and running splendidly. The first 24 hours' run in one of the furnaces produced five tons of bullion. The company's mines continue to look well, and there are fair prospects of the bullion yield being increased.

PYRAMID DISTRICT.

Favorable News.—Nevada *Journal*, Sept. 2: The news from Pyramid City continues favorable. On Wednesday some fine ore was encountered in the prospecting shaft on the Jones claims. It assays $103 in silver and $5 in gold, a total of $108. The tunnel in the Sep. Monsrch is being pushed and shows favorably daily. The main ledge will soon be struck, and then we shall know the kind of a camp there is out there. A great deal of prospecting is being done in other portions of the district, and altogether the outlook is decidedly encouraging.

WASHOE DISTRICT.

California.—Gold Hill *News*, Aug 31: Daily yield, 700 tons of ore. The ore breasts at all points are showing unusually fine. The ore is rich in every quarter of the mine. The bullion yield, which promised at one time to considerably exceed that of July, will probably reach $2,000,000, the amount having been greatly lessened by some necessary repairs to the mills, and a delay in hoisting ore through the Ophir shaft caused by the breakage of a cable. The usual dividend may be looked for, although a surplus sufficient will be placed in the treasury by that time to more than double it if the management so desire. The south drift on the 1600-ft level has penetrated the ore body a distance of 155 feet, the face of the drift still in the richest character of ore. The new mill will be in complete order for starting up by the 6th of September. The flow of water at the bottom of the C & C. shaft is still very strong, averaging about 45 inches, miners' measurement. The pump has been running at the rate of ten strokes per minute for the past five days, and has about all the work that it can do. Sometimes the flow of water will slacken so as to allow of sinking the shaft from ten to thirty feet, when a crevice will be opened and the workmen again drowned out of the shaft. It will then take three or four days to reduce the water sufficiently to again begin work, when the same operation will be repeated.

Melbourne.—Grading for the hoisting machinery is steadily progressing and will be completed in a day or two more. Commodious hoisting works will shortly be erected, Mr. Heagorty, the superintendent, being instructed by the company to procure machinery sufficiently powerful to sink the shaft to a depth of 1,000 feet immediately. The shaft on which sinking is going steadily on is in ledge matter the entire depth, and some very fine streaks of quartz have been encountered.

Justice.—Daily yield, 110 tons of ore, keeping the four mills steadily running. The ore stopes on the 400, 500 and 600-ft levels are showing finely, and are yielding good ore. East cross-cut No. 1, from the south drift on the 800-ft level, is advancing toward the ledge. Day before yesterday, cross-cut No. 2, from the same drift, cut the ore vein, uncovering some splendid ore, with a good prospect of developing a fine body. This ore is a combination of the ore recently struck in cross-cut No. 3, 100 feet further to the southward. Cross-cut No. 3 is rapidly penetrating the ore vein, which at that point is wide, well defined and ore of a good milling character.

Dayton.—Sinking the main shaft is making fair progress. The flow of water at the bottom is still strong. Cross-cutting the ledge in the southern portion of the mine on the 300-ft level has been commenced in good earnest. Cross-cutting and opening up the ore vein on the 500-ft level will be commenced immediately and driven ahead with all possible vigor. As soon as the development of the ore vein on the 500-ft level is well under way, the same character of work will follow on the 700-ft level, and by the time the 700-ft level is crosscuted, the 900-ft level will be ready to open, so that during the next six months to come some lively work will be done. The machinery has been given a thorough overhauling.

Imperial Con.—Daily yield, 30 tons of ore. The ore stopes from tha north winze, below the 2000-ft level, are being extended both north and south, and are showing well. The north drift on the 2000-ft level is being pushed ahead with all possible vigor to meet and connect with a south drift now being run from the Alpha bullion drift. This connection will give a much better circulation of good air and greatly facilitate the developments on the 2000-ft level.

Con. Virginia.—The repairs are completed and the shaft sunk to the 1550-ft level, where a large and commodious station is being opened. As soon as this station is completed, which will be about the 5th of next month, the extraction of ore will be resumed with a fair prospect of a long and prosperous run. The extraction of ore has been necessarily light, owing to the interruption caused by the shaft repairs, and the want of milling capacity for the past month. This, however, will make no difference in the payment of the regular monthly dividend, as the reserve now in the treasury is amply sufficient to more than pay all expenses and make the usual dividend also. The mine is in fine working condition at every point. The new mill is nearly ready to start up, so that when the extraction of ore is resumed, there will be no impediment to the successful taking out of any desirable amount.

No work is being done in the north drift on the 1700-ft level.

BULLION.—An east cross cut has been started on the 1700-t level to cut the ore vein. The face of this drift is in soft, favorable ledge material, but will have some distance east to run in order to reach the ore vein. The Alpha drift on the 2000-ft level is being again advanced at as rapid a rate as the great heat encountered will admit of.

YELLOW JACKET.—The south drift on the 2040-ft level from the bottom of the south winze is in a distance of 77 feet, the face in dry porphyry, with quartz seams running to the southeast and carrying some ore. The main south drift on the 1 40-ft level, running to connect with the Crown Point mine, has passed through the Kentuck, and is now in the Crown Point ground. Retimbering the south winze between the 1740 and 1940-ft levels is completed.

PHIL. SHERIDAN.—Sinking the shaft is advancing. There is still a considerable flow of water.

OPHIR.—Daily yield, 300 tons of ore. The ore breasts on the 1600-ft level show well and are yielding good ore. The east ore body recently struck on that level is proving much better than it was expected to do when it was first cut. The face of the west cross-cut, 200 feet south of the Mexican line, is in quartz and low grade ore. Sinking the main incline is making good progress.

CROWN POINT.—Sinking the main incline is making good progress and will have but a few feet more to sink to reach the 1800-ft level. The main south drift on the 1700-ft level is rapidly advancing, the face still in quartz and low grade ore. It now has only about 40 feet more to run to reach and connect with the new Belcher air shaft.

LADY WASHINGTON.—The work of easing up the timbering of the shaft, necessitated by the swelling of the ground at some points, is completed, and sinking actively resumed. The bottom is hard quartz material of the most favorable character, and the chances are that an ore body may be encountered before long. Owing to the powerful machinery and ample pumping arrangements, no trouble is experienced in handling what water comes in, and none is anticipated.

JULIA.—Excellent work is being done at all points in the mine. The face of the main south drift on the 1800-ft level is still in h e quartz, with spots of excellent ore. The east drift, on the same level, is also showing some good ore.

WARN.—Sinking the shaft is going ahead six feet per day. The rock in the bottom blasts well and good progress is being made

CHOLLAR-POTOSI.—Daily yield, 100 tons of ore. The ore breasts afford the usual amount of milling ore. Sinking the main incline is going ahead at the rate of two and a half feet per day. Sinking the new combination shaft is also making good headway. The erection of the huge pumping engine and auxiliary machinery is going steadily forward.

SIERRA NEVADA.—A drift east has been started on the 1750-ft level to cut and prospect the ore vein. The quartz body recently developed by the north drifts on the 1500 and 1250-ft levels is showing well

LADY BRYAN.—The surface preparation for the reception of the new and powerful pump machinery is going ahead as u sual. A portion of the machinery has been already shipped.

COSMOPOLITAN.—The main drift north, following the vein, continues in very promising ledge matter, with streaks of good ore. The drifts from the npraise are yielding considerable good ore.

HALE & NORCROSS.—The new pumping machinery will be in complete readiness to steam up and set to work by Saturday next.

UTAH.—Sinking the main shaft is going rapidly ahead. The shaft will soon have attained a depth sufficient for opening a station at the 900 fe level.

SAVAGE.—Putting in the pump and columns in the shaft is nearly finished.

NORTH CARSON.—Good stringers and bunches of ore continue to he met with in sinking below the 250-ft level.

ALTA.—The rock in the bottom of the shaft blasts well, and the flow of water gives little or no trouble whatever.

AMAZON & GLASGOW.—The new pumping machinery will he on the ground ready for erection by to-morrow. Much better progress can then be made with the prospecting.

NORTH CON. VIRGINIA.—The pumps are all in place ready to start up, down to the 840-ft level. The pump columns and sinking pump are in place ready for work, down to the 900-ft level.

GOULD & CURRY.—The work on the main shaft is still the feature of the operations in the mine; it is steadily progressing. Sinking the combination winze on the Savage line is making fair progress. It is now down 300 feet, the bottom in hard blasting rock.

BALTIMORE & AMERICAN FLAT.—The past week has been mostly consumed in necessary repairs to the boilers, so that but little work has been done in the mine.

TROJAN.—Sinking the main shaft is making excellent headway, the bottom being soft clay, quartz and ore mixed. The air winze below the 180-ft level has been sunk a distance of 35 feet, the entire distance through good milling ore. The dump is being rapidly filled up with ore taken from the winze.

SILVER HILL.—The station at the 650-ft level is completed. As soon as the water tank is finished, sinking the main shaft will be resumed.

OVERMAN.—Putting in the foundations for the new pumping machinery is being pushed with steady vigor. Sinking the main shaft is making fair headway.

BELCHER.—Daily yield, 350 tons of ore, keeping the mills steadily running. The erection of the new pumping machinery is being pushed with all the speed possible.

WEST BELCHER.—Ore extraction is going forward lively from the npraise west, above the 300-ft level. There is plenty of ore in sight, and the bullion results will soon place the West Belcher among the producing and profitable mines of the Comstock.

TWIN PEAKS.—It is necessary to finish the road to the works before the machinery necessary to carry forward the work of development can be hauled to the mine.

PROSPECT.—The pumps keep the water reduced below the 400 ft station, and the diamond drill is being pushed ahead to prospect the ledge.

NIAGARA.—Sinking the main incline is being pushed with all possible vigor. The rock in the bottom of the shaft is much harder than it has been for some time past.

ORIGINAL COMSTOCK.—Work being actively resumed under most favorable auspices, some very fine and encouraging prospects in the way of pay ore being developed.

HERALD.—Bottom of incline continues in excellent vein matter, giving good assays and constantly improving.

KOSSUTH.—Preparing to cross-cut and open up the ore vein on the 500-ft level is going steadily forward.

BUCKEYE.—The north and south drifts on the 500-ft level are each steadily advancing, the face of both being in quartz and vein matter of a lively and encouraging character.

ROCK ISLAND.—The pumps are still kept busy hoisting water. No advancement can he made in the prospecting drifts in the mine until the flow of water is checked.

BEST & BELCHER.—But little work is being done in the mine at present, the time being occupied by the repairs to drifts and the Gould & Curry shaft.

CALEDONIA.—The water has been drained and work was resumed in the bottom of the shaft yesterday morning.

MEXICAN.—The northwest drift on the 1465-ft level is advancing, the face still in fine quartz and ore.

(Continued on Page 180.)

Mathematical Instruments at the Fair.

John Roach, the mathematical instrument maker, whose exhibit is on the ground floor near the orchestra, is deserving of more than a passing notice, and is worthy of being classed first among the industries of San Francieco. Each instrument bas some peculiarity and improvement, the result of a lifetime of study and close application to an intricate business, which has made Mr. Roach verily a master of his art. There are on exhibition

Plain Transits

With single vernier reading to single minutes, with large compass needle well suited for land surveying. These appear at first glance to be short centered instruments, but on examination will prove to have longer centers and more substantial socket than those made East. The two vernier instruments are made in a similar way.

A Polar Transit

For public land surveying has a revolving telescope, a complete compass circle, and the arcs so divided that triangulation may he performed with this as well as any angular instrument, while the solar part is of a large radius, insuring great accuracy.

A Miner's Transit.

Having an extra telescope on the end of the horizontal axis, admits of any angle being taken, as up or down a shaft, and a prismatic eyepiece allows of an easy position of the observer. There is besides an eight inch instrument reading to 30 seconds. Another five-inch instrument is on exhibition, which is eminently fitted for underground work, and which should be in the hands of every mining engineer. The balance of the case is filled with various instruments: glass syphon tube for mountain barometer, aneroids, thermometers, hygrometers, saccharometers, hydrometers, ground spirit levels, platinum points for lighthouses, etc.

A card of medals which date from New York 1834, 1836, and in San Francisco 1862, 1875, must not he overlooked. A nice telescope surmounts the whole case, and we are glad to confess that for beauty and finish of workmanship, and for the eminently practical way in which the faults of other manufacturers are carefully avoided, Mr. Roach's instruments rank second to none made, and are deserving of the highest praise.—*Mechanics' Fair Daily.*

Photo-Printing on Wood Blocks.

The negative is, of course, taken in the usual way; but as it must be reversed on the block it should be taken through the glass, that is, the film side should he next the door of the slide, the thickness of the glass allowed for in focusing, and the spring of the slide kept from the film, in any of the well known modes. To prepare the block, dissolve five grains of chloride of barium in about half a drachm of sulphate of barium. This is then gently rubbed over the surface of the block—first with the finger and then with the ball of the thumb—so as to produce an even, thin coating, which result is easily obtained after a little practice. A coating just sufficient to whiten the surface will be found enough. Or the two salts of barium, in very fine powder, may be intimately mixed, and, by a circular motion of the finger, applied to the block, when sufficient will be found to have adhered to answer the purpose. The barium chloride is converted into silver chloride, and the surface rendered sensitive as follows: Six grains of pyroxylin is dissolved in half an ounce of ether and two drachms of alcohol; then twenty grains of silver nitrate is dissolved hy heat in two drachms more of alcohol, and added. This should stand till clear, and will keep well if light be excluded. The silver collodion is poured on and off the block in the ordinary way, and may be dried either spontaneously or by artificial heat. In consequence of the rigidity of the block the progress of printing cannot be examined in the usual way; but with a moderate amount of practice there is little difficulty in hitting the proper time without examination. By a method we have lately adopted, the progress may be examined from time to time, and the block returned to its proper place with ease and certainty.

The printing should not he deeper than the finished image is intended to he, as it does not seem to lose anything in the fixing, but rather appears to get a little deeper. On removal from the frame, the surface of the block should be brought into contact with a solution of hyposulphite of soda in a flat dish, and moved about on the surface for a few minutes, when it will be found sufficiently fixed, requiring only to be washed with a gentle stream of water and set up to dry. Or if it he desirable to get rid of the thin film of collodion, it may easily be dissolved off hy a mixture of ether and alcohol before the application of the hxing solution.—*British Journal of Photography.*

SAVING IN LONG RUNS.—The long engine runs adopted last winter on the New York Central and Hudson River railroad (engines go through between Buffalo and Albany, 300 miles) have resulted in a notable economy in locomotives, the company having been able to lay up 42 of its stock of engines, notwithstanding a large increase in traffic. There are other considerable economies effected hy it, as in fuel (saving heating up, cleaning, switching, etc); and the company is altogether satisfied of the wisdom of the change. It is not pleasant for the men, who are compelled to be away from their homes a much longer part of the time, but the economy is such that there is no prospect that the practice will be abandoned for the old one.—*Railroad Gazette.*

The Engineer.

The Colossa of New York.

There are times when art approsches the confines of engineering, and we know no better modern instance than the great statue of the Goddess of Liberty, which the French will erect on Bedloe's island in New York hsy. The *Iron Age* notes that a fragment of the statue has been put ashore from a French steamer during the week, and describes it as follows: The fragment was contained in a huge case, as large as a small dwelling, made of boards nailed rudely together, with open spaces between. All of the statue it held was the wrist and right hand, with a section of the torch which the right arm is to hold aloft, hearing a flambeau, which will serve as a lighthouse beacon. The vast case rested on a truck and was an object of much curiosity to the people around the docks. The French sailors of the *Labrador* fairly danced around it in their enthusiasm, calling on those in the vicinity, whom they guessed were Americans, to come and "zee ze tumb." The thumb, which partly encircled the torch (a huge cylinder of 12 feet in circumference) was a ludicrously gigantic member. On the thumb nail alone a man of several hundred pounds avoirdupois might find a more roomy seat than in a Third aveuue car. As for the arm below the elbow and opening into the palm of the hand, three men ot ordinary stature might walk shreast within its interior. It is said that inside the upper and broader part of the arm above the elbow as many as nine men can be comfortably accommodated. This fragmentary part is made of bronzed copper, about a sixteenth of an inch in thickness. It is in fine, evenly rolled plates, riveted and screwed together in the firmest and most elaborate manner. The completed statue will be about 120 feet in hight, from the crown of the head to the sole of the foot, the elevation of the pedestal being, perhaps, a third of the altitude of the statue. It is understood that a staircase will he placed within the right arm, by which ascent can be made to a balcony running around the edge of the flambeau. The hight of the complete arm is 35 feet. Of course, the statue is upright. The left arm is bent so as to enfold and hold lightly toward the body a set of tablets upon which the Declaration of Independence is supposed to be inscribed. A tunic falls over a peplum from the shoulders to the feet. The head is surrounded by a diadem, from which projects a circlet of prongs that catch the sun's rays and construct a brilliant nimbus of glory out of them. The folds of the outer garment are so arranged that the edges fold diagonally across the figure. Its estimated cost is $125,000, half of which has already been subscribed. Both pedestal and statue will he completed in two years from now, and it will be the joint enterprise of France and America. Along with the fragment already received and the portion on exhibition at Philadelphia, the right arm is supposed to be complete.

LESSEPS' NEW SCHEME.—The *Revue Industrielle* contains some figures in connection with M. de Lesseps' new scheme of turning the great desert into a garden. At the last meeting of the academy of sciences he presented the summary report of Capt. Roudaire upon the "establishment of an interior sea in the African desert." "We have reason," says M. de Lesseps, "to be satisfied with the results obtained by our compatriot *savant;* he is henceforth sure that there can he established a sea of from 25 to 40 meters in depth, and which shall cover an area of 16,000 kilometers (6,200 square miles), with a length of 400 kilometers (250 miles) from east to west. In applying to the works for executing the new marine lake, the mean cost of the work in hand in Egypt, (0 francs, 95 centimes, [= 18 cents] per cubic meter of sand) the cost of the enterprise will hardly exceed 40,000,000 francs ($16,000,000). The revenue of the fisheries would represent, alone, an enormous interest on the capital expended; since we see, in Egypt, the fisheries of the salt lakes produce 1,500,000 francs ($300,000) revenues. In this great submersion of the desert, not a single oasis will be destroyed; Capt. Rondaire is assured that the cultivated points of the desert are, without exception, 20 meters above the sea level. Capt. Roudaire is present at the meeting, and I am happy to express before him the high opinion which we have of his courage, his perseverance, and his disinterestedness."

AN ENGINEERS' INSTITUTE IN CHINA.—A marine engineers' institute has been established in Shanghai, China. We learn that on May 26th last, the inaugural *soiree* and entertainment of the newly formed association was held in the Temperance hall, Shanghai, and was in every sense most successful. The leading European residents honored the meeting by their patronage and presence. During the evening the chairman presented a beautifully illuminated address, conveying the thanks of the members to Mr. James M. Robsou (late of Newcastle-on-Tyne), for his services in promoting the formation of the club. The library of the institute already contains 1,000 volumes, and the whole scheme will be of great value to the European engineers in China waters.

The Work in the Channel Tunnel.

We have spoken of the inception and progress of the tunnel under the British channel. We now have details of the method of operations, which are of general interest. The correspondent of the *Graphic* writes as follows:

Day aud night shifts, each of six workmen and a foreman, have been at work ever since the 25th of February, when the ground was broken, snd on Saturday afternoon (June 3d) they had reached a depth of 61 meters—200 English feet—in *craie de Rouen* (gray chalk), which was entered at a depth of 35.95 meters—118 feet. As one of the objects of these borings is to gauge the amount of water that is likely to be met with in the final operations, the shaft has been lined to a depth of 50 meters with iron tubing, let in telescope-wise, of different dismeters. The first tube is 10.26 meters long and 43 centimeters in diameter; the second 17.05 meters long and 38 centimeters in diameter; the third 23.30 meters long and 33 centimeters in diameter; and the fourth 50.02 meters long and 28 centimetera in diameter. The annular space between the tubes has been filled up with cement grouting, to make it water-tight and to consolidate the whole.

The operations are twofold—first, breaking, turning, twisting, and crushing the ground at the bottom of the shaft hy means of an instrument called a trepan, acted upon by a powerful lever; when this has been effected an iron scoop five feet long is let down by rods, and turned round till the foreman considers it full, when it is withdrawn. This operation, at 60 meters, occupies 40 minutes. On reaching the surface the scoop is emptied, its contents carefully examined, and specimens collected; the scoop, after being well washed, is sent down again, the return operation occupying 10 minutes. Two rods only have broken during the whole operation, and these were withdrawn without much difficulty. Two tubular pumps are on the works, the larger one having been discarded since the tubes of 33 and 28 centimeters in diameter have been fixed; the pump with a smaller bore is occasionally sent down the shaft to pump it dry snd ascertain the amount of infiltration, which hitherto has been small, and of spring water only.

The daily progress of the borings through the upper strata averaged from 50 to 60 centimeters; since reaching the gray chalk (*craie de Rouen*) the rate has increased from 82 to 100 centimeters daily; the greatest progress made in any single day was two meters, 50 centimeters in 22 hours. Now that a softer stratum has been reached, progress will be more rapid, and a faster, though less powerful machinery has recently been substituted for that at first used.

The Hoosac Tunnel.

This great engineering work is complete. According to the *Railway Review* the first passenger train passed through the tunnel July 8, 1875. The road was then formally opened, but so much work remained to he done that it was not ready for actual use until July 17th. During the past year the tunnel has been enlarged aud arched, and the road from Greenfield to North Adams rebuilt, making it very substantial. Trains have only run at night, that the work might not be interrupted. An average of 100 cars of Western freight has been carried eastward daily, but a single mixed train has taken all the passengers between Greenfield and North Adams without reference to connections with other roads. The tunnel and the picturesque Deerfield valley will attract many summer visitors, and it will daily become more of a thoroughfare. Passenger trains run through the tunnel in 18 minutes, while 30 are allowed for freight. A telegraph station is established at each entrance and but one train is allowed in at one time. When the business of the road shall require it, another telegraph operator will he stationed at central shaft, and two trains he allowed to pass through at the same time. Three passenger trains each way will be run for the present between Boston and Troy every day except Sunday.

The central shaft, which was built at an expense of upwards of a million dollars and 20 or more lives, was originally intended as a third point where the work of excavation could be carried on and afterward serve as an immense chimney, through which the smoke and bad air of the tunnel would be taken off. The shaft itself was only completed a few years before it was overtaken hy the work from the western entrance of the tunnel, so that the temporary advantage it gave cannot be said to be in proportion to its cost. Experience has proved that the rush of air occasioned by the speed of trains affords sufficient ventilation, and that the shaft was an actual disadvantage. It has therefore been entirely closed near the surface of the mountain.

A NEW WAY TO MAKE A GLASS ROOF.—Rendle's system of glazing described in *Engineering*, consists of a series of zinc bars of pot-hook section, with a return bend; the bars being screwed to the purlins. The top bar is simply of pot-hook section, and the bottom bar, the same section reversed. The glass rests in the groove of the lower bar and in the back groove of the intermediate and upper ones, in which it has full vertical play. The panes lap each other; no water can penetrate the roof (as was tested by a fire hose); water from the inside is carried down by the grooves; the panes are rigid, although readily fixed and replaced. At Paddington there are 15,000 square feet under roof, and Mr. Rendle is under contract to cover several more large stations.

[From Mechanics' Fair Daily.]

A Lay from the Lathe.

EDITORS FAIR DAILY:—I saw a piece in your paper the other day signed "Cold Chisel," and I will say that it was the first piece of cold chisel work which ever deserved to be seen. I have a rather poor opinion of Cold Chisel. He is generally little more than a makeshift and I am glad he has risen above himself and chips off some pretty good sense. As you seem to be willing to hear us workers on our own behalf, I propose to "chuck" the subject of improving our work and "turn off the scale coat" if I don't get any deeper.

Your correspondents speak of the advantages of the fair for improving work. This is true, but I am surprised that more workmen do not come forward with their specimens of good work. We ought to have long benches filled with "pieces" prepared merely to show the toolcraft on them. These might not be more interesting than a basket of chips to the common observer, but to the practical worker they would be full of meaning and worth long study. Mechanical ideas travel slowly by talk. Workmen are generally too tired of the shop to discuss such things when work is over; and then it is pretty hard to talk up a thing unless you have the work to show for it. But if we had a good bench full of samples of the finest work that can be done with lathe, planer, grindstone and emery, it would be as valuable to us to examine as a case of insects would be to a member of the academy or a picture gallery to an artist. This would be working for ourselves. Of course workmanship shows in the finished machines, but the credit goes to our employers. Besides this the work on a finished machine may be made up a by a hundred hands and it is impossible to get the credit for the actual work where it really belongs.

It seems to me it would be a good plan for a mechanical exhibit, to have the hands in some shop take hold and lay out a machine among themselves and then each man work up the part which he is best at. I would then have the machine laid out in the fair, each part by itself. I would begin with the drawings and specifications, then the patterns, then the castings and forge work, making all parts of casting or forge work in duplicate, so that each can be laid beside the perfectly finished piece as it comes from the machinist. Then we should have an original sort of a show of practical mechanism. These parts would all lie each by itself, with its bolts and connections complete. I warrant you that show would be studied by every mechanic in the city. The excellence of the work would show for itself; not only would the polished and lacquered metal appear and all the joints be made and covered, but the style of castings which are furnished to the machinist would be discovered, as would also the quality of the pattern which is furnished to the molder. It is pretty generally known that each preceding workman has a good deal of influence on the work of the man who follows him. The pattern maker can fill a "flask" with "rats," in spite of the finest molding, if he does not give the molder a good pattern, and the puddler can send the machinist to the grindstone every five minutes if he makes a wrong mixture. The finished machine does not tell all these secrets of the shop, but if a machine should be made in duplicate, as I have said, in finished and unfinished parts, a skillful workman could tell where the greatest credit for the work belonged.

I would have this machine laid out there in the fair a certain number of days, so that it could be thoroughly studied for its workmanship; then I would advertise that on a certain evening it would be set up and put to work; of course every part should be perfectly fitted beforehand, and an hour or two would suffice to set it up. I warrant you you would have a larger audience than the band on the night that it was done.

You may say that I am "cutting" a pretty "coarse thread" on this subject. Well, I will change my "gear" and cut down the "feed" a little. I think a mechanic needs no better proof that actual work is a good thing to show than he can get at the fair this year; the trouble is that there is not enough of it. The lathe is well represented in a piece of shafting which lies on a table near the main engine. This will do for a sample of the heavier work and the heavier material. There ought to be 20 specimens of iron turning, from the main shaft of a steamer down to the smallest governor balls. The light work of the lathe is well shown by those two enterprising wood turners who have their beautiful work spread out not far from the office of Dewey & Co.'s *Fair Daily*. I think the lathe ought to have done ten times as well for the fair, and yet I am proud to see that the lathe outstrips all other tools in showing its work. Where are you, slow-going "planer," that you have not matched your straight lines against my curves? Where are you, rattling "drill," that you have not worked through the subject of workmen's exhibits instead of waiting for me to work around it? Where are you, all useful tools, that you have not shown the public your claim to honorable existence?

Well, Mr. Editor, while I have been "centering" this piece for you my "tool" has fed into the "tailblock," so that I run my pen on to the "loose pulley" and quit for this time.

THE LATHE.

USEFUL INFORMATION.

The Game Law.

As the game season approaches, much interest is felt by sportsmen to learn the changes in the laws with regard to killing game that were effected by the last Legislature. The new sporting journal, the *Pacific Life*, gives the following synopsis of the laws on this subject as they now stand, which will no doubt be found to be correct:

The close season for salmon commenced August 1st and extends to November 1st. Under the law passed at the last session of the Legislature it is made a misdemeanor to catch, transport or have in possession fresh salmon during this period. The penalty for a violation of the law is from $20 to $200, and this is divided between the informer, the prosecuting attorney and the school fund of the county.

Every person who, between the first day of January and the first day of September of each year, takes, kills, or destroys any elk, deer, mountain sheep or antelope, is guilty of a misdemeanor; and every person who shall take, kill or destroy any of the animals herein mentioned, at any time, unless the carcass of such animal is used or preserved by the person slaying it or is sold for food, is guilty of a misdemeanor. Any person catching or having in his possession, or offering for sale, shad, at any time prior to the first Monday of December, A. D. 1877, is guilty of a misdemeanor. The following counties are excepted from the provisions of this section: Del Norte, Humboldt, Shasta and Mendocino.

Section 626 of the Penal Code was amended last winter to read as follows: Every person who, in the counties of San Bernardino or Los Angeles, between the first day of April of any year and the first day of August of the same year, or who in any other of the counties of this State, excepting the counties of Lassen, Plumas and Sierra, between the fifteenth day of March and the fifteenth day of September, in each year, takes, kills or destroys quail, partridge or grouse, mallard, woodteal, spoonbill, or any kind of broadbill ducks, is guilty of a misdemeanor.

Section 631. Every person who, between the fifteenth day of October in each year and the first day of April in the following year, takes or catches any trout, is guilty of a misdemeanor.

Section 632. Every person who, in the counties of Santa Clara, Alpine, Santa Cruz, Lake, San Mateo, Monterey, Sonoma, Tuolumne, Alameda, Marin, Placer, Nevada, Plumas, Sierra, San Luis Obispo, Solano, Mariposa, Mendocino or Napa, at any time takes or catches any trout, except with hook and line, is guilty of a misdemeanor.

Section 633. Every person who takes, catches or kills any trout by the use of nets, weirs, baskets or traps, is guilty of a misdemeanor.

The penalty for the violation of the law is as follows: Except in cases where a different punishment is prescribed by the Code, every offense declared to be a misdemeanor is punishable by imprisonment in a county jail not exceeding six months, or by a fine not exceeding $500, or by both.

The Board of Supervisors of Santa Cruz county, at their meeting on the first Monday in August, changed the deer law so that hunters may kill deer from the 15th of August to the 1st of January, instead of (as heretofore) from the 1st of September to the 1st of January.

Things Worth Knowing.

Keep tea in a close chest or canister.

Keep coffee by itself, as its odor affects other articles.

Keep bread and cake in a tin box or stone jar.

Cranberries will keep all winter in a firkin of water in a cellar.

Oranges and lemons keep best wrapped in soft paper, and if possible laid in a drawer.

Scaled herrings should be fat fish, free from scales, and when smoked he of a bright golden color. No. 1 herrings are generally small and poor fish.

Salt—Ashton's, Marshall's and other Liverpool brands come in bags, 224 pounds; New York State in barrels and bags, 240 and 280 pounds; cases of table salt contain 60 boxes, about 2 pounds each. Salt also comes in small packets, put up in sacks, three sizes: 25, 10 pound packets; 40, 6 pounds and 80, 3 pounds.

Gunpowder is a heavy tea of a dark green hue, and the leaves rolled in hard balls.

Twankays are known by the large, yellowish, badly rolled leaves and strong odor. The infusion is a deep yellow, and of clear, sharp taste.

Mackerel comes in barrels, half-barrels, quarter-barrels and kits, containing, full weight, respectively, 200, 100, 50 and 20 pounds.

THE VARIOUS KINDS OF CAMPHOR.—Ordinary camphor comes from Japan or the island of Formosa, but there are various highly esteemed species of camphor obtained from Borneo and Sumatra. There is also another variety of medium quality produced by the *Blumea balsamifera*, a plant of the composite order, which grows in the east of Asia. The Chinese denote it by the name Ngai, and make use of it in medicine and the manufacture of ink. It produces harder and more brittle nuts than the laurel camphor. Like this latter, it is sublimed at an ordinary temperature, but less easily, while the Borneo camphor does not show any traces of sublimation even after several years. All camphors float in water, but when the air in the interstices is exhausted by an air-pump, Ngai and Borneo camphor sink to the bottom, while the laurel camphor swims. The specific gravity of laurel camphor is .995 that of Ngai 1 02, and that of Borneo 1.011. Laurel camphor melts at 335 deg. Fahr., Ngai at 509 deg., and Borneo at 405 deg. Laurel camphor, washed with hydrochloric acid and still moist, quickly changes to a colorless liquid. In the same circumstances Ngai and Borneo absorb the acid very slowly, and do not turn to a liquid till long after. Nitric acid changes Borneo camphor into an oil, which, on the addition of water, deposits a substance identical laurel camphor. The same thing occurs with Ngai.—*The Laboratory.*

How Wounds are Produced.

Many cases are coming up continually before coroners and coroners' juries which require judgment to be pronounced on the probable cause of death wounds.

Dr. William Macewen, in the Glasgow *Medical Journal*, gives a careful study of 71 cases, including 104 wounds, produced by 51 different articles. He concludes:

1. Blunt instruments sometimes produce scalp wounds having straight outlines and sharp clean edges, which in these respects could not be distinguished from the wounds produced by sharp cutting instruments.

2. Scalp wounds, which exhibit entire hair bulbs projecting from the surface of their sections, have been produced by blunt instruments.

3. Wounds exhibiting nerve filaments, or minute blood vessels bridging the interspace between the lips of the wound toward the middle of the depth of the section, while the tissues have receded all around them, below as well as above, have been produced by blunt, non-penetrating instruments.

4. When a wound, even with sharp, well-defined margins, bears in contour a resemblance to an osseous ridge in close proximity, there is a *probability* that it was produced by a blunt instrument, through forcible impact against the underlying osseous ridge.

5. *Cut* hairs found in the immediate vicinity of a wound are valuable aids in determining whether a sharp or blunt instrument has been made use of.

6. As to the diagnosis between wounds produced by instruments of the knife kind and other sharp-edged substances, such as glass, earthenware, etc., no dependence can be placed on the mere regularity of outline or sharpness of edge, or the reverse.

7. Sharp, clearly defined wounds, in certain cases, present peculiarities in their termination which may be sufficient to enable a probable diagnosis as to whether they were produced by a knife or portion of glass or earthenware.

8. The same instrument used by the same person in delivering several successive blows may produce wounds of different characters.

WOOL GREASING.—A Mr. Lebrun mentions, in a German paper, that a considerable quantity of oil may be saved by the following process of oiling wool, besides insuring a more uniform and regular web, on account of the woolen fibers loosening and separating themselves more easily from each other. Moreover, this plan, it is said, is not open to the objectionable features of some processes, which sometimes cause the total disappearance of fine color dyes; and the cards wear longer and better, besides allowing the wool to be more easily and economically cleaned. To obtain this preparative, pour into a wooden trough 20 parts oil, with 10 parts liquid ammonia, adding five parts of water. Stir up this liquor with a wooden spoon, and, by inserting a steam pipe, allow the same to boil until the strong smell of ammonia has evaporated, after which the oiling or greasing may be proceeded with in the usual manner.

GOOD HEALTH.

Remedy for Small-Pox.

Small-pox is epidemic in Southport, England, at present, as it is here, and Edward Hine, a Wavertree correspondent of the Liverpool *Mercury*, sends the following to that paper, and the recipe which it contains may be of service to the suffering in this city:

No disease is so repulsive as the small-pox, and none so generally dreaded. It is well known that it is much about our town and suburbs. I am willing to risk my reputation as a public man if the worst case of small-pox cannot be effectually cured in three days, simply by cream of tartar. This is the sure and never-failing remedy.

One ounce of cream of tartar dissolved in a pint of boiling water, to be drunk when cold, at short intervals.

It can be taken at any time, and is a preventive as well as a curative. It is known to have cured in a hundred thousand cases without failure. I have myself restored hundreds by this means. It never leaves a mark, never causes blindness, and always prevents tedious lingering. It is so effectual that if popularly used would dispense with the unnatural law of vaccination and the costly staff of vaccinators, for small-pox never appears without a need, and then ought to be purifying and healthful to the system; and when capable of being so quickly removed need never be feared above a cold or an overflow of bile.

Like the identity of the British with lost Israel, it is too grand, too simple, and too good to be quickly accepted by the people; and the doctors, as the ministry to the identity question, laugh at the remedy, because it interferes with the old routine of their customs, and has not emanated from themselves. Nevertheless, if the people would only try it, and report all the cures to you, you would require to employ many columns if you gave them publicity.

Unwholesome Ice.

There is danger in ice from impure water. The evidence we find in a recent report to the Massachusetts State Board of Health, by Dr. A. H. Nichols, concerning the outbreak of an intestinal disorder among the guests at one of the hotels at Rye Beach in the summer of last year. The symptoms were those generally following a derangement of the digestive system; such as nausea, giddiness, loss of appetite, diarrhea, abdominal pain and fever. With about five per cent. of the guests, these symptoms were grave and persistent; among the great majority, and notably with children under ten years old, there was no such illness, and there were no traces of it at the other hotels and in the cottages at Rye Beach. The sewerage of the hotel was first carefully investigated, and then the water supply, the proprietors of the hotel lending eager aid to thorough research; even the kitchen and its processes were overhauled without finding the cause of trouble. At last it was discovered in the ice with which the hotel was supplied. This had been procured from a pond of which the outlet had in recent years been closed by sand and stones which shed up from the sea, the pond thus becoming a stagnant receptacle of mud and sawdust, there being two sawmills on the stream above. The ice was subjected to chemical analysis, and was found to contain putrescent vegetable matter. The hotel stopped using this contaminated ice, and there was an end to the sickness among its boarders. The report concludes by mentioning that there is a common but quite mistaken popular notion that when water freezes its impurities are somehow excluded from the ice. The moral is so obvious that it need not here be stated; but in a general way it may be worth while to summarize the fact that water which is not perfectly fit to drink is unsuitable for an ice supply.

SEA SICKNESS.—As everything relating to sea sickness is of interest in these days of travel, we give for what it is worth the gist of a letter recently printed in an English scientific journal: "Many years ago I had frequently to cross the Irish channel, and was invariably sick if there was the least motion in the water. Once when it was very rough, and the wind blowing a hurricane, in some unaccountable way I hit luckily on an expedient which for me, at least, is an effectual preventive, and I should like it to be tried by others. For what reason I cannot say, but I made my respiration coincide punctually with the heave and fall of the vessel. As she rose I inspired slowly and regularly, and as she fell I expired, and the effect was so completely successful that I several times fell asleep. But each time (I suppose because the breathing was no longer synchronous with the vessel's movements), I was awakened by sensations of sea-sickness, which two inspirations and expirations, as above described, immediately dispelled, and I completed a very rough voyage with comparative comfort. I have sailed since, though not on a very rough sea, and have been able to walk the deck and enjoy the voyage. My inference is that sea-sickness is caused by the heavings and falls of the vessel crossing the motions and operations of the diaphragm, which unseasonably presses on the upper stomach and liver, and so disorders their functions."

COLORS FOR CONFECTIONERY AND FOOD.—The police of Paris have directed that the following substances be employed for coloring articles of food or confectionery: Blue: indigo and its derivatives, Prussian blue; red: cochineal, carmine, Brazil wood, lake orchil; yellow: saffron, Avignon yellow berry, quercitron, fustic, turmeric; green: mixture of Prussian blue and logwood (Campeachy wood); violet: mixture of carmine and Prussian blue.

The use of the following pigments is prohibited: oxide of copper, blue copper salts, red lead, vermillion, chrome yellow, gamboge, white lead, Schweinfurt and Scheele's green (Paris green).

For coloring drinks they recommend Curacoa logwood; for absinthe, soluble indigo blue with saffron; for blue liquids, soluble indigo blue, Prussian blue and ultramarine.

We notice that, singularly enough, aniline colors are omitted from the list of prohibited colors.

EUCALYPTUS GLOBULUS IN PULMONARY GANGRENE.—Of all the drugs employed by Dr. Bucquoy (of Cochin hospital, Paris) in pulmonary gangrene, none, he asserts, have given him better results than *Eucalyptus Globulus*. He uses it in the form of an alcoholate—two grammes (half a drachm) daily in a mixture of water, gum, orange-flower water and syrup. Out of the various cases he has had under his care at Cochin, five ended in cure, whilst in all the others there was a favorable modification of the odor of the breath, the sputa and the violent cough, after carbolic acid had failed.—*Druggists' Circular.*

MINING AND SCIENTIFIC PRESS.

W. B. EWEB.....SENIOR EDITOR.

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THE ORIGINAL ARTICLES in this paper are mostly set in solid type, giving in our columns one-third more reading than is contained in ordinary leaded matter.

Our latest forms go to press on Thursday evening.

San Francisco:

Saturday Morning, Sept. 9, 1876.

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NEW ADVERTISEMENTS.

Mines and Mining Lands Bought and Sold, American Mining Agency, Philadelphia, Pa.; Water Tanks, Wells, Russell & Co., S. F.; Kearsarge Con. Quicksilver M. Co.—Sale.

W. B. MURDOCK, of this city, in speaking of the new mining board in New York, suggests to us the query: "Why not a mining board in Chicago? For energy and speculation its business men have a most favorable and world-wide reputation. The successful organization of the New York board would be an incentive to the formation of one in Chicago. For companies formed on properties of merit with a view of legitimate operations, the larger the field for the disposition of its securities, the better for the development of the mining and all other interests on this coast, which would be benefited thereby."

JET.—In answer to a correspondent who asks us the price of jet, we may say it varies in price. If he will send us a sample we can answer more definitely as to the value of what he has.

ON FILE.—"Some of the mines of Reese River District," "Notes from the South Yuba," "Facts about Peat," "Alta Mine and its Prospects."

MR. ROYALL, of Hornitos, Mariposa county, has left us a sample of ore which he supposes to be telluride of silver. It is, however, altaite.

THE California society for the prevention of cruelty to children has been organized by some of our prominent citizens.

THE Ventura oil refinery was started up for the first time this week. This is another important industry for this coast.

A Notable Railroad Connection.

Engineering on the Southern Pacific Railroad.

The event of driving the last spike in the railroad connection between San Francisco and Los Angeles, which occurred on Tuesday last, was one of great importence, indicating as it does the gradual opening up of southern California, Arizona, etc., and bringing them into more direct communication. The road passes through the San Joaquin valley, from Lathrop in the north (where the line branches from the Central Pacific), to Tehichipa, a distance of 300 miles, on almost a level. The work of track-laying was comparatively inexpensive, with bridges crossing the Stanislaus, Tuolumne, Merced, Fresno and Kern rivers, and other streams flowing from the mountains to the San Joaquin. The San Joaquin Valley railroad, which comprises this section of the road, intersects the counties of Stanislaus, San Joaquin, Merced, Fresno, Kern and Tulare, and all the products of Tuolumne and Mariposa counties will find their way to market on this great highway.

The only natural passes across the barrier separating Los Angeles from San Francisco are the Tehichipa and Tejon passes, the former of which was chosen by the railroad engineers as the easier through which to run their track, and from there it debouches into the Mohave desert. These were not the only obstructions to be overcome, and the San Fernando tunnel, the longest on this side of the continent, had to be bored, and the work was performed with more then ordinary expedition.

San Francisco is now placed in communication by rail with Los Angeles, San Bernardino, Santa Monica, Wilmington, Anaheim and Santa Ana. Los Angeles is now the center of an extensive railroad system, branches extending to Santa Monica, Wilmington and Anaheim, besides the main trunk of the Southern Pacific railroad, which runs through it. The branches extending to Wilmington and Anaheim are owned and controlled by the Southern Pacific railroad company; that to Santa Monica is the nucleus of the Los Angeles and Independence railroad. All that remains of the Southern Pacific railroad to be built is from Indian Wells to the Colorado river, at or near Fort Yuma

The engineering difficulties in building this road were very great, and those encountered in ascending the Tehichipa canyon surpass anything encountered on an equal distance in the Sierra Nevada. Every artifice had to be employed to enable the engine to climb the steep grade, and within 19 miles there are 17 tunnels in ascending the Tehichipa. A few statistics regarding the length and size of these tunnels cannot prove uninteresting. Tunnel No. 1 is 245 8-10 feet long; No. 2, 232 2-10 feet; No. 3, 707 7-10 feet; No. 4, 257 feet; No. 5, 1,156 3-10 feet; No. 6, 303 7.10 feet; No. 7, 532 7.10 feet; No. 8, 690 feet; No. 9, 426 2-10 feet; No. 10, 406.6 feet; No. 11, 158.8 feet; No. 12, 756 3 feet; No. 13, 513 8 feet; No. 14, 512.7 feet; No. 15, 360.7 feet; No. 16, 262.5 feet; No 17, 260.9 feet; making a total of 7,683.9 feet. Nearly all these tunnels are heavily timbered with stanch 11x14 inch redwood timbers. At the bottom they are 14 feet in the clear, or 16½ feet in excavation. They are 22 feet in hight, and the shoulders at the springing of the arch are 18 feet 4 inches. In the Soledad canyon there are two more tunnels, numbered 18 and 19, the first being 264 feet long, and the latter 332 feet. The longest tunnel on the coast is the San Fernando tunnel, 6,966½ feet in length.

This triumph of engineering skill was commenced on March 27th, 1875, the headings met July 14th, 1876, and the timbering was completed August 9th, 1876. It is build on a slope of 37 feet to the mile, and is perfectly straight, so that one can see through it. It is not cut through a single mountain, as is the case with most undertakings of this kind, but runs through a succession of ridges and canyons. The entire length is 6,966 feet, or nearly a mile and a quarter. This is exclusive of the heavily-graded approaches, which aggregate half or three-quarters of a mile more. The deepest point in the tunnel is 600 feet below the top of the mountain. The excavation is made in the form of a trapezoid, only that the top which forms the longest side of the figure is surmounted by an arch. The width of the bottom is 14 feet, the hight of sides to the commencement of each, 16 feet, and the height to center of arch 21 feet. The sides and top are protected by heavy timbers, braced, fitted and spiked into the aperture as soon as the earth is removed. The south approach ascends at a grade of two feet in 100, until it reaches the mouth of the tunnel, where the road-bed strikes a uniform gradient of 71-100ths of a foot in 100, rising toward the north. At the northern extremity it reaches its highest point, and then descends with the same incline as the southern approach. Work was commenced simultaneously at both ends, and at three intermediate points on the line of the tunnel. From these points inclines were sunk to the level of the road-bed to further the work of excavation and provide ventilating facilities when the tunnel was completed. The tunneling was originally started some distance from the present face, but the overlying earth caved in so badly that it was found necessary to make excavations about sixty feet deep before sufficiently solid earth was found. Another obstacle which presented itself was an excessive flow of water, rendering the work of excaveting not only dangerous but very expensive.

Tunnel 9 is at the famous loop of Tehichipa pass. This loop completely encircles a mound and by so doing gains a difference in elevation of 77 feet 46 inches. Emerging from tunnel 9, the train winds around the mound and passes directly over the tunnel at right angles, having made a curvature of 300 fast 52 inches. The length of the loop is 3,794 feet. Pictured on the map this loop looks like a coil thrown carelessly in a rope; it is a veritable corkscrew. It is claimed to be a novel and original achievement in engineering. The total length of tunnels between Caliente and Los Angeles, as given above, is 15,246 4 feet.

The road has been built to within 100 miles of the Colorado river, which it will reach before the close of the year. The whole distance from here to Fort Yuma by the road is 715 miles, over 600 of which are completed. The last spike in the connection was driven by Charles Crocker. It was made of Los Angeles county gold. Appropriate ceremonies participated in by the railroad directors and prominent citizens from Los Angeles and San Francisco where held. A banquet was given, toasts offered and speeches made. Trains leave here now daily for Los Angeles at 4 P. M., arriving at Los Angeles the next day at 3:30 P. M.

California's Birthday.

The 9th of September is an important day in the history of California, since, on that date, in the year 1850, the State was admitted into the Union. It was ceded by Mexico to the United States in 1848, but so rapid was its progress that in two years it became a full-fledged State. This rapidity was mainly due to the discovery of gold, which attracted thousands of adventurous spirits to the new El Dorado. A State government became soon necessary, from the confusion attendant on the existence of the old Spanish laws, by which the property and affairs of the settlers had hitherto been settled. Shortly after the formation of a State government, however, everything went on smoothly enough, with the exception of the trouble caused by the Mexican land grant system, the evils of which are yet felt.

Californians can look back with pride and gratification at the progressive record left since their State joined the sisterhood of States. Previous to the occupation by Americans, the fair valleys, productive hills and boundless forests were comparatively useless to the meager population which was scattered over the land. In few instances was the soil tilled at all. Mines were unknown, and the principal industry—if so it can be called—of the people, was in tending the flocks and herds which roamed at will over the broad territory so soon to be subjected to the implements of the miner and farmer. The few short years intervening between the discovery of gold and the admission of California as a State wrought a wondrous change. The adventurous, energetic Americans came in numbers and roused the lethargic, conservative natives from their sleep of centuries, showing them the hidden wealth of the land and completely changing the customs, laws and everything else from what it had been. They speedily scattered into every corner of the State, each unearthing some new product, cultivating the land and digging down into the bowels of the earth in search of nature's hidden treasure.

The result of these labors is seen to-day. A proud city whose ships go to every quarter of the world, whose merchants trade with all nations, and whose manufactories furnish necessaries to the whole territory west of the Rocky mountains. A city beautiful in architectural adornments built on a site which twenty-five years ago was a waste of sand, one which ranks in wealth and population with the large cities of the world and which bears the reputation of a material progress more rapid than history speaks of. Hundreds of thousands of acres under cultivation by an industrious agricultural population, thousands of mines being worked in every direction, manufactories for the utilization of raw material built, and evidences of thrift and prosperity of the people on every hand.

From our abundant wheat crops we have enough to spare to employ hundreds of ships in carrying it to the marts of Europe to feed the people there. The capabilities of the soil having been proven, we raise grains, fruits, vegetables, etc., nearly every imaginable variety and more than we want ourselves. Our mines have produced since their discovery upwards of $1,143,000,000 in gold and silver, and the value of our agricultural products no man can compute. Our manufactories, though few as yet, are prosperous and increasing. We have within the State upwards of 1,500 miles of railroad, while steamers and vessels navigate our streams in all directions. The State not only supports its own population, but is sufficient of a producer to send a variety of things to those outside its borders.

All this we see has happened within a quarter of a century, and still we progress. California is to-day in a more prosperous condition than any State in the Union. The people are well-to-do, and what is more, we have room for many others to come and prosper too. Those who have come to us within late years may not see the steps which have been made so plainly as those who have resided here long, but still they can see enough to prove that Californians have something to be proud of in the advanced and progressive position of their State.

Combined Ore Feeder and Crusher.

Mr. James Tulloch, of Oakland, inventor of the well-known "Tulloch ore feeder," has just patented through the MINING AND SCIENTIFIC PRESS Patent Agency, a combined machine for crushing and feeding ores to stamp mills. While the work done by ordinary rock breakers or ore crushers is sufficient to reduce the ore into pieces which can be fed to stemp mills, the size of the pieces is by no means uniform, some of them being so large that they receive the blow of the stemps two or even three times before they are sufficiently reduced to allow the stamp to act upon any of the smaller pieces in the battery. And while a small piece of ore can be pulverized much more readily by the action of stemps, large pieces can often be broken into smaller fragments more readily by reciprocating jaws; and when pieces of ore of uniform size are fed to a battery the work of the stemp is greatly facilitated, and the wear and tear upon the machinery is reduced.

The invention provides a combined ore crusher and feeder in which the large pieces of ore are reduced to a uniform size before they are fed to the stamps, and as the inventor can utilize the drop of the stamps with better effect for reducing the large pieces of ore to a uniform size between reciprocating jaws than under the stamp, he saves materially in the time required to crush a given quantity. The ore is placed on the hopper of the machine just as it comes from the rock breaker. Surrounding the lower end of the hopper, and projecting a short distance below it, is secured a combined rock breaker and feeder, which receives the ore as it descends by gravity from the hopper, and which will reduce the larger pieces to a medium size before dropping it into the stationary chute.

The combined crusher and feeder consists of two jaws. One jaw encircles the sides of the lower end of the hopper, while the other jaw forms the front side. The upper portion of this crusher conforms to the hopper shape of the lower portion of the hopper, while the lower part of the rear jaw curves forward. Both jaws have transverse teeth on their inside faces. The operating lever receives its motive force from the blow by the tappet of the stamp. The rear end of the lever is formed into a square frame which surrounds the crusher. The front jaw is hinged to the front part of the frame, and the rear jaw to the rear part, while the frame itself is suspended on journals midway between the jaws, so that the up and down motion imparted to the extremity of the lever will cause the jaws to reciprocate. The opening through which the ore is delivered from the crusher to the stationary chute is regulated according to the size required to produce the desired size of ore.

It will thus be seen that the crusher receives the ore from the hopper, sizes and delivers it to the chute, which directs it into the battery. The plain reciprocating jaws, similar to the above described crushing jaw, could be used for simply feeding the ore from the hopper without crushing.

Gems and Precious Stones.

[Written for the PRESS by HENRY G. HANKS.]

N. Malachite.

Melachite, although not a precious stone, is highly prized for ornamental purposes. It generally occurs in mammillary concretionary masses of a beautiful green color. It has an uneven fracture, splintery or conchoidal, opaque; luster, dull; color, emerald green, sometimes in bands or stripes of different shades; does not scratch glass; takes a high polish; streak, lighter color than the mineral. When pure, it has the following composition: Protoxide of copper, 71 9; carbonic acid, 19.9; water, 8.2. Total, 100. Specific gravity = 3.7 to 4; Hardness = 3.5. Seldom found crystallized; crystals, monoclinio.

B. B. decrepitates and bleckens; with borax, yields a bead of copper. Effervesces with nitric acid, giving a green solution, which becomes blue on adding an excess of ammonia. The powdered mineral, after wetting with hydrochloric acid, imparts a blue color to blowpipe flame.

The ancient name for malachite was "molochitis," which was derived from the mallow, which it was observed to resemble in color. It was highly esteemed, according to Pliny, for making seals and for its medicinal properties, "which render it a preservative for infants from certain dangers which menace them."

Malachite is abundant in a few localities. In the Urals, in the Burra Burra mines, Australia, at Bembe on the west coast of Africa. Dana gives the Hughes mine, in Calaveras county, as a locality. Although there are many localities on the Pacific coast where it occurs in small quantities, I do not know of any which produces specimens of any value for ornamental purposes.

There is a slab of melachite at St. Petersburg 32 inches long, 17 inches broad and 2 inches thick, which is valued at 30,000 francs. Whole rooms in several European palaces are lined with malachite. Mantel pieces and table tops are not uncommon. There are fluted Corinthian columns of malachite in churches in St. Petersburg. It is used extensively in inlaying marble and other ornamental stones, for clocks, vases, statues and other ornamented work, but is seldom worn as jewelry.

[Editorial Correspondence.]

The Centennial at Philadelphia.—No. 14.

Terraced npon a little eminence, near the center of the Centennial gronnds, and commanding a delightfal view of the same and a portion of the city and Schuylkill river, stands an elegant stractnre—a sort of Moorish palace, constructed after the style of ths twelfth century, flanked npon either side with arches of glass, and glistening all over with that material and varions colored brick and iron work. The location is qnite romantic. A deep and thickly wooded ravine near by is spanned at a little distanoe by an ornamental bridge, 500 feet long, while still nearer, the same ravine is crossed by a single rail railroad track, across which rons, every five minutes, a novel two-story car. This structore is known as

Horticultural Hall,

And is reckoned as one of the five great maiu buildings of the Exposition. Although comparatively small in extent, many think it the most beautifnl of all, and it will remain as a permanent ornament to Fairmount park. A very good idea of its general appearanoe may be formed from the view given in the accompaaying illnstration. The leagth of the hnilding is 383 feet; its width, 190 feet, and its hight, 70 feet. It covers an area of about one nad a half acres. The two main entrances are throngh imposiag doorways, aud are beautifully ornamented with tile and marble work. The central portion of the building consists of a large hall or conservatory, arannd which runs a corridor, also of Moorish construction, and some 20 feet high. A colossal terra cotta statne of Diana, the goddess of the woods and the hunt, guards the principal entrance. A msgoificent fountain decorates the center, whioh, by the spray wafted from its falling jets, greatly modifies the overheated and sickening atmosphere rendered necessary to keep in a healthy condition the rare exotics which are gathered here from almost every tropical region of the globe. The angles of the main hall are adorned with smaller fountains, while many pieces of elegant and appropriate statuary, intorspersed here and there among the gay flowers and rich shrubbery, adorn other portions of the hall. Here, in this fairy-like palace, Flora is enthroned and holds nadisputed sway.

The grounds immediately snrrounding and oonnected with hortionltnral hall are about 40 acres in extent, and are specially devoted to horticnltural pnrposes. They are beautiful in topography, gently nneven, tastefully and artistically laid out, and divided into scores, if not hnndreds, of little parterres, separated by asphaltnm avenues and walks of greater or less width and length. These parterres are covered with an immense number and variety of flowers from bulbs, shrubs and seeds, judiciously relieved by borders and patches of living green. At one time there were here over 30,000 hyacinths in foll bloom. Flowering shrubs are seen in great variety, spring blossoms without number, thousands of roses, beautiful and rare evergreens and trees and plants—such as may be grown in our summer atmosphere—from all parts of the world. Here England has been allotted 43,000 square feet of space; Germany, 10,000; Spain, 6,000; the Argentine Republic, 5,000; France, 3,800; and the Netherlands, 200 feet. The view of these flower-beds upon either side, looking down the broad walk from Belmont avenne—horticnltural hall closing the vista—is said to be the finest one of the kind in the world.

Within this floral temple, and npon the surrounding grounds, the science of horticnltnre is illnstrated in the following order and classification: Ornamental trees, shrnbs and flowers, hot-houses, conservatories, graperies and their management, garden tools and accessories of gardening, landscape gardening, designing, construction and management.

The Interior of the Hall

Is a fairy palace indeed, the floral display in which it is difficnlt to describe. Nowhere else on this side of the Atlantic, can the visitor behold such a collection of the wonders of floricultnre. The vestibnle leading to the entranoe is devoted to the exhibition of garden implements, such as pruning knives, spades, hoes, rakes, etc., all glistening in high polish. There is also here a fine collection of fancy woods and hanging baskets. On either side of the centrnl hall are the forcing houses, which are well filled with plants that reqnire special care and warmth previous to their being transplanted to the places where they are to bo seen aad studied as standard representatives of their kind.

Passing to the interior of the hall we behold rare exotics from the burning climes of Africa and Sonth America, the twisted and thorny cacti from the plains of Lower California and Mexico, and stately palms and gigantic ferns from islands on the Pacific ocean. Prominent among the latter are the palm ferns from the gardens of Messrs. Miller & Sievers, of San Francisco. The broad fan palm, suggestive of summer heat, is also here, and the sago and guava plant, the date and the cocoa tree and the banana, with its cluster of fat and luscious fruit. Here, too, is the india rubber tree, with its thick, fleshy leaves, the tall stemmed mahogany and the camphor tree, with its sharply cnt and abundant show of foliage. Then we have the Japan maple, with its crimson shading, reminding us of New Englaad's autumn leaves, aud here by its side is the flamingo plant, with its broad, curled leaf of the brightest scarlet hue. The orange and the lemon also add their dense foliage of the richest green, with here and there rich samples of golden fruit.

Curious and Interesting Exhibits.

A single exhibitor from Cuba is said to show more than 1,000 plants and trees; another from the island of Jamaica comes with 250 speoimens. In one of the forcing houses there is a collection of palms owned in South Amboy, N. J., said to be worth $10,000. In an "annex" just ontside, an English florist makes an exhibition of rhododendrons, the finest and largest ever shown in America. Plants of rare and of curious growth, and others noted for their historical interest, are grouped and arranged so as to add in every possible way to the pleasure and attractiveness of this exhibit. Among the curious we have the famous California pitcher plant, with its cnp-shaped petals, blotched with yellow and green, as though designed as a fancy cup for mottled frogs to drink from There is, or a short time since was another peculiar plant—a small cluster of bnlbs growing from a piece of decaying bark. From ont of these bulbs springs a long, delicate drooping tendril, from the end of which a beautiful yellow flower has come forth. There are no leaves, nor even a vestige of green abont either tendril or flower. The bulb and its beautiful pendant flower must have secured its entire nourishment and growth and color from the dull decaying bark, from which, by some incomprehensible means, it has burst forth and matured without leaf or leaflet. This onrious plant is from London. Qoite prominent among the ferns, with their brown trunks and feathery leaves, is a weeping tree fern—a most magnificent variety of this interesting and, of late, popular family of plants. Its drooping leaves hang in graceful symmetry aronnd its hidden dark brown stalks.

An Historical Plant.

Among the plants of historic interest, there is one—a sago palm—which formerly belonged to the great Revolntionary financier, Robert Morris; him throngh whose timely aid the Contioental army was saved from disbandment or starvation, aad from whose purse the impoverished treasnry of the struggling colonists was repleaished, and the great Centennial we celebrate made a possibility. This plant is not beantifnl to look upon, but it has a history upon which, during this Centennial year, all delight to dwell. Its body is some eighteen inches thick, bnt only ten feet in hight, and its age is proclaimed, in all solemnity, to be from 125 to 130 years. It bears a silver shield npon which is inscribed: "Cycos Revoluta; owned by Robert Morris, before and during the Revolntion. Presented by Jacob Hoffner."

There is also a date palm, originally from Bermnda, from whose jnicy trunk, though only thirteen feet in hight, spring numerous branches. It first found its way to Mississippi, then became the property of William Ravea, of Charleston. When South Carolina seoeded Raven sold ont to a New Orleans gentleman and the tree found its way once more to the banks of the Mississippi. It was then fifty-four years old, and while it was in that city. the celebrate dlitigant, Mrs. Gaines, once saved her life from assassins by taking shelter behind its favoring trunk. Its freqoent transplaoting, migrations and vicissitudes, have earned for it quite a chapter in the history of the last half century of American horticnlture.

In addition to the productions of natnre, art has also contributed largely to the floral display in this building. The formers of artificial flowers have sent numerous contribntions in wax and large qnantities of natural flowers, preserved, chemically and otherwise. These preserved flowers consist chiefly of funeral wreaths, harps, crosses, etc.

The Great Floral Display of the Season

Was made abont the last of May, in the floral "annex" to the horticultnral building, by Anthony Waterer, of Surrey, England. This display consisted of some 135 varieties of rhododendrons, among which were nearly 1,000 different specimens in full bloom. This sight, alone, was well worth a visit to Philadelphia, and was such a floral exhibit as was never before seen in America and may never be seen here again. It was not only a thing of beauty bnt it was really a joy forever, for no one who saw it can ever forget those lovely combinations of charming tints, and the gorgeous richness of the thousands of masses of bloom which were there presented to the eye of the beholder. The building in which the exhibit was made was also happily conoeived. It consisted of a Gothio arch of frames, springing directly from the ground, and covered with canvas instead of glass, by which a mellow, softened light was produced, free from the glare and heat usnally met with in a conservatory. It was perfectly delightful to wander through the winding paths of this structure, the ground in which was thrown into graceful curves of unevenness, and the paths bordered upon either side with gronps and masses of the plants, all topped with branches of bloom, rich with every conceivable tint of color from the most delicate throngh every shade of pink to the deepest red of carnation. To stand upon the rsised bank at the fnrthermost extremity and look down upon that gorgeous mass of varied color hefore and below, was one of the richest sights which the lover of color and of flowers could desire to look upon.

Horticnltural hall and its snrronndings, including the deep and shady recesses of Laasdowne ravine, is a most delightful retreat in which to rost the head and eyes after wandering throngh the other great buildings, filled with machinery and all the vsried products of art and indnstry. There, amid windiag walks bordered with trailing vines and trees and flowers of every hue; amid shady recesses, running brooks and sparkling fonntains, the lover of natnre delights to turn away from the practical to the beautiful, and linger awhile where Flora reigns supreme. Here Patrons are reminded of all that is beautiful and good in our noble Order. From here Laborer and Husbandman, Matron and Maid may carry to their distant homes, in the broad prairies or on the mountain slopes, some new ideas that will bud and blossom and add new attractions to garden, field and lawn.

W. B. E.

Archæological.—A telegram from Philadelphia, dated the 4th inst., says: A large nnmber of gentlemen from western and northwestern States and Territories, with representatives of the Government Coast and Geological Surveys, and a few distingnished scientists from abroad, assembled to-day in the Ohio State building, on the Centennial gronnds, in response to a call of the Ohio association, for the purpose of forming an international archæological association. Gen. Brinkerhoff, of Ohio called the meeting to order. Prof. Cox, of Indiana, was chosen temporary chairman. Dr. Halderman, of Philadelphia, made an address of welcome, complimenting the Ohio association upon the interesting and valuable character of its collection at the Centennial exposition. An instructive discnssion followed npon recent discoveries. A permanent organization was effected, with the following officers: President, Col. C. C. Jones, of New York; Vice-Presidents, Prof. Cox, of Indiana, aad F. W. Putman; Secretary and Treasurer, S. D. Pelt, of Ohio.

The Cassiar Mines.—The steamship *California*, from Cassiar, has bronght $40,000 in gold from the mines. Only one or two big strikes are reported at Sitka. Gold diggings are reported on the Keuni river, whioh empties into Cook's inlet. Four men took ont $4,000 in a short time.

A water right for the purpose of supplying the Beach mines, on the Columbia river below Umatilla, has been taken by Wilson S. Gaston. These mines have long been worked by Chinamen with hut slight results, owing to the limited amount of water.

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Mason won the International chess tonrnament prize at the Centennial.

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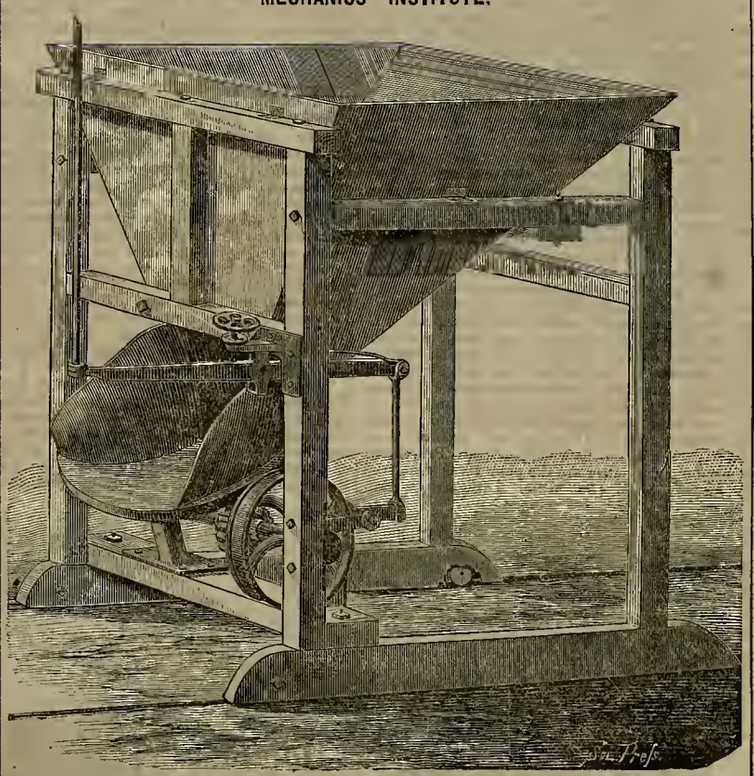

It may be considered as now fully demonstrated, by careful and long-continued experimentation, that the plan upon which a perfect ore feeder must be constructed is that of the *carrier*, and not that of the shaking table. Uniform and accurate feeding is not possible upon the latter plan. The ore must be evenly carried, upon a steadily advancing plane, or table, to the line of discharge, and there simply *dropped*. Spasmodic or jerky contrivances will not answer the purpose.

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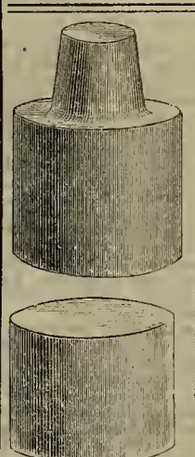

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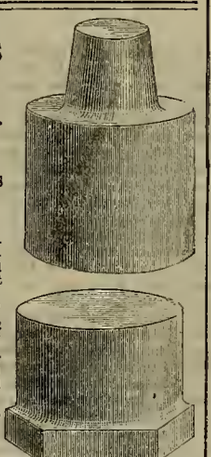

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SIMPLER THAN A PUMP, AS IT REQUIRES NO ATTENTION.

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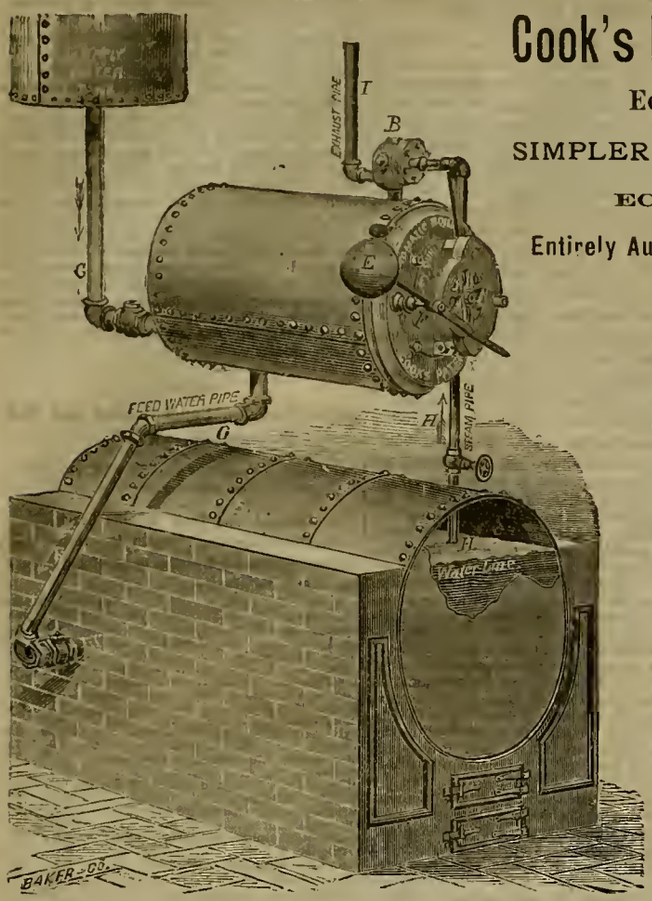

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WERE AWARDED THE HIGHEST PREMIUM OVER ALL MACHINES EXHIBITED AS BOILER FEEDERS AT THE CINCINNATI EXPOSITION AND THE ST. LOUIS FAIR.

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This Feeder will discharge from 40 to 200 gallons of water at one movement, where a pump would require hundreds of strokes to do the same work.

The water is kept exactly at the proper line, whether running fast or slow, without attention from the engineer.

Feeders, Heaters and Regulators Combined are made on this principle. Simple and economical.

The control of feeding water to the boiler, is taken out of the hands of the engineer and left to unerring natural laws.

These Machines are now introduced on this coast for the first time, although they are extensively used in the Eastern States. They supply the boilers with great regularity, and keep the water at exactly the same levsl. As a protection against explosion, they are simply perfect, leaving nothing to be desired.

ONE OF THESE FEEDERS CAN BE SEEN IN OPERATION AT THE PACIFIC IRON WORKS.

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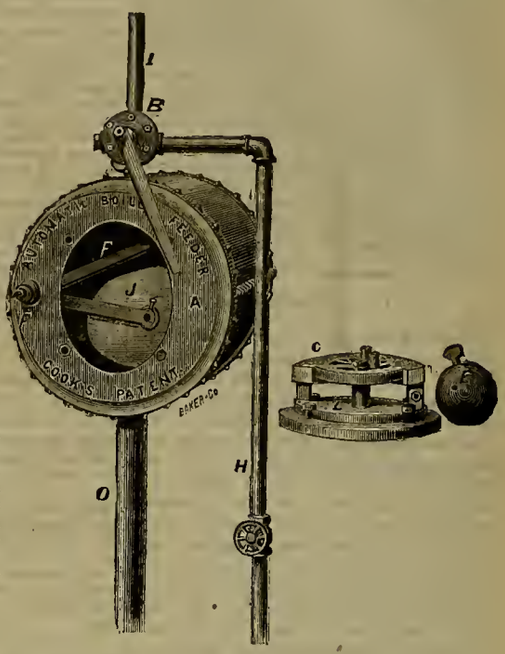

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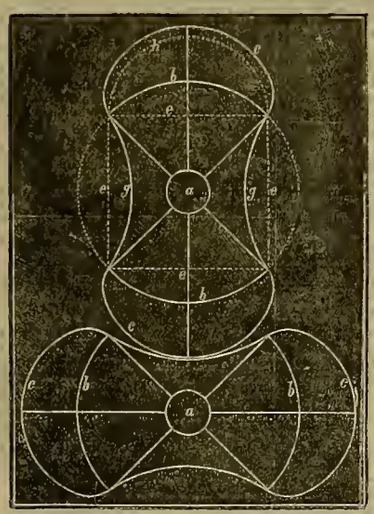

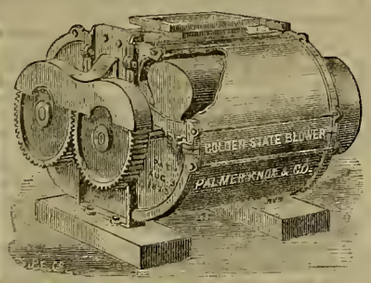

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Blast or Exhaust for Furnaces or Reduction Works.

They have no superior. The casing is made in sections, so as to be easily accessible. They run easily, not rapidly, and the perfect contact of wings gives a uniform and powerful blast.

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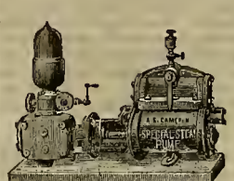

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Fifty-five tons, fifty pound, fish bar pattern, Tredegar make; also, 85 tons Erie pattern, Orawahay make, for sale cheap, or would exchange for old material, by

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(Continued from Page 174.)

Idaho.

THE MINES.—Idabo *Avalanche*, Sept. 2: At the Poorman matters are moving along finely. The stopes are opening up splendldly and the rock exceeds the most sanguine expectatione of the superintendent. The ledge, where the main portion of the work is in progress, is quite large and abounds in high grade ore, all of which promieee a handsoms yield. Quite a large quantity of this is now ready for crnsbing, and the work of hauling it to the mill will commence in a few daye. Operations on the 7th level will, in a few days, reveal a still better quality of ore from that section of the mine, and altogether the Poorman has to-dav as fine prospects as its most sanguine friends could wish for. Captain Bledsoe is driving the work with his usual energy, and a good bullion product from the Poorman may be expected. At the Empire the work of hoisting water is still in progress. The upper levels are entirely clear now and workmen will proceed to etoping to-morrow or next day. There has been no caving or any damage sustained through the recent period of inactivity, so there is every promise now of most encouraging operations. The water will all be removed from the lower levele by Thursday next, and the rich ore known to exist there will be brought to the surface. There is nothing definite concerning the resumption of operations in the Golden Chariot, although letters have been received here during the paet few days from helow, announcing that the superintendent would be up here ahout the 12th of Septemher and pay off.

In the Mountains.

EnITOAS PRESS:—I am very comfortab'y domiciled here at what is known as the "Bridge house." It is sitnated in a deep valley, with high rocky monntains on every eide, and in the midet of the wildest ecenery. I eaw very little from the railroad when we came np, as it was after night before we arrived at any notable pointe, but I am satisfied that there is nothing on the line of the road to compare with what I have seen about here. The valleys are heavily timbered with yellow and sugar pine, sprnce, fir, red cedar and tamarack, and the sngar pine in the markets is mostly furnished by the mille in this vicinity. The lumber is hanled by four, eix and eight-horse teams, from eight to twenty miles to the railroad stations, and thence shipped to the city.

J. C. Culbertson owns the toll road here, having built it over some very rough country to connect the railroad station with his mills and interior conntry.

The monntaine are seamed nud split up with deep gorges and their tops are quite bare. All the rocke are much worn, as if washed with water, and they have deep grooves nnd scratches running in one general direction, which appear to have been formed by a glacial action similar to that which has marked the rocks on the coast of Labrador and Newfonndland and in the valleys of Switzerland. If such an action has caused this peculiar appearance, it mnst have taken place ages ngo, when the climate was very different from that which at present prevails.

The snmmere are short, beginning about June, and snow begins falling sometimes as early as October, but not usnally before Novemher. The climate is warm bnt not oppressively eo, and a pleasant breeze is always stirring. The grass and the foliage of the trees are green and beautiful as they are in the spring with us; and springs of clear cold water, that seems as if it came from snow, hurst from the sides of the mountains in every direction, crossing the road every few hundred yards. The road is liusd with mosses and ferns; wild blackherry, thimble berry and other bushes abound, making this the most beautiful resort one can imagine.

The winter snowe—the effects of which nan even now be seen—are something wonderful. The cold is never great, rarely falling to eight or 10 degs. above zero, Fah., and the average temperature is about 35 degs. The enow falls in immense volumes, etanding last winter 12 or 14 feet deep on a level. It is moist and holds together so that it will pile np in enormons massee and with such a weight as to ornsh in the steepest roofs, unless nonetantly cleared away. As an iustance of its force, the cap timbers which croes the tops of the finmes are from five to eight inches square, and their ends project only a foot heyond the edge, yet I have eeen these ends hroken short off hy the weight of the snow which accumulated upon them. I can now well appreciate the difficulty in keeping open a railroad which crossee these mountains and only wonder that it is as efficiently done as it is. S.

Culhertson's Station, Sonth Yuba, Sept. 4th.

BULLION SHIPMENTS.—Bullion shipments from the following mines have been made since onr last report: California, Aug. 30, $81,347; Ophir, Aug. 31, $23,155; Comanche, Aug. 29, $7,793; Northern Belle, Aug. 29, $8,171; California, Aug. 31, $170,022; Tybo Con. Aug. 27, $9,236 Total for month, $52,039. Ophir, Sept. 1, $56,713; Con. Imperial, Sept. 2, $12,348, and $22,135. Total for August, $77,809. Leopard, Sept. 1, $6,074; Calaveras, Aug. 29, 212 ounces bullion; Con. Virginia, Sept. 2, $25,381; Northern Belle, Aug. 31, $7,991; Jefferson, Aug. 30, $406.25; Arizona, Sept. 3, $2,922; Con. Virginia, Sept. 4, $47,319; California, Sept. 4, $219,037; Northern Belle, Sept. 3, $8,352; General Thomas, Sept. 3, $4,275.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PAESS American and Foreign Patent Agency, the following are worthy of mention:

CUT-OFF BLAET TUYERE IRON.—Isaac S. Van Winkle, San Francisco. This invention provides certain improvements in that class of tnyeres which are employed for hlast furnaces and forges, and it consists in so conetructing the tuyere that it will have a tendency to convey away from the grates all flux and other substances which will cloy them. The grates themselves are so flanged as to present an additional protection, and also to prevent leakage of air aroond them. The inventor combines with them a valve which is capable of heing adjusted so ae to regulate the blast or cut it off altogether. By means of this valve the full opening of one, two or three grates can be permitted, or by turning it one or all of them may be ehut off, and the size of the fire may thus be regulated for large or small work and greatly economize fnel.

MINEA'S CANDLESTICK.—Dennis Quinliven and Robert Lineberger, Ukiah, Mendocino Co. This invention is a novel device for holding candles which are to be nsed in tunnels, mines, or other places where it is deeirable to support a light in various positions to show the work, while the hands are free. It consists of a socket for holding the candle, and this eocket has three prongs or hooke so that it can be supported in any position where there is the least crevice, projection or irregularity. The socket may be stamped out of eheet metal, and has formed with it three projectione. Two of them are turned to a point and stand downward and backward from the socket. The other point extende npward and is hent into a backward curve eo it can be readily hooked on any irregularity or projection which may be convenient.

RECEIVING AND DRYING SHEETS FROM PRINTING PRESSES.—John D. Yost, San Francisco. This machine relates to a novel means for receiving and supporting printed sheets after they leave the press, so that they shall be hung in the least possible space without touching each other, to dry. In certain classes of printing, as of labels in colors, and when a heavy sizing or gloss is used upon the sheets, it is necessary that the sheets can be placed separate, so they can dry for several days without being touched. It has, therefore, been customary to remove each sheet from the receiving table as soon as placed there by the flies, and these sheets are usually attached in pairs, back to back and hung in lines stretched across the room. This improvement consists in receiving the sheets directly from the flies upon supporting rods, so that they hang vertically, and are just sufficiently separated to prevent their touching. They are, by the means adopted, received on the rods with a rapidity equal to that with which they could be thrown on a table by the flies. The rods are then removed to longitudinal frames.

LASTING CLAMP.—David Morey, Watsonville. The patent covers an elastic clamp for lasting the upper leather of shoes and boots, and it consists of a yoke having a screw passing through its center and a pair of forceps, a process so attached at each end of the yoke that they can be made to seize the edges of the leather of the upper, and when the screw is turned up against the bottom of the last it will cause the forcep to hold the leather more strongly as the strain increases.

SOLDERING FURNACE.—Ferdinand C. and Charlee C Smith, Portland, Oregon. The ob ject of this invention is to provide a soldering furnace which will be more durable than the ordinary sheet iron one heretofore used, and one which can be cheaply manufactured; in which those parts which are most likely to burn out or become destroyed can be readily removed and replaced with new ones. The peculiar conetruction ndmite of this furnace being made of cast iron.

QUICKSILVER RETORT.—Frederick Gutzkow, San Francisco. This invention consists of an improved retort for separating solid substances from their gaseous oontents, and specially for separating quicksilver from its ore by distillation. The retort stands vertically and admits of continuous working. It is formed of flanged plates of cast iron, clay, or other material, the object being to allow a speedy and cheap replacing of worn-out plates without disturbing the furnace itself.

AN AGRICULTURAL ANNEATISEMENT.—Probably the largest advertisement in the world is that of the Glasgow *News*, which displays its name on the slope of the Ardenlee, Scotland. The length of each letter is 40 feet; the total length of the line 323 feet, and the area covered is 14,815 feet. The borders of the letters are ehown with a pure white flower, the center is set with dwarf beet, the dark purple of which shows well at a distance, and on each side of this there is a row of light purple candytuft.

THE production of the Comstock mines for the month of August aggregated over $3,500,000.

THE Mechanics' fair will close on the 16th inst.

Asbestos and its Uses.

Ashestos is a mineral enbstance unaffected by fire. The name amianthus is now applied usually to the finer and more silky kinde. A single fiher of this substance fuses into white enamel glass; but in the maes it is capable of resisting ordinary flame, and is hence extensively used in the manufacture of fire-proof roofing, flooring, steam-packing, clothing, safes, paint felting, etc. The ancients wove a cloth out of it for the purpose of wrapping np the bodies of the dead when exposed on the funeral pile; they also made napkins of it which were cleansed hy throwing them into the fire, and used the finer varieties for the wicking of votive lamps. Gloves for handling hot iron have been made of it in Fraoce; but as a general thing clothing made of asbestos is now more of a curiosity than anything else.

The principal nsee to which the material is more practically adapted are enumerated above. Perhaps its most extensive use is for felting for steam boilers, pipes, etc., to which it has been found to be most admirably adapted. At the Mechanice' Fair, the Salamander Felting Co. exhibit various specimens of crude asbestos, such as is used for coating steam boilers, pipes, etc. They exhibit it aleo in practical nse on the varions steam pipes abont the bnildiug. This salamander felting, as it is called, is a nonconducting compositiou for ooating steam boilers, drums, pipes, etc., the object being to prevent the radiation of heat and condensation of steam. It is composed of asbestos and other fireproof and non-conducting material, and ie the best covering for thie pnrpose yet discovered, saving all the way from fifteen to thirty per cent. in fuel. It can bs applied while the boilere and pipes are hot, so that it does not interfere with their use. It is suscentible of a smooth and beautiful finish, and may be painted or ornamented in any tasteful manner.

One of the great problems of the age is how to ntilize the power developed by the combustion of fuel. It is well known that by far the largeet portion of such power goes to waste, and we have been unable as yet fully to control it. Felting made of the material under consideration has done much to save that power. It has been applied with satisfaction to hundreds of steamboat boilers, etationary boilers, and steam machinery of every deecription; to hot water pipee in hotels and private houses, to hot air and blast pipes, locomotives and steam threshers; and to various other purposes, euch as roofs, fire-proof window shuttere, ranges, stoves, ceilinge, safes, and in faot to all purposes where it has been desirable to prevent the radiation or transmission of heat. In addition to the advantages possessed by thie class of felting in non-conductiug peculiarities, it is very light, does not crack or crumble off, and preserves iron from rnst or corrosion. It is put np in barrels in a plastic state, nnd is applied like mortar. It is entirely indestructible by fire, and hy moistening in water can he used over and over again on the eame boilers and pipes, or on another eet.

Seward Cole, 317 California street, who is owner of the patent of salamander felting for this coast, is also agent for H. W. Johne' patent ashestoe materials. Prominent among them is asbestos steam packing, which is made in different forms. In nddition to the peculiar characterietics named, some varieties of ashestos also poesees superior lubricating qnalitiee, which render it, in the improved form, a perfect eteam packing, requiring little oil and without any tendency to heat or waste. The long and severe tests to which this packing has been subjected—in one instance having been nsed without removal on an ocean steamer which sailed over 90,000 miles, and in another, on a locomotive which run over 50,000 miles—establishes its economy. The rope packing is made hy a new process, by which the nsbestos fihers are securely covered by a thin hraid, in which form it can he safely transported and conveniently nsed. The loose packing coneists of finely separated, long fihers of asbestos, which can be twisted or packed into any desired form. The flat packing ie for gaekets, man-holes, plates, etc., is furnished in sheets of various thicknesses. Asbestos felt and concrete roofing are also made. The asbeetos painte are epecially adapted for ornamental structional painting. They are combined on different prinoiplee from any other paints heretofore produced, and contain no water, alkalies or ingrediente other than those beet adapted for the purpose. The firm also make steam pipe coverings, sheeting, lining, felt, oement, etc. Many of these articles may be eeen in the display of Seward Cole, at the fair.

Most of the exhibit, however, coneists of California asbeetos. The fibers have to be separated before the enbstance can be made up into felting. The miners of this coast have wanted so mnch for the product, that up to thie time moet of the substance has been imported from Maryland. The company own a mine in that State and furnish it here all prepared at a less nrice than minere are willing to furnish the crude material. This, of course, should not be. Mr. Cole prefers the California asheetoe, if proper quality can be delivered in qnantity. He is willing to pay from $30 to $35 per ton delivered in San Francisco. As he is the only person here who will buy it at all, of course minere must sell it to him. There ie no general demand for the article, for the simple reason that everything made from it ie patented, and one firm control the patents. Specimens of ashestoe of good quality are frequently sent to Mr. Cole, but the large lots do not come up to the samplee. The stony asbestos is valueless, as it is the fiber which is wanted. It ie used as a binding material for the cement, so the fiher is wanted, not the pulverized substance, although the fibers should be separated. That which comee from the Eaet is all put through a hark mill and is ready for nee. They prefer to purchase it here in a crude form and prepare it themselves, if it can be hought for less than that which is ehipped from the East, but are nnwilling, of course, to pay a higher price than for that which is all prepared. Minere who own leads of asbestoe—and there are many of them—can get the price stnted ahove for a desirable article, hut ten or fifteen tone at a time nre preferred in one shipment. It must, however, come np to eamples and not be half worthlese stone.

[Copyrighted.]

Mechanical Ore Concentration and Separation.—No. 5.

(Written for the PRESS by FRANCIS F. M. CAZIN, M. E., Santa Fe, New Mexico.)

Minerals and Their Specific Gravity.

The following table of minerals (ore and rock) subject to mineral dressing ie arranged according to specific gravity:

NAMES.	SPECIFIC GRAVITY	
Platinum, n.	17	18.9
Mercury, n.	13.6	
Gold, n.	12.7	14.9
Silver Amalgam, n.	10.5	14
Silver, n.	10.5	
Bismuth, n.	9	9.5
Copper, n.	8.6	
Hessite (62.2 silver)	8.13	8.45
Molybdenum	7.5	
Sylveniate (26.2 gold + 14.3 silver)	7.99	8.33
Galena	7.4	7.6
Mendiprite (chloride and oxide of lead)	7	7.1
Wolfram	7	7.6
Matlockite (chlorite and oxide of lead)	6.9	7.2
Foliated Tellurium	7	
Brittle Silver or Glaserz (68.5 silver)	6.9	7.2
Cinnabar	6.2	70.2
Lanarkite (sulphate and carb. of lead)	6.8	7
Carbonate of Lead	5.46	5.48
Calomel (chloride of mercury)	6.4	6 5
Copper Nickel	6.6	5.7
Wolfenite	6.3	5.9
Bismuthine (81.25 bismutb)	6.5	7.8
Cerusite (77.52 lead)	6.5	
Smaltite (28 2 cobalt)	6.4	7.3
Caledonite, (copper and lead)	6.4	
Cupro-plumbite (copper and lead)	5.4	
Leadhillite	6.26	6.43
Stephanite (68.5 silver, 15.3 antimony)	6.2	6.3
Polyhasite (64 to 72 silver)	6.2	
Anglesite (sulphate of lead)	6.25	6.3
Argentite (87 silver)	7	7.4
Needle ore (36 lead, 11 cop., 36.2 bismuth)	6.7	
Copper silver pyrites (53.1 silver, 31.2 cop.)	6.2	6.3
Pyromorphite (phosphate and chlor. lead.)	6.1	7
Crocoisite (chromate of lead)	6	6.6
Flustone	6	.5
Gersdorite (28.1 nickel)	6	6.3
Cerasine (chloride and carbonats of lead)	6	5.3
Eulytine (69.4 bismuth)	5 9	5
Bromide of Silver	5.75	
Bournonite (41.7 lead, 12.7 copper)	5.7	5.8
Chalcosite (79.8 copper)	5.7	
Valentinite (83.4 antimony)	5.6	
Chloride of Silver	5.58	5.5
Ruby Silver ore (light) (65.4 silver)	5.6	5.8
Ruby Silver ore (dark) (59. silver)	5.4	5.6
Bunnite (38 lead)	5.5	
Red Oxide Copper (88.8 copper)	5.3	5.8
Stibnite (74.6 antimony)	5.23	
Cotunnite (chloride of lead)	5.24	
Sauarmontite (83.4 antimony)	5.22	5.3
Saynite (40.65 nickel, 14.11 bismuth, 1.68 copper, 1.58 lead)	5.14	
Polychromic Copper ore (55.5 copper, 16.4 iron)	4.9	5.1
Fablerz (30 48 copper up to 31 silver)	4.3	5.1
Wolfsbergite (copper and antimony)	4.7	
Tetrahedrite (57 to 32.69 silver)	4.6	5.6
Antimouite	4.6	4.9
Magnetic Pyrites	4.6	4.8
Pyrites	4.5	4.9
Kermesite (75 antimony)	4.5	4.6
Dufrenoysite (45.20 copper, 1.94 silver)	4.5	
Bismuth, red	4.3	4.7
Stannite	4.4	
Stembergite (33.2 silver)	4.2	
Wittenichlte (copper and bismuth)	4.3	
Copper Pyrites	4.2	
Zinchlende (black jack)	4.2	
Baryta	4.2	
Brown Hematite	3.8	4.2
Carbonate of Iron	3.7	3.8
Azurite (69 oxide of copper)	3.7	3.8
Red Antimony	3.7	3 8
Pyrolusite	3.7	3 8
Atacamite (56 oxide of copper)	3.7	
Sphaerosiderite	3.6	
Malachite (57.3 copper)	3.5	4
Arsenite	3.7	
Red Oxide of Manganese	3.3	3.7
Calamine	2.6	4.4
FLUORSPAR	3.1	
HORNBLENDE	3.1	3.4
DOLOMITE	2 8	
PORPHYRY	2.7	2.8
SLATE (argillaceous)	2.7	
QUARTZ	2.7	
CALCAREOUS SPAR	2.6	2.8
GRANITE	2.5	3
LIME ROCK	2.5	2.8
FELDSPAR	2.5	2.6
SANDSTONE	2	2.6

EVERY PART STRENOTHENE A' PART.—This is the latest: Blood is becoming the faehionable beverage in Cincinnati, being thought a great remedial draft for invalids suffering with anæmia and generally "run down." The Cincinnati *Commercial* describee a place in John etreet where between two and four o'clock in the afternoon ladiee congregate and drink blood fresh from the slitteu throate of hullocks. They seem to enjoy it, but it is said to be not altogether conducive to good health. At the slaughter houses in this city the Eaet river consumptives may be seen almost any day drinking the life blood of eteers, bnt as yet the custom has not become as fashionable ae it is said to be in Cincinnati.—*Daily Graphic.*

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING AUGUST 29TH, 1876.

MEAL BINS.—Jacob R. Felter, San Bernardino, Cal.

DIAL TELEGRAPHS.—John O. Ludwig, S. F.

WINDMILLS.—James N. Rundle, Visalia, Cal., assignor to self and David L. Tonseca, S. F.

ORE CRUSHER AND FEEDER.—James Tullock, Oakland, Cal.

PLOWS.—Stephen M. Harris, Forest Grove, Ogn.

ELLIPSOGRAPHS.—Henry O. Root, S. F.

FIRE PLACE AND FURNACE.—Reason Wiley, Arcata, Cal.

DESIGN.

CENTER PIECE.—(two cases.) Samuel Kellett, S. F.

TRADEMARK.

CIGARS.—John W Schaeffer, S. F.

——"The patente are not ready for delivery by the Patent Office until some 14 daye after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Lap-Welded Water Pipe.

In the machinery department of the Pavilion, near the large engine, may be seen a display of water and gae pipe, tubes and pump columns of all sizes from eigbtb-inch to fifteen inches in diameter, exhibited by Dnnbam, Carrigan & Co. Althongb the pipe migbt only receive a paeeing notice from a casual visitor, it is, in view of its nsefnlneee, eepecially on tbis coast, wortby of ae close an examinatinn ae any of tbe more pretentious exhibits in the fair.

While most of the gas and water pipe manufaotnred and shipped to this coast is known among dealers ae butt-welded, the pipe exhibited by this firm is lap-welded pipe. Tbe advantage of thie etyle of pipe is its equal and increased strengtb throughout all parts. It is not fnll of ridges on the inside, as in tbe caee of tbe butt-welded pipe. The interior will be found as perfectly smooth ae the exterior, thereby insuring lees friction and greater discharge.

Tbe lap-welded pump colnmn is fast becoming celebrated among mining men as something long needed, especially in deep mining both in this State, Nevada, and Utah. Its advantagee over the old-fashioned riveted pnmp colnmn are so numerous that our limited epace wonld not admit of detailing them. Suffice it to eay that, being perfectly smootb on its inside, it will discbarge ahont one-third more water with the same or less power than a riveted column, which is acconnted for by the great obetrnction of the rivet heads and eeams in the latter etyle of column; moreover, the constant jarring will in course of time oanse rivets to wear and break, and ae a consequence, a large amonnt of water which shonld be raised to tbe snrface will be pouring out of the seams and falling back into the mine. The lap-welded colnmn being equally solid and strong throughont its entire circumference, entirely obviates this trouble, ae no water can come throngh its sides until the pipe itself is worn ont.

Although a comparatively new article, there are already thoueands of feet now in use on this coast, and all the late heavy and costly pnmping machinery on the Comstock lode has been fnrnished with the lap-welded column pipe. Upon inquiry we find that another great eature about thie colnmn is the fact that its cost is no greater than the riveted.

Messrs. Dunham, Carrigan & Co. also exbibit samples of welded water pipe, ranging from three to fifteen inches in diameter, especia ly adapted for public and private water works, and for hydraulic mining. This pipe is coated both inside and ontside with an indestrnctible patent enamel, which effectually protects the iron from all action of rust, as well ae deetrnction caused by the alkali and mineral which so impregnates the majority of the water in this State. Nnmerons chemists in the East have made exhanstive experiments with the patent enamel, and have given certificates to the effect that it is not affected by the action of alkalies, acide, hot or cold liqnors, or ealt of any description, which in general uee are apt to be conveyed through pipe coated with it. Price sometimes being quite an object in laying long lines of pipe, we find tbat lap-welded pipe is sold at prices fully as cheap as riveted or cast iron pipe, and is pronounced far superior to either.

Tbis firm aleo exhibit samples of lap-welded qnicksilver flasks, an entirely new article in American manufactnres, which in appearance and finish are far superior to the rough and cnmbersome English flasks heretofore the only ones in nee. Dnnham, Carrigan & Co. assnre us that their flaeks are tested under a pressnre of one thousand ponnde per square inch, and they gnarantee every flask to be perfect. As quicksilver forms one of our great mining products on this coast, these flaeks are well worthy the inspection of all who are interested in this branch of industry.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

THERE is not a medical man who denies the efficacy of sulphur as a radical remedy in the larger proportion of skin diseases which prevail in cities; and there is not a medical man who does not indorse GLENN'S SULPHUR SOAP as the best way of applying it. Sold everywhere.

GENERAL MERCHANDISE.

WHOLESALE.

WEDNESDAY M., Sept. 6, 1876.

BAGS.

Eng. Stand Wht..	12	@12½
Neville & Co's...		
Hand Sewed.....	12	@12½
24x36.....	—	@—
21x40.....	—	@—
Machine do 24x40.	—	@15½
" " 22x40.	14½	@—
" " 21x40.	13	@—
" " 22x36.	11¼	@12
Flour Sacks ⅛s..	9	@11
" " ¼s.....	6	@ 7
" " ½s.....	4½	@ 5
Hessian 60-in.....	12¼	@14½
do 45-in.....	10	@—
do 40-in	8½	@—
Wool Sacks, 3½ lbs.	45	@50
do 4 " .	50	@52½
Stand. tunnies...	11½	@12
single seam do...	—	@—
Bean Sags.....	7	@ 8

CANNED GOODS.

Asst'd Pie Fruits		
in 2½ ℔ cans.	2 75	@ 3 00
do Table do...	3 75	@ 4 25
Jams & Jellies	4 25	@—
Pickles ℔ gl..	—	@ 3 50
Sardines, qr box	1 65	@ 1 90
do hf boxes.	3 00	@—

COAL.—Mining.

Australian, ℔ ton	8 75	@ 9 00
Coos Bay.....	—	@ 9 00
Sellingham Bay.—		@ 9 00
Seattle.....	—	@ 9 00
Cumberland.....	14 00	@16 00
Mt. Diablo.....	5 75	@7 75
Labigb.....	—	@22 00
Liverpool.....	8 50	@10 00
West Hartley..—		@14 00
Cooteb.....	9 00	@10 00
Scranton.....	13 00	@16 00
Vancouver's Isl.	10 50	@ 2 00
Charcoal, ℔ bbl.	75	@—
Coke, ℔ bbl.....	—	@ 60

COFFEE.

Sandwich Island	@	21½
Costa Rica per ℔	20½	@ 21
Onatemala.....	—	@ 20
Java.....	—	@ 25
Manilla.....	—	@ 19
Ground in cs....	25	@—
Chicory.....	27	@—

FISH.

Sac. Dry Cod, new	5½	@ 5½
cases..	6	@ 7½
do boneless....	8½	@10
Eastern Cod....	8	@ 9½
Salmon in bbls..6	50	@7 25
do ½ bbls	3 75	@4 00
do ℔ cans.	2 40	@—
do ½ ℔ cans.	1 40	@—
do Col. R. ½ ℔	4 25	@4 50
Pick. Cod, bbls.	22 00	@—
do ½ bbls	11 00	@—
Mack'l No. 1, ½ bbls	11 00	@—
" Extra....	@12	00
" in kits....	1 90	@2 25
" Ex mess.	3 50	@4 00
" Ex mess. ½ bbs—	@12	00
Pic'd Herring, ½...	3 00	@ 3 50
Bos. Sm'k'd Herr's	40	@ 50

LIME, ETC.

Lime, S'ta Cruz,		
℔ bbl.....	2 00	@ 2 25
Cement, Rosendale.....	2 75	@ 3 50
do Portland	4 75	@ 5 50
Plaster, Golden Gate Mills.....	3 00	@ 3 25
Land Plaster, ℔ ton.....	10 00	@12 50

MISCELLANEOUS.

Pulu.....	—	@ 7½

NAILS.

Assorted size, keg 3 75 @4 00

OILS.

Pacific Glne Co.		
Neat F't No. 1	1 00	@ 90
Pure.....	—	@—
Castor Oil No. 1..	—	@ 95
Baker's A.....	—	@1 15
Cocoanut.....	—	@ 60
Olive Plagniol..5	50	@5 75
do Possel.....	4 75	@5 00
Palm ℔.....	9	@—
Linseed, raw....	—	@2½
do boiled....	—	@2½
Cbina nut in ca..	65	@—
Sperm, ornde.	1 60	@1 65
do bleached.	1 90	@2 25
Coast Whales .	47½	@ 50
Polar, refined..	—	@ 50
Lard.....	—	@1 20
Chophine.....	—	@ 37
Devoe's Bril't...	38	@ 39
Long Island....	—	@ 22
Eureka.....	26	@ 27
Devoe's Petro'm	—	@ 42½
Barrel kerosene	23	@ 25
Olive.....	—	@3 50
Downar Kerose's	—	@ 37½
Elaine.....	—	@ 42
Gas Light Oil..	23	@ 25

PAINTS.

Pure White Lead	9¾	@10¼
Whiting	—	@ 1¾
Putty	4	@ 5
Chalk.....	—	@ 1½
Paris White.....	—	@ 2½
Oobre.....	—	@ 3½
Venetian Red...	—	@ 3½
Red Lead.....	10	@ 11
Litbarge.....	10	@ 11
Eng. Vermillion	—	@1 25
Averill Chemical Paint, per gal.		
White & tints.	2 00	@2 40
Green, Blue & Ch Yellow..	3 00	@3 50
Light Red....	3 00	@3 50
Metallic Roof..	1 30	@1 60

RICE.

China No. 1....	1¼	@ 5½
Hawaiian, ℔ lb..	7½	@ 8
Carolina, ℔ lb..	10	@—

SALT.

Cal. Bay, per ton	10 00	@14 00
do Comnon..	5 00	@ 7 00
Carmen Island..	12 00	@15 00
Liverpool fine..	13 50	@14 00

SOAP.

Castila ℔ lb....	10	@ 10½
Common brande..	4½	@ 6
Fancy do ..	7	@ 8

CANDLES.

Grant's.....	16	@ 16½
Mitchell's....	18	@ 20

SPICES.

Cloves ℔ lb.....	45	@ 47½
Cassia.....	23½	@ 25½
Citron.....	28	@ 30
Nutmegs.....	95	@ 97½
Whole Pepper...	14½	@ 15
Pimento.....	16	@ 17½
Gr'nd Allsp'rdz	—	@1 12
do Cassia do..	—	@1 50
do Cloves do..	—	@1 50
do Mustard do	—	@1 20
do Ginger do..	—	@1 00
do Pepper do..	—	@1 00
do Mace do....	—	@2 00
Sowen's Pure Ground ℔ lb	—	@ 50

SUGAR, ETC.

Cal. Cube per ℔..	—	@ 12¾
Cirole A orusned	—	@ 12
Powdered.....	—	@ 12¾
Fine crushed....	—	@ 11
Granulated.....	—	@ 11½
Golden C.....	—	@ 10½
Hawaiian.....	10	@ 11
Cal. Syrup in kgs	—	@ 62½
Hawaiian Molasses.....	25	@ 27½

TEA.

Oolong, Canton, lb	19	@ 25
do Amoy...	28	@ 50
do Formosa	40	@ 80
Imperial, Canton	25	@ 40
do Pinesuey	45	@ 80
do Moynne..	50	@1 00
Cnnpo'der, Cant.	75	@1 00
do Pinesuey	60	@1 00
do Moyune.	65	@1 25
Y'ne Hy., Canton	28	@ 40
do Pingsuey	40	@ 70
do Moyune..	65	@ 85
Japan, ½ chests, bulk.....	30	@ 75
Japan, lacquered bxs, 4½ and 5 lbs	45	@ 67
Japan do, ½ bxs	45	@ 65
do ½ ℔ bx, 4½ ℔	35	@ 65
do ½ & 1 ℔ paper	30	@ 55

TURPENTINE.

Eastern.....	51½	@55

METALS.

[WHOLESALE.

THURSDAY, M., Sept. 7, 1875.

American Pig iron, ℔ ton	32 00	@—
Scotch Pig iron, ℔ ton	34 50	@ 32 00
White Pig, ℔ ton	40 00	@ 50 00
Oregon Pig, ℔ ton	31 50	@ 32 50
Refined Bar,	— —	@— ¼¼
Soiler, No. 1 to 4	— —	@— 5½
Plate, No. 5 to 9	— —	@— 5½
Sheet, No. 10 to 14	— —	@— 5½
Sheet, No. 16 to 20	— 5¼	@—
Sheet, No. 22 to 24	— 6	@—
Sheet, No. 26 to 28	— 6¾	@—
Horse Shoes per keg	7 00	@ 8 50
Nail Rod	— 10	@—
Norway Iron	— 8½	@— 9½
Rolled Iron	— 4	@— 8
Other Irons for Blacksmiths, Miners, etc.	— —	@— 4¼

COPPER.—

Copper Tin'd	— 37	@— 40
Sheathing, ℔ lb	— 24	@— 40
Sheathing, Yellow	— 21	@— 22½
Sheathing, Yellow	— 11	@— 11
Composition Nails	— 21	@— —
Composition Bolts	— 24	@— —

STEEL.—English Cast, ℔ lb — 20 @— 25

Anderson & Woods' ordinary sizes	— —	@— 15
Drill	— —	@— 16½
Flat Bar	— 16	@— 20
Plow Steel	— 8½	@— 9

TIN PLATES.—

10x14 I C Charcoal	11 00	@— —
10x14 I X Charcoal	13 00	@— —
Roofing Plate I C Charcoal	10 00	@ 10 50
Banca Tin	— 24	@— —
Australian	— 25	@— —

ZINC.—By the Cask —

Zinc, Sheet 7x3 ft, No 7 to 10 ℔ lb	— —	@— 11
do do 7x3 ft, No 11 to 14	— —	@— 11½
do do 8x4 ft, No 8 to 10	— —	@— 12½
do do 8x4 ft, No 11 to 10	— —	@— 12
Nails Assorted sizes	3 60	@ 3 75
QUICKSILVER, per lb	— 43	@ 45 —

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, Sept. 6, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 91¼ to 91¾. Silver 5½@5¾.

GOLD in N. Y., 109⅞

GOLD BARS, 880 90. SILVER BARS, 11@21 per cent. discount.

EXCHANGE on N. Y., 50-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, 5 per cent. discount.

LONDON—Consols, 95⅝; Bonds, 102¼

QUICKSILVER in S. F., by the flask, per lb. 45@

Amusements.

WADE'S OPERA HOUSE, Mission Street, near Third. Open every evening with first-class Dramatic Company. Box Office open from 9 A. M. to 10 P. M. Doors open at half past seven. Commence at eight o'clock. TONY DENIER.

CALIFORNIA THEATER, Bush Street, above Kearny. Open every evening with the best Dramatic Company in the United States. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance. Doors open at half past seven. Monday, September 4th, EDWIN BOOTH.

W. T. GARRATT'S
BRASS and BELL FOUNDRY
SAN FRANCISCO,

MANUFACTURER AND IMPORTER OF

Church and Steamboat BELLS and GONGS,

BRASS CASTINGS of all kinde,
WATER GATES, GAS GATES,
FIRE HYDRANTS,
DOCK HYDRANTS,
GARDEN HYDRANTS.

A General Assortment of Engineers' Finding.

Hooker's Patent Celebrated

STEAM PUMP

☞The Best and Most Durable in use. Also, a variety of other

PUMPS

For Mining and Farming Purposes.

ROOT'S BLAST BLOWERS,
For Ventilating Mines and for Smelting Works.

HYDRAULIC PIPES AND NOZZLES,
For Mining Purposes.

Garratt's Improved Journal Metal,
IMPORTED OF

IRON PIPE AND MALLEABLE IRON FITTINGS.
ALL KINDS OF

WORK AND COMPOSITION NAILS,
16-tf AT LOWEST RATES.

Mining and Other Companies.

Pereone intereeted in incorporated eharee will do well to recommend the publication of the official noticee of their companiee in this paper, as the cheapeet appropriate medium for the eame.

Antilles Mining Company—Location of

Principal place of business, San Francisco, Cal. NOTICE.—There are delinquent upon the following described stock, on account of assessment, levied on the seventh day of July, 1876, the several amounte set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Blow, W W.....	381	50	$ 10 00
Blow, W W, Trustee.....	377	2250	450 00
Blow, W W, Trustee.....	378	375	75 00
Cox, A P, Trnstee.....	394	1125	225 00
Glazier, I & Co, Trustees....	373	300	50 00
Hunt, D B.....	347	100	20 00
Hunt, D B, Trnstee.....	345	450	90 00
Hunt, D B, Trustee.....	346	125	25 00
Hunt, D B, Trustee.....	381	150	30 00
Hinkle, Phillip.....	374	300	60 00
Haynes, John W.....	355	150	30 00
Hotaling, A P, Trustee.....	355	750	150 00
Hosmer & Bourne, Trustees..	353	150	30 00
Hosmer & Bourns, Trustees..	364	75	15 00
Hosmer & Bourne, Trustees..	379	150	30 00
Kendall, C W.....	357	150	30 00
Landers, John, Trustee.....	371	375	75 00
Reeves, O F, Trustee.....	391	1125	225 00
Reeves, O F, Trustee.....	392	1125	225 00
Singleton, M A, Trustee.....	359	150	30 00
Twing, D H & Co, Trustees..	375	300	50 00
Turner, John.....	360	750	150 00
White, T A, Trustee.....	393	1125	225 00
Wade, A P.....	348	825	165 00
Wade, A P.....	395	3000	600 00
Wade, A P, Trustee.....	367	2000	400 00
Wade, A P, Trustee.....	368	500	100 00
Wade, A P, Trustee.....	369	250	50 00
Wade, A P, Trustee.....	370	250	50 00

And in accordance with law, and an order of the Board of Directors, made on the seventh day of July, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the company's office, on Friday, the eighth day of September, 1875, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

H. M. MORGAN, Secretary.

Office, 207 Sansome street (third floor), San Francisco, Cal.

Cincinnati Gold and Silver Mining Co.—

Principal place of business, San Francisco, Cal. Location of works, Kelsey Mining District, El Dorado Co., Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 29th day of August, 1876, an assessment, No. 5, of ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 535 California street, San Francisco, Cal

Any stock upon which this assessment shall remain unpaid on the 29th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 16th day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale

WM. SMALL, Secretary.

Office, Room 2½, No. 535 California street, San Francisco, Cal.

Kearsarge Con. Quicksilver Mining Co.—

Location of principal place of business, San Francisco, Cal. Location of works, Lake Mining District, Lake County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessement (No. —), levied on the first day of July, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
James McHaffie, Trustee..	6	100	$ 15 00
James McHaffie, Trustee..	7	25	3 75
James McHaffie, Trustee..	8	150	22 50
James McHaffie, Trustee..	9	65	9 90
James McHaffie, Trustee..	10	100	15 00
James McHaffie, Trustee..	11	91	13 65
James McHaffie, Trustee..	24	1000	150 00
James McHaffie, Trustee..	25	1000	150 00
James McHaffie, Trustee..	25	1000	150 00
James McHaffie, Trustee..	27	1000	150 00
James McHaffie, Trustee..	28	100	15 00
J M Davis.....	32	100	15 00
James McHaffie, Trustee..	36	110	16 50
James McHaffie, Trustee..	38	100	15 00
James McHaffie, Trustee..	39	100	15 00
James McHaffie, Trustee..	39	100	15 00
James McHaffie, Trustee..	40	100	15 00
James McHaffie, Trustee..	45	50	7 50
John O Hanscom.....	47	400	60 00
Mre Joeeph C Perkins. ...	49	100	15 00
James McHaffie, Trustee..	51	49	7 35
Jno C Hanscom, Trustee...	52	500	75 00
Jno O Hanscom, Trustee..	53	400	60 00
Jno O Hanscom, Trustee..	54	100	15 00
Jno O Hanscom, Trustee..	55	250	37 50
Jno O Hanscom, Trustee..	56	100	15 00
Jno O Hanscom, Trustee..	57	50	7 50
Jno O Hauscom, Trnstee..	58	50	7 50
James McHaffie, Trustee..	59	250	37 50
James McHaffie, Trustee..	60	130	19 50
James McHaffie, Trustee..	51	26	4 20
James McHaffie, Trustee..	54	10	1 50
J M Davis, Trustee.....	82	68	10 20
J M Davis, Trustee.....	83	300	45 00
J M Davis, Trustee.....	84	200	30 00
J M Davis, Trustee.....	65	100	15 00
J M Davis, Trustee.....	80	100	15 00
J M Davis, Trnstee.....	87	100	15 00
J M Davis, Trustee.....	88	50	7 50
J M Davis, Trustee.....	89	50	7 50
J M Davis, Trustee.....	90	50	7 50
J M Davis, Trustee.....	91	50	7 50
James McHaffie, Trustee..	93	100	15 00
James McHaffie, Trustee..	94	100	15 00
James McHaffie, Trustee..	95	300	45 00
Henry Philip, Trustee....	96	1000	150 00
James McHaffie, Trustee..	97	1000	150 00
James McHaffie, Trustee..	101	100	15 00
James McHaffie, Trustee..	102	100	15 00
James McHaffie, Trustee..	103	100	15 00
James McHaffie, Trustee..	104	50	7 50
James McHaffie, Trustee..	105	50	7 50
James McHaffie, Trustee..	106	50	7 50
James McHaffie, Trustee..	107	50	7 50
James McHaffie, Trustee..	108	150	22 50
James McHaffie, Trustee..	109	250	37 50
James McHaffie, Trustee..	110	2500	375 00
James McHaffie, Trustee..	111	5000	750 00
James McHaffie, Trustee..	112	5000	750 00
James McHaffie, Trustee..	113	200	30 00
James McHaffie, Trustee..	114	100	15 00
O D Fitzhugh.....	115	3333	499 95
Henry Philip, Trustee....	116	500	75 00
Henry Philip, Trustee....	117	500	75 00
James McHaffie, Trustee..	118	10000	1500 00
James McHaffie, Trustee..	119	1910	285 55
W G Hughes, Trustee.....	124	3334	500 10
Jno Brownlie, Trustee....	125	750	112 50
Jno Brownlie, Trustee....	126	2500	375 00
Jno Brownlie, Trustee....	127	1000	150 00
James McHaffie, Trustee .	128	10	1 50
James McHaffie, Trustee..	129	10	1 50
James McHaffie, Trustee..	130	10	1 50
James McHaffie, Trustee..	131	10	1 50

And in accordance with law, and an order of the Board of Directors, made on the first day of July, 1876, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, room 10 Stevenson Block, on the 16th day of September, 1876, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

JAMES M. HAFFIE, Secretary.

Office, Room 10 Stevenson Block, San Francisco, Cal.

Mariposa South Mining Company—Loca-

tion of principal place of business, San Francisco, Cal. Location of works, Spanish Belt Mining District, Nye county, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the eighth day of August, 1876, an assessment, No. 1, of ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, 418 California street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 19th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the seventeenth (17) day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Secretary.

Office, Room No. 2, 418 California street, San Francisco, California.

Northerly Five Cent Hill Gravel Mining

Company. Location of principal place of business, San Francisco, Cal. Location of works, El Dorado Co., Cal.

Notice is hereby given that at a meeting of the Directors, held on the ninth day of August, 1876, an assessment of 5c per share was levied upon the capital stock of the corporation, payable immediately, to the Secretary, at the office of the company, room 33, Merchants' Exchange, California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Monday, the 11th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 28th day of September, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. WARREN BRYANT, Secretary,

Room 33, Merchants' Exchange, San Francisco, Cal.

Sierra Iron Company—Location of prin-

cipal place of business, San Francisco, Cal. Location of works, Sierra and Plumas counties, Cal.

Notice is hereby given, that at a meeting of the Trustees of said company, held on the 18th day of August, 1876, an assessment of $1 per share was levied upon the capital stock of the corporation, payable immediately, in gold coin of the United States, to the Secretary, at the office of the company.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 26th day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

CALES T. FAY, Secretary.

Office, No. 9 Halleck Block, 318 Sansome street, San Francisco, Cal.

Taylor Mill and Mining Company—Prin-

cipal place of business, city and county of San Francisco. Location of works, Garden Valley Mining District.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 10th day of August, 1876, an assessment of forty (40) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at his office, No. 607 Montgomery street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 13th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the fourth day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

SAM'L S. MURFEY, Secretary.

Office, No. 607 Montgomery street, San Francisco, Cal

Tintic Milling and Mining Co.—Notice

to Stockholders. In accordance with a resolution adopted at a meeting of the Trustees of the Tintic Milling and Mining Company on the 14th day of August, 1876, a special meeting of the stockholders of said company is hereby called, the same to be held at the office of the company, No. 310 Sansome street, San Francisco, Cal., on Monday, September 18th, 1876, at two o'clock P. M., to decide upon the proposition to increase the capital stock of said company from $3,000,000, divided into 30,000 shares, being the present capital, to $10,000,000, divided into 100,000 shares.

JOHN F. MILLER,
WM. H. PATTERSON,
O. H. LAGRANGE,
N. T. HAMILTON,
O. C. MILLER,
} Trustees.

San Francisco, Cal., August 14th, 1876.

Union Stone Company of California—

(Sorel Patent).—Location of principal place of business and works, city and county of San Francisco, Cal.

Notice is hereby given, that at a meeting of the Board of Directors of this company, held on Tuesday, the 22d day of August, 1876, an assessment (No. 4) of 20 cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 19 First street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Tuesday, the 26th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 17th day of October, 1876, to pay delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors.

H. F. KNOX, Secretary.

Office, No. 19 First street, San Francisco, Cal.

Iron and Machine Works.

WM. HAWKINS. T. G. CANTRELL

HAWKINS & CANTRELL,

MACHINE WORKS,

210 & 212 Beale St.,

Near Howard, - - - SAN FRANCISCO.

MANUFACTURERS OF

Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horse Power.

N. B.—Jobbing and Repairing done with Dispatch.

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STEAM ENGINES,

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N. E. corner of Tehama and Fremont streets, above Howard, San Francisco.

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Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,

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Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

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Joseph Moore,	Jesse Holladay,	O. E. McLane,
Wm. Norris,	Wm. H. Taylor,	J. B. Haggin,
	James D. Walker.	

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary

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THOS. PENDERGAST. HENRY S. SMITH.

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24v22-3m JOSEPH MOORE, Superintendent.

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Steamboat Shafts, Cranks, Piston and Connecting Rods Car and Locomotive Axles and Frames,

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Is Extensively Used in the East and

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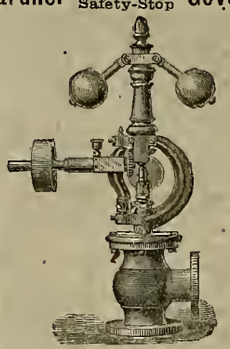

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☞ When all others fail, buy a "Gardner." We have all sizes of these celebrated Steam Governors on hand at all times.

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CHLORIDIZING FURNACE.

Guaranteed to Chloridize from 85 to 95 per cent. of any gold or silver ores that are not more profitable for smelting. Will also desulphurize ores and put them in proper shape for working in cupola furnaces.

Cost of Roasting and Chloridizing by this Process:

Two cords of wood at $6	$12.00
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1500 lbs of salt at 1½c	22.50
Wear of shoes and power	1.50
Cost for 15 tons	$44 00
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In a furnace of three or four times this capacity the cost is decreased by 20 per cent.

The furnace is now working successfully at the Pce Consolidated Co.'s mines, in the Peavine District. For further information, apply to

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For Gold, Silver and Copper Ores.

The roasting capacity of the Furnace, per 24 hours, is from 6 to 50 tons, according to percentage and nature of the sulphureted ore, with an expenditure of one and a half to two cords of wood, and two to three shifts of unskilled labor, according to amount of ore handled. The Furnace is adapted for chloridizing, as well as oxidizing, roasting, and for the manufacture of sulphuric acid. In point of cheapness of construction and efficiency in working, the Furnace is far the best in use. Millmen in need of a cheap and efficient Roasting Apparatus will apply to

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Furnace can be seen on application for permit, at Grass Valley.

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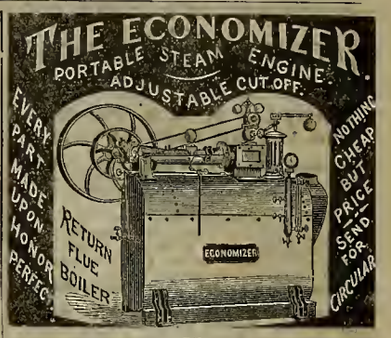

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Best of its kind in use. Price, complete, $275. Also, small Pony Planers and Planing Machine Knives, which are recommended as superior and extra in quality. 100 Scroll work designs free on receipt of stamp. For circulars giving detailed information, address

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The mining public is hereby notified that all persons who represent themselves to be my agents or to have authority under my patents to build and use, or to contract with others for the right to build and use a Cylindrical Rotary Roasting Furnace (except in Lander county, Nevada,) are frauds, and any person or persons that constructs one of my furnaces either with or without additions, alterations, or supposed improvements, or attempts to use one constructed under a contract with any such unauthorized person, will be prosecuted as infringers of my rights on the premises. I have made arrangements to have all my furnaces constructed by the Etna foundry, in this city, and no other foundry has a right to make one without my written consent. For rights to build and use, address

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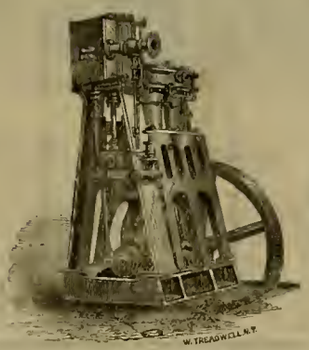

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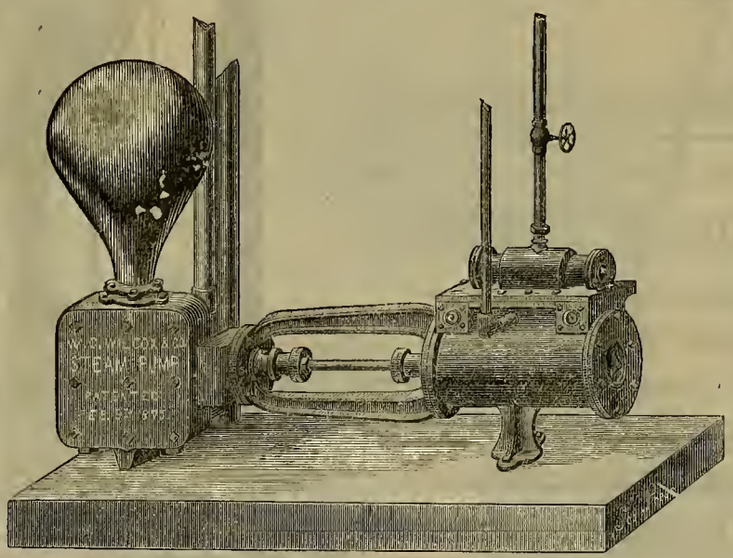

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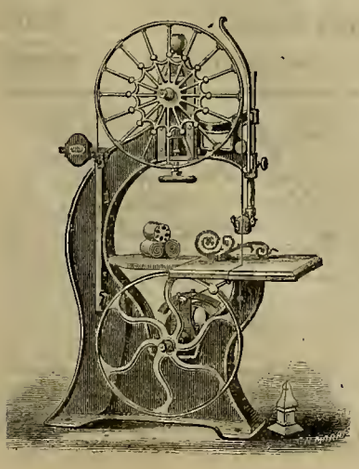

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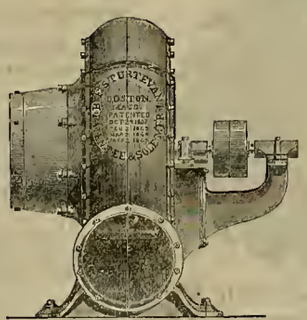

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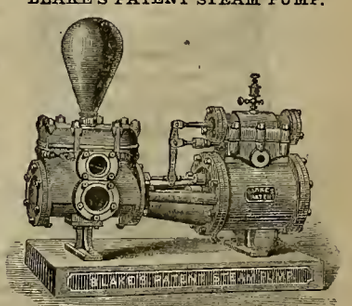

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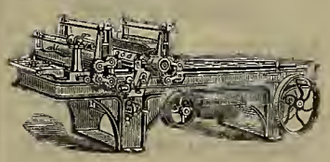
Is gotten up from new patterns specially for this Coast. It has Cast Steel Slotted Cylinder Head, running in patent self-oiling boxes; will plane 24 inch wide and *six inch thick*, and tongue and groove 14 inch wide. Will make rustic and stick gutters, or heavy mouldings, etc., and is the best job machine ever built. ☞ We have always on hand these machines with or without under cutter head, also, a large assortment of Planing Mill Machinery.



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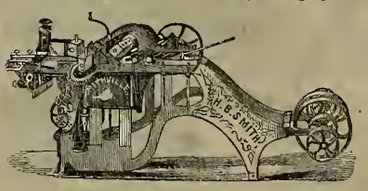
We have four sizes of these Machines always on hand—"B," "C," "D" and "E,"—to work either three or four sides. Have slotted heads and all other improvements, and may be seen in any mill on the Coast. ☞ *Prices reduced* to 15 per cent. less than Eastern list. We have also, a large stock of all kinds of Planing Mill Machinery, such as Molders, Mortisers, Tenoners, Band and Jig Saws, etc. Send for our new Illustrated Catalogue. BERRY & PLACE, Selling Agents



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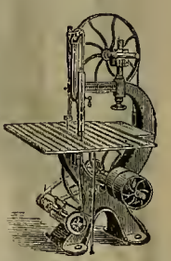

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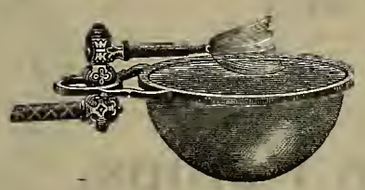
Can be affixed to any Gas Fixture.



By the most Inexperienced.

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Your attention is particularly directed to this new and valuable invention. It is especially adapted to the use of Compositors, Bookkeepers, Engravers, Jewelers, Tailors, Lithographers, for reading, writing and sewing purposes, and for all who have work to do and desire a soft, cool and pleasant light that will not injure the eyes.

For use in parlors it is unequalled, a single apparatus possessing more illuminating power than THREE ordinary burners.

For the sick room it is invaluable. The concentrating cup can be filled with water of any color, thus giving the patient a soft light of any desired shade.

For the dining room library—as a summer reading and illuminating agent—it is without doubt the coolest yet invented, giving an immense increase of light with a wonderful decrease of heat, a desideratum hitherto absolutely unattainable. All who have employed the most popular reading lamps of the present day, and have experienced the annoyance of the great heat arising from their use, will at once see the importance, comfort and utility of this beautiful invention.

Our regular burner is a "four foot," which consumes four feet of gas an hour, and will give a stronger light than the "Argand Burner," which consumes from ten to twelve feet per hour.

This apparatus consists of a hemispherical cup, made of flint glass, and supported by means of a light frame, constructed in such a manner that it is easily attached to any gas-fixture, the screw threads being the same as in all common burners.

We place our Burner in a horizontal position, instead of perpendicular as in the ordinary way, and fill the cup with water.

The light shining through the water is thus intensely magnified, and produces a soft, cool and pleasant light, exceedingly agreeable to the eye. By this means the obnoxious yellow-colored rays, which are so detrimental to the sight, are entirely absorbed and done away with.

The strong, yet mellow, illuminating power thus obtained is of the most practicable utility and value. It does away with the necessity of a drop-light, so objectionable by the constant escape of gas through the flexible tube, and at one-fifth its cost.

It is, in general opinion, the most efficient light, in every respect, that has been known, or hitherto introduced to the public. The facility with which this apparatus can be affixed to any existing gas fixture by the most inexperienced is another great point in favor of its general adoption.

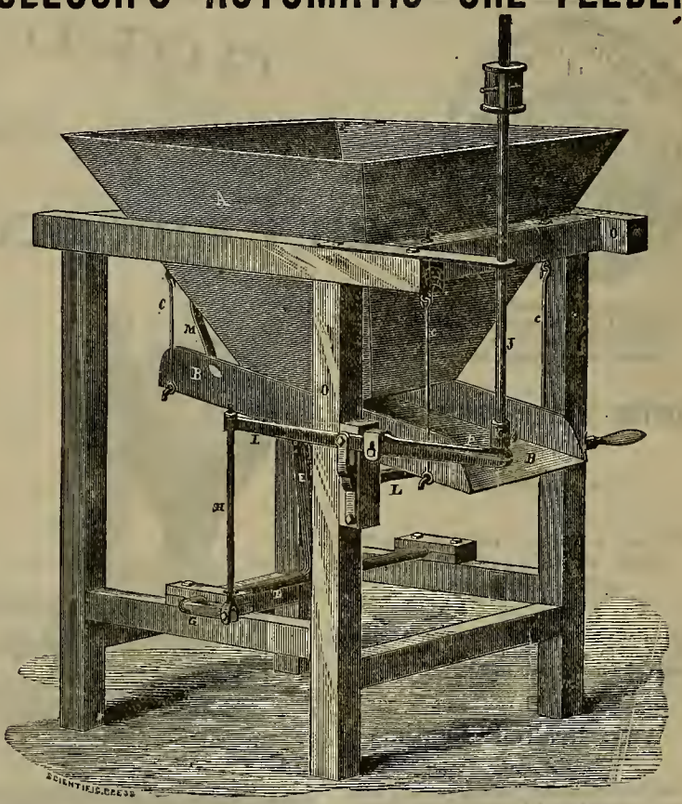
We invite all to call at our stand and examine the

GAS SUNLIGHT APPARATUS.

GEO. T. BROMLEY,

Sole Agent for the Pacific Coast.

TULLOCH'S AUTOMATIC ORE FEEDER.



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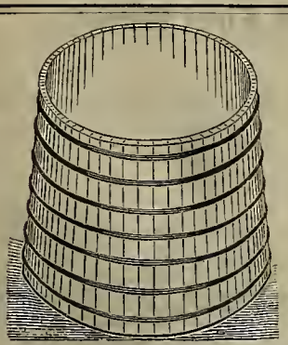

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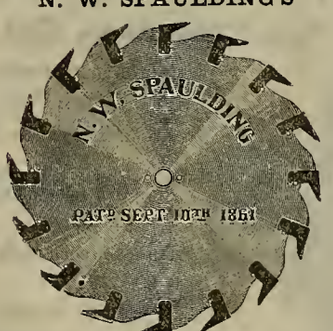

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MINERAL CITY, WHITE PINE CO., NEV., May 2d, '76.
MESSRS. DEWEY & CO.—*Gentlemen:*
I have just received Canadian letters patent for Fuse Lighter. Also, Canadian letters patent for the Drill Extractor. I return you my thanks for the able manner in which you have conducted the business.
Yours respectfully, JOHN W. PLATT.

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, SEPTEMBER 16, 1876.

VOLUME XXXIII. Number 12.

What Makes the Best Belt?

The question as to what is the best material for belting has long been a mooted one, and one upon which there is yet a difference of opinion. Some prefer leather, because they have used no other, perhaps; some prefer rubber belts, perhaps for the reason that they have found them much better than leather. Many prefer the rawhide belts of H. Royer, because they are more pliable and wear longer than any other. That belts are continually being changed from leather and rubber to rawhide is well known to us; that a change from rawhide belting has been made to any other we have never heard; therefore, we have fair reasons to believe the rawhide belting the best.

It may seem strange to many that we should speak of rawhide as more pliable than leather or rubber. As there can be no doubt that rawhide is stronger than tanned leather or rubber, we will speak more particularly of its pliability first. We visited the belting factory of H. Royer, 855 Bryant street, to investigate this subject, and though we found a notice on the door, "no admittance except on business," we pushed on. Courteously admitting the right of the press to investigate, Mr. Royer trued us loose, and we interviewed the premises. First, let us say, however, that Mr. Royer commenced the "fulling" of rawhides and their manufacture into belts some eight years ago, and has gradually built up such a business, that some four months ago he moved into his present commodious quarters, corner of Bryant street and Parke avenue, where he has erected a building 50x75 feet, four stories high, and sunk a good artesian well, that supplies 5,000 gallons of water per day. A 20-horse power engine furnishes the power necessary for all the manipulations of the hides, and pumps water into large tanks for ordinary purposes, and for use in case of fire. The lower floor is used for cleaning and hairing the hides, which are then taken to the third floor, looking more like large sheets of glue than anything else After being thoroughly greased with tallow, they are put through the fulling machines, then stretched, fulled again, and again stretched, and some fulled the third time, which renders them soft and pliable, and leaves the outside clean and dry, the tallow having been worked entirely into the hide. They are then passed to the second floor, where they are again stretched and cut into strips for belting, cemented together and riveted, ready for use. The upper floor is used for drying purposes only.

Lacing hides are carried through the same process of fulling and stretching, and all the hides are made perfectly soft and pliable without the use of any chemicals or tanning process, save the mechanical action of the machinery upon the hide. After seeing several of them go through their terrible twisting and turning, forward and backward, doubling and straightening, stretching and rubbing, we do not wonder at their pliability.

There can be no doubt that the process of tanning leather detracts from its strength and durability, but extracts the glue so that it will keep softer than it would with it in, where it is to be exposed to the weather. Now, belts are nearly always kept under cover, and consequently ordinary tanning is superfluous, and really injurious to the belt. Once made soft, the fulled belt will not again get hard, and besides possessing all its original strength, resists abrasion much better than tanned leather. In fact, rawhide governor belts will last nearly 20 times as long as a tanned leather one will. Also fulled rawhide properly prepared and afterward taken care of, makes the most durable harness. Another item in favor of fulled rawhide belting is that it is stronger in proportion to its weight, and flanks and poor hides cannot be so readily worked into them as they can be into tanned leather belts, as the fulling does not increase the weight, and but very little the bulk of the hides. It can never be turned back into common rawhide, nor will it get so hard as common leather.

Mr. Royer's move into his present location was a happy one for him, as he thereby avoided the late great fire, and also finds himself in position to fill some large foreign orders lately received.

An Improved Provision Safe.

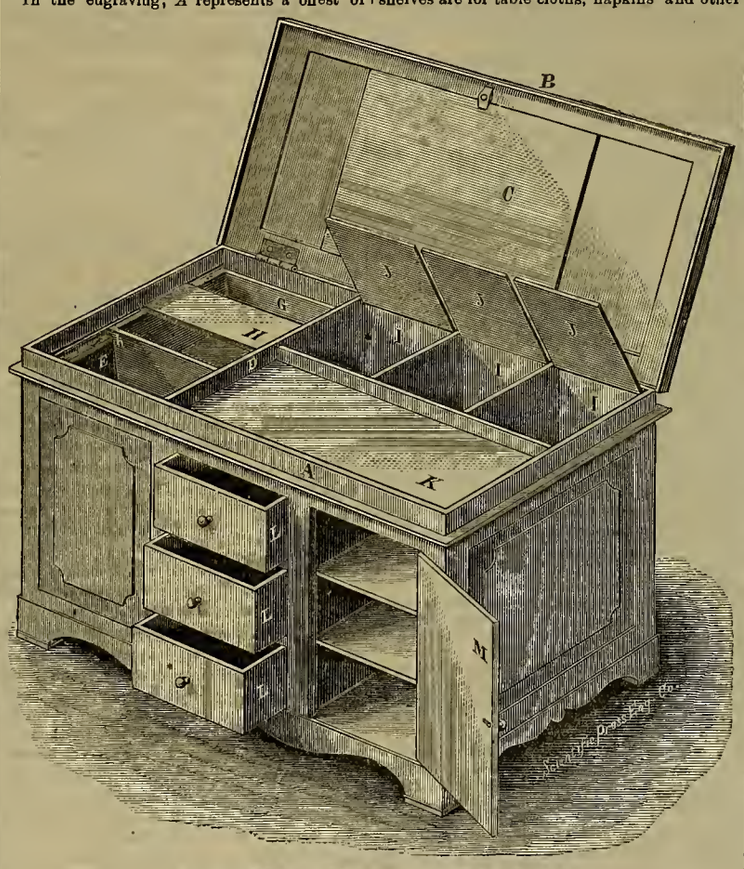
George McIntyre, of 753 Folsom street, in this city, has recently patented through the MINING AND SCIENTIFIC PRESS Patent Agency, an improved kitchen accommodation safe, a representation of which is given on this page. I is a chest or cabinet, which is not only useful for holding articles used in cookery, but is also provided with drawers and shelves for containing napkins, towels, cutlery, and other articles which are used in and about a kitchen and dining room.

In the engraving, *A* represents a chest or cabinet having a hinged cover, *B*. The cover is constructed of a single panel, and this panel is depressed on the inside of the lid so as to provide a recess in which the head-board, *C*, will lie when not in use. A button on each side of the recess fastens the board in place. An upright partition, *D*, separates off one end of the box, so as to form the flour bin *E*. A rail or ledge, *f*, is secured to the end of the chest, inside of this bin, while a similar rail or ledge is secured opposite it to the upper edge of the partition. The dough tray, *G*, is provided with a shoulder or ledge, *n*, along the upper outside edge of its opposite sides, so that when the tray is set into the bin its ledges, *h*, will rest upon the rails or ledges, *f*. The dough box is shallow, so that it only projects downward a short distance into the bin, so that it can be slid back or forth on the rails or ledges, *f*.

When the dough box is pushed back against the rear side of the chest, sufficient space is left in front of it to admit the hand or arm of a person into the flour bin below, and this space, when it is not required to be open, is closed with a board, *H*, which prevents dust from entering the bin.

Along the rear side of the chest, between the flour bin and the opposite side, are two or more small bins, *I, I, I*, each of which is provided with an independent lid or cover, *J*, and which are intended to hold salt, soda, or other things used in cooking. These bins need not extend down to the bottom of the chest. Between them and the front of the chest, and somewhat below the upper edge of the bins is a bottom, *K*, which forms a shallow table for the cook to work upon.

L, L, L, are a series of drawers, which are placed one above the other in the middle of the chest, and are useful for containing knives and forks and other small table furniture. *M* is a cupboard door that opens to a series of shelves. The corner shelves and drawers extend entirely back to the rear end. These shelves are for table cloths, napkins and other kitchen and dining room cloths. This convenient and ornamental kitchen cabinet is on exhibition at the fair.



McINTYRE'S IMPROVED KITCHEN SAFE.

NEVADA STATE FAIR.—The Nevada State fair is in progress this week at Reno. The beginning was under good auspices. A dispatch on Tuesday was as follows: The opening day of the third annual fair of the Nevada State agricultural, mining and mechanical society augurs well for its being the most successful exhibition which has ever been held here. The attendance is larger than it has ever been before on the first day, and the entries in all the departments are more numerous. The pavilion is already well filled, and a large force of entry clerks are kept busy in recording the new arrivals. The art department would be creditable to much older places, and the articles of Nevada workmanship are meritorious. Light wagons and carriages make a fine display, and the agricultural and mining machinery are greatly admired. The weather is beautiful, the clear mountain air as exhilarating as a draft of the vintage of Champagne.

THE small-pox epidemic is rapidly decreasing in San Francisco.

California Powder.

The 15th of September ushers in the hunting season, when it shall be lawful for all good citizens to burn as much powder and fire away as much shot as they please in their search for game. Few of them ever think, perhaps, that in doing so they assist two prominent home industries—the powder works and shot factory. When this is hinted to them probably a few facts about the home powder works will be of interest.

Few people have any idea of the magnitude of the operations carried on by the California powder company, or could even guess at half the amount manufactured. The company own an extensive property on the San Lorenzo river, in Santa Cruz county, the head office and salesroom being in the city. The capacity of the mills is 640 kegs of mining powder per day, each keg holding 25 pounds. The capacity for manufacturing sporting powder is 20,000 kegs of 25 pounds each per year. They employ constantly 200 men, and make all the packages, both iron and wooden, at their own mill. Both steam and water power is used. There are 15 buildings at the works, besides the small village of cottages occupied by the employees, which is a short distance from the factory. There is an extensive cooper shop connected with the works, where 640 wood and iron kegs are made daily.

They make at these works all classes of blasting and sporting powder. The sizes of grain of the sporting, rifle, musket and cannon powder are designated by figures, not by letters.

The old method of using letters is not considered satisfactory, because there is no standard of F recognized by the different powder companies. The numbers 1, 2, etc., on the powder manufactured by the California powder company, and the letters FFF, FFFg, etc., on that of some other manufacturers, indicate the size of the grain, but have no reference to quality. This company begins with No. 1 for fine grain powder, and increases in coarseness as the numbers increase, No. 2 being coarser than No. 1. The finer grains, Nos. 1 and 2, are mostly used in dry weather, and for quick birds; while Nos. 3 and 4 are oftener used for larger game and longer range, it being a well known fact that medium coarse powder shoots stronger than fine, while it is easier on the shoulder.

The company manufacture several brands of Santa Cruz sporting powder as follows: The "Cabinet" is a special brand of powder introduced for fastidious hunters. It has a diamond grain, and is the best brand manufactured by the company. The "Eureka" is an extra quality of powder, with a crystal grain, and of double extra strength. The "California Sporting" is more especially for duck shooting, different manufacturers having a custom of making a brand for this purpose. The "Pacific Rifle" is a fine grained powder, claimed to be a very superior article. "Quail Shooting" is a brand for sportsmen generally, and is designed more particularly for use in shot-guns for general shooting. "Sea and River Shooting" is a powder of extra quality, made in view of our long wet winters, and for use about the bays and marshes. "Valley Mills" is a common gunpowder suited for all kinds of uses, hunting, sporting and musket shooting. "Pistol powder" is manufactured expressly for use in pistols, and is of special fine grain and extra quality. Of course there are different numbers from one to four of each of these brands.

The California powder company also manufacture large quantities of different brands of blasting powder: Of these, C signifies coarse; FC, fine coarse; FM, fine medium; F, fine; FF, double fine; and FFF, triple fine. They also manufacture Hercules powder for hard rock, pipe clay and cement, XX Hercules (or double strength) for heavy rock, boulders, etc. This is a nitro-glycerine compound, and the company claim for it safety and economy over other blasting powder. As an indication of its reputation, we are told that for each year since the company commenced manufacturing Hercules powder, the sales have more than doubled; and that this year they have averaged over 10,000 pounds per month more than the monthly sales of last year.

CORRESPONDENCE.

Mines of Humboldt and Lander Counties, Nevada.

[From Our Own Correspondent.]

Some of the Mines of Reese River District.

Leaving Bsttle Mountsin, distant from Ssn Francisco by rail 524 miles, a ride south for 90 more by stage (the Tnller & Clugage line,) hrings yon to the city of Anstin. It contains at present about 2,500 inhabitants, who seem to be less affected than usual hy the prevailing dullness. Isolated somewhat in position, they appear to give little attention comparatively to the rise and fall of Consolidated Virginia, having a perfect nest of little bonanzas of their own to keep the majority busy. The veins are generally small, from two and a half feet to four inches in width, bnt their name is legion.

As "good things are put up in little bundles," yon will not be surprised to hear of the exceeding richness of some of their ores, or of the enormons yield from some of their chimneys. The ledges of the district are generally in granite running parallel, northwest and southeast from 100 to 300 feet apart, and looked upon as true fissnre veins, the amount of treasure to he derived from this sonrce being limited only by the ability of man to unlock the numerous store-houses in which it has so long slumbered. The chloride ore is found near the surface. As the sinking proceeds nearly every form of silver ores are encountered, including bromide, iodide, stephanite, black sulphuret, ruby, horn and antimonial, to fine wire and native silver. If ore will not work up to $100 per ton it is thrown aside. The entire district averages as to all the ores worked, $230 per ton, some choice lots running up into the thoussnds, and the shipments of bullion in the past 10 years upward of $13,000,000. During the mining excitement that prevailed from 1863 to 1865, 15 or 16 mills were built at Austin and in the vicinity, most of which soon ceased to run, as the minee were not sufficiently developed to supply them with ore.

The Manhattan Mill and Mining Company

From comparatively small heginnings has grown into a large trunk, whose branches now overshadow more than half the city. It is the great enterprise of the district. Commencing on locations made by Mr. Frost and others, known as the North Star, Oregon, Southern Light and Blue ledges, a nuclens wss formed around which has been gathered the present valuable and extensive property of the company. The Independence and the Panamint, the former together with other ledges heing worked through the Frost shaft, and the latter through the Bowman incline, are said to be the most productive in the district. As they are situated further east than any previously found in that direction, the property of the company has been grestly enhanced in vslue.

The Independencc

Was cut at the 370-foot level of the Frost shaft only a few months ago snd shows one of the largest and best defiued veins in the district, with good large deposits of ore, giving pulp assays from $400 to $500 per ton. The Curtis shaft—a new one—now heing sunk for working the Panamiut, Allsopp and other ledges, has now nesrly reached the Panamint, which is yielding also large quantities of high grade ore. In addition to those mentioned, there are the Oregon and North Stsr shsfts, through which a nnmher of ledges are worked, principally on the tribute system, which adds materially to the income of the company. Furthermore, the Isahella, Mohswk, Ogden, Dollarhide, Eclipse, Grove and Hatfield are all, or most of them, in active operation under lease, provided with everything necessary for effective work, such as blacksmith shops snd good hoisting works, the company having no less than 13 on their different locations, about 80 in all, which are secured by U. S. patents and cover 160 acres of ground. The nnmher of ledges now worked hy the company is about 25, the oref om which, together with that of the greater part of the district, is reduced at their 20-stamp mill, whioh has recently heen refitted and placed in the hest possible condition, with Stetefeldt furnace, Krom concentrator, Brady rock-breaker and all necessary appurtenances for performing good work. It has turned out over $9,000,000 within the last nine years, and the monthly product is on the increase, that of Jnly heing $229,813.40.

That the readers of the PRESS may form a better idea of the richness of the ores, the following extract has heen tsken, hy permission of Hon. M. J. Farrell, of Austin, from the manuscript of an article prepsred by him for the *Mining Review*:

"In lots of ore worked at the Msnhattan mill (the only one now running) from $300 to $700 per ton is common, $1,500 to $2,000 frequent, $3,000 to $4,000 occasional, while lots have heen worked as high as $5,000 per ton, pulp assay."

Dividends may be expected for some time to come, as a conaiderahle reserve fund is understood to he on hand, and the outlook for the company is believed to have never been more promising. Before tsking up the other mines of the district, an allusion to the kindness and courtesy on the part of Mr. Curtis, the efficient superintendent, and Mr. Farrell, who has charge of the books, will, no doubt, be pardoned, as it is to them I am obiefly indebted for the facts here given, as well as for much other valusble information in regard to the operations of the company, necessarily omitted.

The New Pacific Company, (Limited,)

A London incorporstion, are working the Buel North Star incline, driving the 300-foot east and working two shifts. In the Pscific proper they are driving west from the 120-foot level on the Warren ledge and at the 240-foot level, cross-cutting south. They are also cleaning out the 400-foot level north, with the view of sinking for the North Star ledge. These are numbered among the best mines of the district, and when the present operations sre completed, as rich returns may be as confidently anticipated as in the past.

The Idaho,

The property of C. Dollarhide, promises well, the ore taken out of an incline 340 feet deep having paid something more than the expenses for opening, and improving as greater depth is reached, first-class ore working from $735 to $1,252, and seoond-class from $180 to $430 per too.

The Ruby,

A. H. Dollarhide, owner, formerly paid well on chloride ores near the surface. After reaching the sulphurets on the water line one lot of first-class weot over $1,200; second-class $350. Pressnt depth 330 feet, with drift running to strike ore chimney.

The Eclipse,

Or Reed & Curtis mine, is yielding some $400 ore on the 400-foot level. First-class from the 300-foot level believed to go over $1,000 to the ton. The mine is probahly paying considerahly more than the expenses of developing.

The Bedford,

Gates & Roden, owners. Incline, 300 feet. Present indications very encoursging. Some of the ore has worked $300 per ton, and assays have run very high.

The Jackson,

McGlennon, Trask & Holmes, owners. Incline 450 feet. Drift esst and west, 100 feet. Ore taken out was said to hsve run all the way from $200 to $2,000 to the ton. Some seen on the dump recently mined was thought to be worth from $2,000 to $3,000. Ledge from two feet to six inches. One heave of five feet had been met with, in other respects regolar from the top to the 450-foot level, where it split, one half running horizontally for 100 feet and then taking the usual angle of the lodge.

The Detroit,

Generally known as the Ward, from its princi pal owner. Incline 350 feet, with 50 more to ron hefore drifting. Hsd turned out rock that worked as high as $1,700. Some ore just sent to mill was estimated at $1,000. By the wsy, it is astonishing how close an estimate is often made by a practiced eye, when accustomed to a particular kind of ore. Both a winze and a chute had been started to prospect some old ground with the hope of striking it rich, with the chances greatly in its favor.

Detroit No. 2,

Lammerhsrt & McLaughlin, had reached a depth of 400 feet and still sinking. The location is among the furthest east, and in consequence considered so far favorahle. A good sized vein had heen found, hut no one in quantity had been discovered. Some nice strata of quartz streaked with rnby silver had begun to make their appearance, giving a gleam of encouragement for the further proseoution of the work.

"There is a tide in the affairs of men,
That, taken at its flood, leads on to fortune."

Many a miner has toiled and delved for years without success; perhaps in utter despair has ahandoned his claim to another to reap the harvest. It has heen so here. It ought not to he, for the indications are as readily understood, as easily followed and as sure of leading to good results as in any district in the land. The practical miner often scouts at science and boasts a skill acquired by experience, ignorant that he himself is, so fsr, scientific. Away with this quarrel hetween practice and science. Let them walk hand in hand as twin sisters, smiling at each other's faces, a mutual aid to progress, as they are and ought always to be. But I stray.

The Bowen and Lindsey,

If reports are true, has paid exceedingly well in the past, having yielded altogether about $100,000. Present depth, 150 feet where worked. First class ore valued at $1,000 and upwards; second class, $350 and $400 per ton.

The Dakota,

Frank G. Eogstrom's claim, is lo cated on large croppings, the vein matter betweeu walls, in places eight feet wide, of couree not all pay ore, but mixed with granite, and sometimes narrowing down to six inches in width. Incline, 480 feet. The mine is said to have turned ont a large amount of silver, some often psying as high as $2,300 per ton.

The Star of Nevada,

An old location, from which some $50,000 have been taken out, it is thought will he organized anew, incorporated and worked mostly hy citizens of Austin, not for speculative purposes, hut for what may be realized from the mine.

The ledges mentioned are within the city limits, and mostly on the west side of Lander hill. Immedistely over the ridge is situated the

King Alfred,

A London incorporation, on which a shaft 820 feet has heen sunk, cutting the extensions of some of the principal ledges of Lander hill, about 15 in all (msny of them, as has been ststed, very rioh, one at least that had some $5,000 ore) and vsrying in width from 20 inches to eight feet. The tests of the ore so far as made have proved satisfactory, and a beginning hss been made hy starting from the 500-foot level, contracts also heing let to run drifts east and west along the ledge. It is contemplated continuing the developments until all the ledges are tapped from different points in the shaft. We were much interested in the workings of some portions of the machinery at this mine, not in ordinary use, that seemed worthy of mention, for which due credit should be given to Capt. McGlennon, the superintendent. The engine is a 30-horse power, (link-motion,) the reels having cog gearing and worked hy clntches. The advantage claimed in this case is, that any weight can be lowered by steam, or if necessary the same end can be accomplished by the use of the hrake strap, by simply throwing out the clutch. In sddition to this, the reversing of the engine and management of the clutch are so arranged as to he under the fnll control of the engineer, nearly 50 feet distant, thus dispensing with the services of an assistant. Two boilers were found neoessary for running the engine and other machinery in conneotion with two steam pumps, one of which is at the bottom of shaft and the other at the 400-foot level, to raise the water.

Owing to the length of this commuoication a further notice of the mines of this distriot will appear in my next. A. C. K.

Alpine County—Its Mines and Resources, Past, Present and Future.

[Written for the PRESS by VICTOR HARLAND.—No. 7.]

Silver Mountain District.

Situated at the base of the high range of mountains that enclose it npon three sides, in a vslley or basin of nearly one mile in length and a quarter of a mile in width lies the town of Silver Monntain. Upon the north are the various mines previously mentioned, while on the south towers thst grim old sentinel, Silver Mountain pesk, with rocky sides, relieved by the emerald tints of verdant grasses and forest timber, resching from its hase till near the summit. The altitude of this monntain is given at 11,500 feet, and from its lofty summit can be seen far to the westward the far-reaching valleys of the Sacramento snd San Joaquin, with the Saorsmento river winding its tortuous way like a silver thread, 100 miles away.

Upon all sides the view from this point is magnificent, and a person standing upon its snmmit at this giddy hight is lost in wondering contemplation of the majesty and grandeur of the surroundings.

The ascent is easily accomplished in abont two hours from the town, and the elevation once gained, the labor in ascending is soon forgotten as the beholder pauses in wonder to view the scene below. At the hase of the mountain, and pssaing directly through the town, is a beautiful stream of the purest mountain crystal, whose waters are as cold as the everlssting snow that feeds it. In the early spring, when the snows of winter recede beneath the persussive rays of old Sol, this stream, now so pesceful, so clear and harmless, becomes a hoiling, rushing torrent of sufficient capacity and power to propel the stamps of 20 mills, could they be placed upon its hanks. Upon the south bank of this stream, which is appropriately named Silver creek, is situated the quartz and saw-mill of the Exchequer company. Good mill sites are easily obtainable for three miles along its course and until its confluence with the Carson river, into which it empties.

The Town

Of Silver Mountain is admirably situated, and is without douht as healthy a locality as can he found in a year's travel. It is easily accessihle, heing upon the main road from the Calaveras Big Trees, and within nine hours' travel of the railroad terminus at Carson City, Nevada. Like msny another mining town on the coast, Silver Mountain hss had its many and varied experiences, its prosperity and adversity. The buildings that were erected here in the earlier period will compare most favorably with those of any mining camp on the coast under the same couditione. Fortunately, its foundation heing upon a rock and not upon the sand, it has weathered the storme of adversity in the past, by the merit of its mines alone has sustained itself, and after a severe and serious hattle with fate and fortune, which left it not without its scars, again comes forward in the new ers as a meritorious csndidate for public attention and favor.

About two miles distant from the town in a westerly direction, in what is known as the

Pennsylvania Canyon,

Is situated the mine hearing the same name. This was originally a locstioo of 2,000 feet on the lode, but now embraces additions] ground by an extension, also a parallel lode. In former times this mine was extensively worked, hut of lste years it has suffered the fate of many others near it, in having a resting spell of five or six yesrs. This company is of home organization, the controlling interest being held within the conuty, and the workmen who participated in the former developments being in msny oases officers and stockholders of the company. The amount of labor heretofore expended upon the property consists of a

Surface Tunnel

Driven along and with the lode for a distance of 500 or 600 feet, with cross-cuts at right angles cutting the lode at different places. The ore discovered at these points, while not rioh, was of sufficient quality for encouragement that at a greater depth an improvement would ensue, and from the massive proportions of the lode it would prove a mine that would practically he inexhaustible. The appearanoe of the lode on the surface and where penetrated by these cross-outs proved its identity as a true fissure vein, and measures were immediately inaugurated by these hardy miners and owners to commence a tunnel to he driven from near the canyon level, which, when completed, would cut the lode at a depth of 500 feet or more.

Accordingly and in due time the operation was begun, and, notwithstanding the financial condition of the men who were hearing this enormous expense, the tonnel was persistently driven until the total length hadreached a horizontal distsnce of nearly or qnite 1,900 feet, snd the lode penetrated by the tnnnel. So uniform in its general dip was the lode that the actual distance of the tonnel driven fell short but nine feet, when compared with the estimated distance by survey before the commencement of the lower tunnel, the lode at this poiot bearing well with its general featnres in the upper workings. Penetrating the lode at different points

The Ore Obtained

Was found to be quite uniform and evenly disseminated throughout the lode from wall to wall. This ore is an admixtnre of the ruby and hlack snlphuret of silver in nearly equal proportions, and while of comparatively low grade will amply repay the lahor of extraction and reduction when treated by an economical prooess that will desulphurize the ore. This, formerly, wss a very prominent mine, and lsrge sums could have heen obtained had the owners psrtaken less of the

Excitement of the Period

And more of discretion. Valuahle as their mine undoubtedly was, and still remains, that spirit of audacity pervading every new mioing camp wss visible here, fabulous prices being asked and reasonable offers refused. The mine having a genuine merit, it hss again been under examination and will doubtlese pass into other hands ere long. The former owners labored long and faithfully to develop their mine in the manner stated, and the uniform grade of the ore from upper to lower tunnels has decided it but a question of successful reduction, which, once solved, will enable this mine to rank with others far more prominent at the present time, capable of producing their quota of mineral wealth.

Metallurgical Processes at the Centennial.

Working Silver Ores.

EDITORS PRESS:—Your correspondent who heie hears "the burden of the day and the heat" for the benefit of your patrons, striving to select, in this great storehouse of man's ingenuity, such items as will he likely to prove most useful and pleasant to the special class who form the readers of the SCIENTIFIC PRESS, will devote this letter to a description of two distinct forms of that great industry of *milling ores*, so important and interesting to every resident of the coast. In a small building annexed to machinery hall the thunder of the "Nevada quartz mill" reverberates, and a curious and interested throng of spectators stands eagerly viewing the process of extracting the precious metals from the quartz which has been brought from the famous Comstock lode. The procese is thoroughly and fully demonstrated, and, even at the risk of repeating that with which many of your readers are already familiar, I will give a brief description of

The Mill and its Operations,

So that comparison may the more easily be made with the plan and working of the Chilsn machinery for the reduction and amalgamation of ores, as exhibited in a frame building erected for the purpose, west of machinery hall.

With a liherality which our California legislators unhlushingly failed to imitate, the State of Nevada appropriated $20,000 for the purpose of exhihiting her mineral specimens

Continued on Page 190.

MECHANICAL PROGRESS.

Hints for Steam Users.

Many things are simple and well known, and yet very important. Many simple things, although well known, are enforced by repetition. For these reasons we make room for a few hints to steam users from the *Iron Age*. They will not be new to most of our readers, and yet to read, remember and practice them will be valuable sometimes, even to the saving of life:

Among the recommendations of almost all the small engines in the market, we find the assertion that "it does not require a skilled man to run it." "Our machine can be run by a boy," etc. Now, good machinery needs good care, no matter how simple it is. There may be no danger of explosion, the machine may require little attention and almost "run itself," yet it should have good care. What constitutes good care we shall endeavor to explain briefly.

Oiling.

Abundant lubrication with good oil is a prime requisite. We place this first, because the mistaken idea only too generally prevails that any kind of oil will answer, provided enough is used to keep the bearing surfaces from "squeaking." The steam user who follows this policy will do so to his cost. The oil used should be the best. We do not believe there is any economy in attempting to use a cheap oil to lubricate any kind of machinery.

Most engines of the present day, no matter how small, are fitted with oil cups, and many engineers take it for granted that if the cups are filled once in so often it is all right. It may be all wrong. What a bearing needs is a proper quantity of oil constantly supplied to it, and not to be flooded one day and dry the next. It may happen that the cups do not work as they should. The bearing may not get enough, and the oil in the cup last too long, or the cup may deluge the bearing at first and then let it go dry. We have seen a cup intended to run a certain bearing for a month and supply it with plenty of oil, which invariably emptied itself in a week, while other cups beside it would work as they were intended to. The result was that a green hand, trusting the cup to do its work like the others, ruined the bearing entirely.

Cleaning.

An engine or machine should never be allowed to become dirty. Thorough cleaning requires very little labor, and only a little attention now and then. An engine or machine which has always been kept clean, protected from rust, and not abused in any way, is worth, when second-hand, very much more than another which has had little attention, been allowed to rust and to take care of itself generally.

Boilers.

The boiler is at once more expensive and more easily destroyed than the engine itself. Very often it receives the least attention, and would have even less were it not for the fact that utterly neglected boilers do at times explode with inconvenient effect. Most of the small engines in the market are provided with safety boilers, so that the danger from explosion is very small. A boiler should not be blown off and filled with cold water while hot. Blowing out under pressure does not seem to be a desirable practice. The heating surfaces of the boiler should be kept as clean as possible. A very thin deposit of soot makes a great difference in the amount of heat transmitted. In getting up steam when the boiler is cold, it is well to avoid too much haste. One part may be over-heated while another part is cold, resulting in strains. The valve should be closely looked after.

Firing.

Firing is an art to be acquired by all steam users. It was once thought that anybody could fire, and he was supposed to be a good fireman who could keep steam constantly blowing off from the safety valve. It is now understood that he is the best man, other things being equal, who can get the most work with the least coal. Boilers of small engines vary so much in construction and requirements that particular directions in regard to them would be useless. To keep an even pressure of steam, and have but a small body of coal on the grate when it is time to draw the fire, are points that should receive attention.

Care.

A leak should never be tolerated for a moment. The matter may in itself be trifling, but the results may be the destruction of the boilers. The drip from a valve, or steam pipe, or joint, should never be allowed to fall upon the boiler, because of the rapid corrosion which a drip of any kind causes. A very slight leak is often sufficient to cause a severe grooving of the plates, necessitating costly and troublesome repairs. We may be expected to say something about low water, but upon this subject we think there is very little to be said, save that in some boilers a very slight fall of the water level is sufficient to expose the crown sheet, and, with a sharp fire, to ruin the boiler in a short time. The steam user should study his engine, and acquaint himself with all its peculiarities, and if he exercises an intelligent observation he will soon learn what attention it needs, and how such attention should be given.

Condensed History of Steam.

About 280 years B. C., Hero, of Alexandria, formed a toy which exhibited some of the powers of steam, and was moved by its power.

In 540, A. D., an architect arranged several caldrons of water, each covered with the wide bottom of a leather tube, which rose to a narrow top, with pipes extended to the rafters of the adjoining building. A fire was kindled beneath the caldrons, and the house was shaken with the efforts of the steam ascending the tubes. This is the first notice of the power of steam recorded.

In 1543, June 17, Brasco de Garay tried a steamboat of 200 tons with tolerable success, at Barcelona, Spain. It consisted of a caldron of boiling water, and a movable wheel on each side of the ship. It was laid aside as impracticable. A present, however, was made to Garay.

In 1630 the first railroad was constructed at Newcastle-on-Tyne.

The first idea of a steam engine in England was in the Marquis Worcester's "History of Invention," A. D., 1663.

In 1701 Newerman made the first engine in England.

In 1764 James Watt made the first perfect steam engine in England.

In 1766 Jonathan Hulls first set forth the idea of steam navigation.

In 1778 Thomas Payne first proposed the application in America.

In 1781 Marquis Jouffrey constructed a steamboat on the Saone.

In 1781 two Americans published a work on it.

In 1789 Wm. Symington made a voyage in one on the Forth and Clyde canal.

In 1802 this experiment was repeated.

In 1782 Ramsey propelled a boat by steam at New York.

In 1789 John Fitch, of Connecticut, navigated a boat by a steam engine on the Delaware.

In 1794 Robert Fulton first began to apply his attention to steam.

In 1783 Oliver Evans, a native of Philadelphia, constructed a steam engine to travel on a turnpike road.

The first steam vessel that ever crossed the Atlantic was the *Savannah* in the month of June, from Charleston to Liverpool.—*Hunt's Merchants' Magazine.*

Russian Mechanical Education.

President Runkle of the Massachusetts Institute of Technology, on the recent visit of the school to the Centennial, was deeply impressed with the Russian system of shop-work instruction for engineers and machinists, which is very clearly shown in connection with the exhibits of the imperial technical schools of St. Petersburg and Moscow. He thinks the Russians are developing an idea of great value and importance in their system of technical education, which should be introduced in the similar schools of this country as soon as possible. To explain the matter fully, he has just published a pamphlet, which our readers will do well to examine.

The Russian idea is to educate young mechanists and engineers by means of *instruction* as opposed to *construction* shops. The instruction in the different classes of work—forging, filing, turning, etc.—is given in different shops. Each instruction shop is managed by an expert, who makes the selections and carefully grades the course of practice in his own shops.

The mechanism which the student manufactures is selected solely with reference to the most rapid development of his skill, and no effort is made to sell his practice work. The time which it is necessary to devote to the manufacture of each particular piece is known by experience. The student is allowed the proper time for his work, and it is not wasted. All the students in the same shop produce pieces which are essentially alike at the same time. The expert in charge informs them all at once of the most approved method of producing the piece, sees to it that all the necessary facilities are in readiness, and is present while they work.

STEEL FOR SHIPS OF WAR.—Another step in advance in shipbuilding has been taken by the introduction of steel for the hulls of war ships, by which a great diminution of weight will be gained and consequent speed. The contract for the first six vessels of this new build has been given to the important firm of Elder & Co., of Glasgow. They are to be corvettes of 2,300 tons, and will carry fourteen guns. The steel hull will be sheathed with two thicknesses of teak and coppered externally, and the craft is intended for service on foreign stations. The machinery and boilers will be protected by a strong armored deck, and it is expected that the corvettes will be able to maintain the high speed of twenty miles an hour. Should this expectation be realized, we shall have in these strong and handy ships a most efficient convoy for our commercial marine in war time, and no less efficient instruments, were the declaration of Paris out of the way, for sweeping the seas of the commerce of the enemy. The present order will, as far as it goes, reanimate the depressed shipbuilding industry of the Clyde; but the plates will be rolled at Sheffield, or in some other of the English steel-making districts.—*Iron.*

AMERICAN ENGINES IN HOLLAND.—The first American steam engine in Holland was sent there some six months ago. The firm which received it has since ordered seven more.

SCIENTIFIC PROGRESS.

Men of Science at the Centennial.

The *American Journal of Science and Art* compiles an interesting list of the noted scientific men who are honoring our country with a visit this summer. It says: No occasion has before drawn together so many distinguished men of science from abroad, in various departments, as the Centennial exhibition at Philadelphia. Without attempting to enumerate all whose names might properly be mentioned in this relation, we recall, from Great Britain, Sir William Thomson, the well known physicist, who is President of the Judges on the XXVth Group—Instruments of Precision and Research; Sir John Hawkshaw, the eminent engineer who was last year President of the British Association; Sir Charles Reed, President of the XXVIIIth Group of Judges—for Education and Science; Capt. Douglas Galton, President of the Judges under the XVIIIth Group—Railway Plans, etc.; Mr. Isaac Lowthian Bell, the most eminent iron metallurgist in Great Britain, and author of the well known treatise on the "Chemistry of the Blast Furnace," President of the Judges of Group I.—Minerals, Mining Metallurgy, etc.; Dr. William Odling, Wayafiete Professor of Chemistry in the University of Oxford, Secretary of the Board of Judges on Group III.—Chemistry and Pharmacy, etc.; from Sweden, Prof. Adolf E. Nordenskiold, Prof. C. A. Angstrom, Polytechnic Institute, Prof. O. M. Torell, Chief of the Geological Survey of Sweden, and Richard Akerman, of the Royal Swedish School of Mines, all from Stockholm, under whose immediate superintendence the excellent geological, mineralogical and metallurgical display of Sweden, at the Exposition, has been made; from Russia, Major-General Axel Gadoline, an eminent engineer, and Prof. L. Nicbolsky, Mining Engineer and Professor at the Mining School at St. Petersburg, who is in charge of a systematic collection of Russian minerals—the only systematic mineral collection in the Exposition; from Germany, Dr. Wedding, Royal Prussian Counsellor of Mines, Dr. Rudolph Von Wagner, the well known editor of *Wagner's Jahresbericht*, and Dr. G. Seelhorst, of Nuremberg; from France, Mr. L. Simonin, J. F. Kuhlman (*fils*), M. E. Levasseur, and M. Emile Guimet, of Lyons; from Italy, Prof. Emanuel Paterno, of Palermo; from Mexico, Mariano Barcena, the mineralogist.

NEW RAYS OF CALCIUM.—Mr. Lockyer, in a letter to M. Dumas, says: "I have recently carried out a series of experiments upon calcium, employing at first a small battery and a small coil, and afterward a large battery and a large coil, and to avoid all doubts I photographed the results. I found that with the small coil I was able to obtain a photograph which only contained the ray in the blue, without any trace of the ray in the violet; and with the largest battery and the largest coil I obtained a photograph containing the rays of the violet without any trace of the ray in the blue, and that by varying the surface of the battery I was able to get a spectrum resembling the absorption spectrum of calcium in the sun. These results agree so completely with those of the dissociation of a salt of calcium that I have asked myself the question if we have not here before us a dissociation of the calcium itself. Naturally we are unable to determine, for the present, whether we have a lower molecular group of calcium, or whether the calcium itself is a compound of two distinct sub-elements, if the expression may be used. It seems that we can only undertake to solve this question by photographing the rays of the calcium (H_1 H_2) in different stars. If we find that they present always the same relative breadth and intensity there will be a strong presumption that we have met with a decomposition of calcium, or, in other terms, we shall have shown that a spectrum of rays is a spectrum due to different orders of molecular grouping. If, on the other hand, we find that these lines vary in breadth and in intensity, it will be difficult to explain this phenomenon except we admit that calcium, instead of being an element, is really composed of two substances.—*Comptes Rendus.*

PROFESSOR OF THE NATURAL SCIENCES.—An American gentleman of considerable national notoriety lately visited England bearing letters of recommendation, in which he was styled "Prof. of the Natural Sciences." The first English savant upon whom he called and presented his credentials, advised him as a friend to not present such papers, for, said he, "It's a good deal in his country to be a professor of chemistry; it's a great thing to be a professor of geology; and the magnitude of a professor of astronomy is something not easily measured. But when you are recommended as a professor of all these and much more, the idea is overwhelming."

ZOOLOGICAL GARDENS FOR NEW YORK.—During the coming winter an effort will be made to organize a society, with a capital of over $200,000, for the formation of zoological gardens in New York. It is hoped by the movers that the Legislature will empower the commissioners to set aside a portion of Central Park for such gardens, but the commissioners themselves are opposed to this at present, claiming that they cannot afford room. The zoologists hope to convince them to the contrary.

Prof. Huxley's Views of America.

As is generally known, perhaps, Prof. T. H. Huxley, the famous Englishman of science, is making a flying visit to this country. He was present at the recent meeting of the American Association for the advancement of science and made a brief speech showing his kindly appreciation of our country and our people. He said:

Since my arrival in this country, I have learned a great many things, more, I think, than ever before in an equal space of time in my life. In England, we have always taken a lively interest in America; but I think no Englishman who has not had the good fortune to visit America has any real conception of the activity of the population, the enormous distances which separate the great centers; and least of all do Englishmen understand how ideatical is the great basis of character on both sides of the Atlantic. An Englishman with whom I have been talking since my arrival says: "I cannot find that I am abroad." The great features of your country are all such as I am familiar with in parts of England and Scotland. Your beautiful Hudson reminds me of a Scotch lake. The marks of glaciation in your hills remind me of those in Scottish highlands.

I had heard of the degeneration of your stock from the English type. I have not perceived it. Some years ago one of your most distinguished men of letters, equally loved and admired in England and America, expressed an opinion which touched English feeling somewhat keenly—that there was a difference between your women and ours after reaching a certain age. He said our English women were "beefy." That is his word, not mine. Well, I have studied the aspect of the people that I have met here in steamboats and railway carriages, and I meet with just the same faces, the main difference as to the men being in the way of shaving. Though I should be sorry to use the word which Hawthorne did, yet, in respect to stature for fine portly women, I think the average here fully as great as on the other side. Some people talk of the injurious influence of climate. I have seen no trace of the "North American type." You have among you the virtue which is most notable among savages, that of hospitality. You take us to a bountiful dinner, and are not quite satisfied unless we take away with us the plates and spoons. Another feature has impressed itself upon me. I have visited some of your great universities and meet men as well known in the old world as in the new. I find certain differences here. The English universities are the product of Government, yours of private, munificence. That among us is almost unknown. The general notion of an Englishman when he gets rich is to found an estate and benefit his family. The general notion of an American when fortunate is to do something for the good of the people and from which benefits shall continue to flow. The latter is the nobler ambition.

It is popularly said abroad that you have no antiquities in America. If you talk about the trumpery of three or four thousand years of history, it is true. But, in the large sense, as referring to time before man made his momentary appearance, America is the place to study the antiquities of the globe. The reality of the enormous amount of material here has far surpassed my anticipation. I have studied the collection gathered by Professor Marsh, at New Haven. There is none like it in Europe, not only in extent of time covered, but by reason of its bearing on the problem of evolution; whereas before this collection was made, evolution was a matter of speculative reasoning, it is now a matter of fact and history, as much as the monuments of Egypt. In that collection are the facts of succession of forms and the history of their evolution. All that remains to be asked is how, and that is a subordinate question. With such matters as this before my mind, you will excuse me if I cannot find thoughts appropriate to this occasion. I would that I might have offered something more worthy; but I hope that your association may do what the British association is doing—may sow the seeds of scientific inquiry in your cities and villages, whence shall arise a process of natural selection by which those minds best fitted for the task may be led to help on the work in which we are interested. Again I thank you for your excessive courtesy, and I may almost say affectionate reception.

METALLIC OSMIUM.—At the session of the academy of sciences, on the 8th of May, were exhibited several specimens of metallic osmium, prepared by M. Henri Ste. Claire Deville. This osmium is of a blue shade, tinged with gray, showing violet if light is reflected several times upon its surface. Osmium is stated to be the most dense matter known; it is hard enough to scratch glass easily. In the preparation of crystallized osmium, the vapor of osmic acid several times distilled is passed over pure carbon. To get this, benzine vapor is decomposed by causing it to pass over a tube of red porcelain, upon which coherent carbon is deposited as a hollow cylinder. The osmic acid vapor is afterwards introduced, carried in by nitrogen. The osmic acid is reduced, giving carbonic acid and osmium, which soon lines the inside of the carbon cylinder, ending by completely transforming the latter into carbonic acid, and depositing the metal. Tubes of osmium are thus produced of a nature analogous to the cadmines of oxide of zinc obtained by burning zinc vapors issuing from a hole in the cover of a crucible in which zinc is boiling

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to Aug. 24.		1 W'k to Aug 31.		1 W'k to Sept. 7		1 W'k to Sept. 14.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	....	....
Advence	....	....	....	....	....	....	....	....
Alpha	63	47½	63	51½	53¾	45	49¼	46
Alta	3	2¾	3	....	....	....	2½	....
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	1	....	1	....	1	....	1	....
Andes	2½	2¼	2½	....	2¼	2¼	2½	2¼
Alps	55c	....	50c	....	62½c	50c	75c	....
Amazon	....	....	....	....	....	....	....	....
Balt'm'e Con	2⅞	2½	2¾	2¼	2⅞	2¼	2¾	2½
Belcher	23¾	22½	25	23½	23½	22⅝	22¾	21
Belmont	3	2¾	2¾	2½	3	2¾	2½	....
Best & Bel	50¾	48¾	50½	47¾	51	46¾	48¾	46¾
Bockeye	....	....	....	....	....	....	15c	....
Bullion	53	49	55	49	47	42	44½	39
Caledonia	9¼	7½	9	8¾	8¾	8	8	7⅝
California	60	58¾	60¼	58¾	61	58¾	61¾	59
Challenge	4¼	4	4⅞	4¼	4¾	....	....	....
Chollar-P'tori	97½	94	100	95	96	94	94	93½
Confidence	19¼	18¼	20	18¾	18	17	17¼	....
Con Imperial	5¾	5½	6¾	5¾	5¾	4¾	5¼	4½
Con Virginia	54⅜	52¾	58¾	52¾	59½	57½	59½	54⅜
Crown Point	12¾	11	13	12	12⅜	11½	11¾	10
Coso Con	70c	30c	30c	25c	25c	20c	16c	15c
Daney	....	....	....	....	....	....	....	....
Dayton	5½	5	6	5¼	....	....	1	....
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka (G V)	....	....	....	....	90c	....	1	....
Eureka Con	11½	10¾	12½	11	13¼	12½	13	12
Exchequer	21	17¾	21	18¾	18	16	19¾	15¼
Emropa	....	....	....	....	....	....	....	....
Gila	1	75c	1	90c	9⅝c	75c	87½c	75c
Globe Con	15c	....	20c	....	17c	15c	25c	18c
Golden Char	1.15	1	1.15	1	1.05	95c	1¼	....
Gould & Car	15	14⅜	16	14⅜	16⅜	15⅝	16	15
Hale & Nor	11	10½	13½	11¼	12¾	11½	12¾	11¾
Ida Elimore	....	....	....	....	....	....	....	....
Jefferson	1	87½	1	....	90c	....	1	....
Julia	9	7⅝	9	8¾	8¾	8	8	6½
Justice	23	24½	24½	23	28½	23½	23½	20½
Jackson	3¾	....	4	3⅞	5	4	4	3¾
K K Con	2¼	1½	3¾	3	3	2⅞	3	....
Kentuck	13½	12	13¾	13¼	14	13	13	12¾
Knickerb'k'r	....	75c	80c	62½c	50c	....	....	....
Koesmth	80	75	1	87½c	1⅜	....	1	87½c
Lady Bryan	1.25	72½c	65c	50c	45c	40c	45c	37½c
Lady Wash	3	2¾	3½	2¾	4	3½	2¾	....
Leo	....	....	....	....	....	....	....	....
Leopard	11¾	10⅞	11¾	9¾	9¾	8½	10	9¼
Leviathan	1	87½	87½c	74c	....	....	87½c	37½c
Mahogeny	....	....	....	....	....	....	....	....
Mansfield	22½	....	25c	....	37½c	22½c	25c	....
Meadow V'y	1	25c	1	75c	87½c	75c	75c	62½c
Mexican	36¾	34½	35¼	33⅞	36	34	36	34½
Midee	....	....	....	....	....	....	....	....
Mint	25c	15c	25c	....	....	....	20c	....
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	87½	....	87½c	75c	75c	72½c	75c	62½c
Niagara	....	....	....	....	....	....	25c	....
Northn Belle	23½	18¾	23	21½	24¾	21	25½	24¾
New Coso	3¾	2¾	2½	2	2½	1¾	2¾	1¾
Occidental	3¾	3¾	4	3½	3½	....	....	....
Ophir	56⅞	51½	56¾	53¾	61	57½	60	58¾
Or Gold Hill	....	....	....	....	....	....	....	....
Overman	77½	74¾	77½	75	73	72½	75¾	69¾
Pacific	....	....	....	....	....	....	....	....
Phil Sheridan	50	....	....	....	....	....	....	10c
Ploche	....	....	....	....	....	....	....	....
Poorman	60c	50c	50c	....	40c	35c	40c	30c
Prospect	6	4¾	7	5¾	7¼	6¾	7	6
Pmecian	....	....	....	....	....	....	....	....
Ray & Ely	8¾	6½	8	7	6¾	5	5½	5
Rock Island	2	1⅞	2	1.70	2	1¾	1¾	....
Rye Patch	....	....	....	....	....	....	....	....
Savage	20½	19	23¾	21	21¾	21	21½	2
Seg Belcher	80c	80c	1	....	....	....	75	....
Sierra Nev'da	14⅜	14	15	14⅜	15¼	14⅜	14¾	14
Silver Hill	9½	8¾	11	10	10¼	9¼	10	9
Sth Chariot	21c	20c	15c	....	10c	6c	6c	5c
Snoocr	....	....	75c	60c	87½c	62½c	75c	60c
Union Con	15	14½	15	14	15	14¼	14¾	....
Utah	22¼	20	22	....	20¾	....	21½	20¾
Wells-Fargo	30c	....	30c	....	25c	....	....	....
Woodville	1⅞	1½	1⅞	1⅝	1¾	1½	1⅝	1½
Yel'w Jacket	24½	22	35¾	30¾	30¾	26½	28½	27⅜

Sales at S. F. Stock Exchange.

FRIDAY, A. M., SEPT. 8.

500 Alpha.....48@48½
100 Andes.....2¾@2½
180 Belcher.....22½@22¾
125 Bullion.....40
310 Best & Belcher.....48¼@47½
410 Baltimore Con.....2¾@2⅝
420 California.....59¾@59
50 Confidence.....17¾
215 C Point.....11¾@11
900 Con Virginia.....57@57¼
2120 Con Imperial.....5¾@5.95
510 Caledonia.....7¾@7⅝
20 Chollar.....94
200 Dayton.....
1125 Exchequer.....16½@18
200 Gould & Curry.....15½@15¾
650 Globe.....20@.8c
250 Hale & Nor.....12¼
1945 Justice.....22½@23½
590 Julia.....
200 Kossuth.....1
900 Lady Bryan.....45@40c
130 Mexican.....34½@34¾
150 Mint.....20c
125 New York.....76@75¾
180 Ophir.....60@59¾
435 Overman.....72@73¼
100 Phil Sheridan.....50c
750 Savage.....21¾@21¼
50 Silver Hill.....9¾
400 Sierra Nevada.....14¼@14¾
100 Succor.....55c
370 Union.....14⅝@14¾
10 Utah.....20½
150 Woodville.....1½@1⅝
2085 Yellow Jacket.....28@28½

AFTERNOON SESSION.

400 Belcher.....22½@22⅝
200 Coso Con.....15c
200 Cosmopolitan.....35c
420 California.....59¾
35 Crown Point.....11⅝@11
5195 Eureka Con.....12@12¼
300 Florida.....15c
10 Gila.....1
245 Gen Thomas.....21¾@23
170 Gold Chariot.....1.78@1¾
125 Jackson.....3
50 Jefferson.....1
300 K K Con.....3
1170 Leopard.....9¾@10
400 Leviathan.....85@87½c
205 Meadow Val.....1@51¼c
240 Manhattan.....16¾@17¼
110 Modoc.....9½@9c
15 Maryland.....75c
355 Northern Belle.....25@24¾
400 New Coso.....1¾
100 North Carson.....1¾
700 Panther.....16c
1050 Poorman.....45@40c
2315 Prospect.....3@2¾
90 Raymond & Ely.....
200 Succor.....55c
800 Sonth Chariot.....5@6c
600 S Modoc.....1@1¼
1000 Trojan.....80c
300 Ward.....1⅝@1¾

SATURDAY, A. M., SEPT. 9.

525 Alpha.....48½@48
150 Am Flat.....1
225 Bullion.....40
3 Best & Belcher.....48½
185 Belcher.....22¾@2 3⅛
475 Caledonia.....7⅝@7¾
745 California.....59½@60
285 Crown Point.....11@11¼
1125 Cos Imperial.....5@5⅛
7.0 Con Virginia.....57½@58
45 Dayton.....
510 Exchequer.....16@16¾
560 Eureka Con.....12@12½
180 Gonld & Cnrry.....15@15¾
1150 Globe.....20@25c
280 Hale & Nor.....12¼@12¾
200 New Coso.....2¼
70 Ophir.....59¾
1000 Poorman.....50c
700 Panther.....75c
400 Sonth Charlot.....8c
405 Yellow Jacket.....27⅝@28½

TUESDAY, A. M., SEPT. 12.

245 American Flat.....1
285 Alpha.....47¼@47
60 Andes.....2¼
20 Bullion.....41½
585 Belcher.....21½@21
225 Best & Belcher.....47@46¼
225 Baltimore Con.....2¾@2½
1000 Baltic.....40c
210 Caledonia.....7¾@7⅞
200 Cromer.....2½
285 Con Virginia.....55@54¾
100 Crown Point.....11¼@10
755 California.....59¼@80
60 Exchequer.....16@16¾
410 Gonld & Cnrry.....15½@15¾
200 Globe.....22½
450 Hale & Nor.....11½@11¾
1180 Justice.....22¾@22⅝
690 Julia.....7@7¾
240 Koesuth.....95c
100 Leviathan.....87½c
523 Lady Bryan.....37½c
580 Mexican.....34½@34¾
25 Maryland.....75c
530 Moxican.....34½@34⅝
500 Nonpareil.....25c
225 New York.....70@65c
425 North Con Vir.....1¼@1¾
285 Overman.....70@69¾
645 Ophir.....59¾@59¾
610 Prospect.....7@6¾
585 Savage.....20½@20
30 Silver Hill.....9¾
615 Sierra Nevada.....14½@14
515 Union.....14¾@14⅝
10 Utah.....21
100 West Belcher.....21½
140 Woodville.....1½
155 Ward.....1¾@1⅝
450 Yellow Jacket.....27¾@27¼

AFTERNOON SESSION.

35 Alpha.....47@47½
50 Alpe.....75c
145 Belmont.....2¾
170 Bullion.....41½@42
45 Crown Point.....10¾@10
225 California.....60
250 Con Virginia.....55¾@55
300 Con Imperial.....5¾@5¾
300 Eureka Con.....12½@12¾
470 Gen Thomas.....2@1¾
100 Gila.....75c
60 Gonld & Cnrry.....15¾@15¾
245 Golden Char.....2@2¼
25 Hnsey.....60c
140 Hale & Nor.....11¾
225 Jackson.....4@3¾
185 Justice.....22½@22¾
125 K K Con.....3
390 Manhattan.....17@16¾
250 Modoc.....4¾@5
500 Meadow Valley.....90@.8c
100 Mansfield.....25c
740 Mexican.....34¾@35¼
570 New Coso.....1¾@2
400 Northn Belle.....2½@24¾
225 Ophir.....59¾@59¾

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., SEPT. 7. THURSDAY A. M., SEPT. 14.

1250 Alpha.....47¾@48
180 Andes.....2¾@2½
250 Baltimore Con.....2¾@2⅝
95 Belcher.....22¼@22⅝
75 Bullion.....39@41
55 Chollar.....95@95c
275 Caledonia.....8@8¼
270 Crown Point.....11¾@11⅝
675 Con Virginia.....58¾@58¾
630 Caledonia.....8@8¼
1384 Con Imperial.....5¾@5⅝
500 Confidence.....17¾@17¾
400 Cromer.....2½
1415 Exchequer.....15¼@1
115 Gould & Curry.....15@15¾
360 Hale & Nor.....11¾@11¾
575 Julia.....8¾@8¾
2410 Justice.....22@22½
25 Kentuck.....13
1980 Lady Bryan.....40@.45c
500 Levisthan.....85@87½c
395 Mexican.....34½@34¾
200 Mint.....21c
45 Maryland.....75c
100 Monumental.....8c
490 New York.....76@75c
440 North Con Va.....1¼@1⅜
386 Ophir.....59¾@59¾
80 Overman.....72½@73
1770 Prospect.....2¾@3
40 Rock Island.....1¾
210 Savage.....21½@21¾
135 Sierra Nevada.....15@15¾
20 Silver Hill.....9
580 Trojan.....80@85c
90 Utah.....20¾
1270 Un Con.....14⅞@14¾
20 Utah.....20½
495 Yellow Jacket.....28@28¼

MONDAY, A. M., SEPT. 11.

1135 Alpha.....46@46¾
23 American Flat.....1
65 Andes.....2¾
570 Best & Bel.....47¾@46¾
100 Buckeye.....25c
200 Belcher.....22@21¾
265 Ballion.....40
10 Baltimore Con.....2¾
110 Caledonia.....7¾@7⅞
225 Crown Point.....11.@10¾
1085 Con Imperial.....5¾@5¾
532 Caliornia.....60@59¾
706 Con Virginia.....55@54¾
54 Chollar.....94@93½
185 Cromer.....2½
360 Dayton.....4¾@4½
905 Exchequer.....16@15¾
360 Gonld & Curry.....16@15¾
700 Globe.....25c
570 Hale & Nor.....11¾@11¾
1805 Justice.....22¾@23¼
570 Julia.....8¾@8¾
420 Kossuth.....1⅛@.9c
1650 Lady Bryan.....40@37½c
100 Leviathan.....87½c
767 Mexican.....34½@34¾
5 New York.....75c
510 North Con Vir.....1¼@1⅞
75 Overman.....70@69¾
695 Ophir.....59¾@59½
10 Phil Sheridan.....10c
1020 Prospect.....2¾@2
290 Rock Island.....1¾
225 Sierra Nevada.....14¾@14¾
655 Savage.....20½@20¾
100 Snccor.....50c
10 Seg Belcher.....75
100 S Hill.....9¾@10
230 Trojan.....1@90c
10 Utah.....20½
200 Union.....14¾@14¾
161 Ward.....1¾
200 West Belcher.....21¾@2
1015 Yellow Jacket.....27¾@27½

AFTERNOON SESSION.

465 Alpha.....48@47½
380 Best & Belcher.....47@47¼
200 Belmont.....2½
590 Coso Con.....16@15c
140 California.....59¾@60
125 Con Virginia.....58¾@58½
1170 Con Imperial.....4¾@4¾
30 Crown Point.....10¾
100 Eureka Con.....12
270 Exchequer.....16@16¾
105 Gila.....1@.8c
160 Gonld & Curry.....15¾@15½
250 Golden Chariot.....2¾@2¾
200 Hale & Norcroes.....12@11¾
105 Justice.....23@22¾
3700 K K Con.....3
210 Leopard.....10@9¾
925 Lady Bryan.....40@37½c
50 Modoc.....1½
95 Mexican.....34½@34½
195 Meadow Valley.....87½@75c
65 Manhattan.....16@16¾
485 Northern Belle.....25¾@25

200 New Coso.....2¼
70 Ophir.....59¾
1000 Poorman.....50c
700 Panther.....75c
400 Sonth Charlot.....8c
405 Yellow Jacket.....27¾@28½

TUESDAY, A. M., SEPT. 12.

245 American Flat.....1
285 Alpha.....47¼@47
60 Andes.....2¼
20 Bullion.....41½
585 Belcher.....21½@21
225 Best & Belcher.....47@46¼
225 Baltimore Con.....2¾@2⅝
1000 Baltic.....40c
210 Caledonia.....7¾@7⅞
200 Cromer.....2½
285 Con Virginia.....55@54¾
100 Crown Point.....11¼@10
755 California.....59¼@80
60 Exchequer.....16@16¾
410 Gonld & Cnrry.....15½@15¾
200 Globe.....22½
450 Hale & Nor.....11¾@11¾
1180 Justice.....22¾@22⅝
690 Julia.....7@7¾
240 Koesuth.....95c
100 Levisthan.....87½c
523 Lady Bryan.....37½c
580 Mexican.....34½@34¾
25 Maryland.....75c
530 Moxican.....34½@34¾
500 Nonpareil.....25c
225 New York.....70@65c
425 North Con Vir.....1¼@1¾
285 Overman.....70@69¾
645 Ophir.....59¾@59¾
610 Prospect.....7@6¾
585 Savage.....20½@20¾
30 Silver Hill.....9¾
615 Sierra Nevada.....14½@14
515 Union.....14¾@14⅝
10 Utah.....21
100 West Belcher.....21½
140 Woodville.....1½
155 Ward.....1¾@1⅝
450 Yellow Jacket.....27¾@27¼

AFTERNOON SESSION.

35 Alpha.....47@47½
50 Alpe.....75c
145 Belmont.....2¾
170 Bullion.....41½@42
45 Crown Point.....10¾@10
225 California.....60
250 Con Virginia.....55¾@55
300 Con Imperial.....5¾@5¾
300 Eureka Con.....12½@12¾
470 Gen Thomas.....2@1¾
100 Gila.....75c
60 Gonld & Cnrry.....15¾@15¾
245 Golden Char.....2@2¼
25 Hnsey.....60c
140 Hale & Nor.....11¾
225 Jackson.....4@3¾
185 Justice.....22¾@22⅝
125 K K Con.....3
390 Manhattan.....17@16¾
250 Modoc.....4¾@5
500 Meadow Valley.....90@.8c
100 Mansfield.....25c
740 Mexican.....34¾@35¼
570 New Coso.....1¾@2
400 Northn Belle.....2½@24¾
225 Ophir.....59¾@59¾

1550 Poorman.....62½@60c
300 S Barcelona.....
265 Yellow Jaoket.....27¾

WEDN'DAY, A. M., SEPT. 13.

505 Alpha.....48@47½
100 Am Flat.....1
90 Alta.....2¾
200 Baltimore Con.....2¾
165 Belcher.....21¾@21½
120 Best & Belcher.....47¾
3580 Con Imperial.....4¾@4¾
120 Caledonia.....7¾
1150 Exchequer.....16@15¾
195 G & Curry.....15¼@15¾
115 Gen & Nor.....11¾@12
120 Julia.....8¾@7
2100 Justice.....22¼@23¼
190 Kosenth.....90c@1
75 Kentuck.....12¾
1551 Leviathan.....85@.80c
200 North Carson.....20c
100 New York.....75@.80c
140 North Con Vir.....1¼@1⅜
505 Ophir.....59½@59¾
115 Overman.....70
50 Phil Sheridan.....1
30 Prospect.....3¾
200 Savage.....20¼@20¾
150 Lady Bryan.....45c
175 Leviathan.....80c
1551 Mexican.....35¾@36

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE.

THE NEW MILL.—Alpine *Chronicle*, Sept. 2: We stated last week that estimates were being prepared for the erection of a 20-stamp mill for the I X L company. The contract has been let to N. D. Arnot, of the Vulcan iron works, San Francisco, who is now here making arrangements to commence the work. The mill is to be a 20-stamp one, and will be furnished with the latest milling improvements. Mr. Arnot already has some of the machinery on the way from San Francisco, and will have all the works on the ground within 50 days. The new mill is to be erected on the beautiful flat known as Nye's ranch, about half a mile below Silver mountain, and is to be completed and in working order within 120 days. The erection of this mill will be watched with much interest by all interested in mining operations in this county. The reputation of the contractor and the Vulcan iron works is a sufficient guarantee that the I X L will be a model mill.

AMADOR.

MECHANICS' MINE.—Amador *Ledger*, Sept. 9: This mine, situated just outside the limits of Sutter Creek, is to be started up shortly. The owners are preparing to incorporate, with 33,000 shares at $1 per share. Ten thousand shares will be thrown upon the market to provide the necessary working capital; the stock, however, is to be exempt from assessment for a period of six months, the development of the property to be carried on in the interval by the original owners. This is about the scheme proposed by the articles of incorporation which have just been prepared. Considerable work has already been done on the 'Mechanics' mine, with results that ought to justify its further development. One shaft has been sunk to the depth of 130 feet, and a drift 100 feet from the surface has been pushed a distance of 100 feet. One crushing of the rock taken from this drift yielded at the rate of $22 per ton. Two later crushings yielded $5.50 and $6 per ton respectively. The reduced quality of the ore in the last tests is accounted for by a break in the ledge. The owners are sanguine that the ore body will recover its richness as development proceeds.

NEW QUARTZ MILL.—We are informed that the owners of the Crown Point mine, located at Drytown, have commenced the erection of a new quartz mill. We believe it is to run 10 stamps. The Crown Point is regarded by expert miners as the future mine of that neighborhood. A dispute about the ownership has been settled, leaving Messrs. Burke, Smith, Lewis and others in possession. They are determined to ascertain by actual working what the property is worth without delay.

QUARTZ EXCITEMENT.—There has been no little excitement in quartz discovery lately in Amador City, owing to the striking of rich ores on the North Gover claim, which we reported in our last issue. The new mine promises to be a valuable one, especially as it adjoins one of the most productive mines in the county—the Gover. Under the stimulus of this find all the unclaimed land in the district has been taken up.

BIG YIELD.—At the last clean-up at the Gover mine upwards of $2,000 was realized from a crushing of 60 tons of rock, averaging $35 per ton.

BUTTE.

GOLD.—Oroville *Mercury*, Sept. 8: O. P. Powers' company cleaned up this week after a 15 days' run, and found on hand $1,500. During the coming month no work will probably be done on the claim, as the ditch needs enlarging and all hands will be at work on that.

CALAVERAS.

GLENCOE CON.—Calaveras *Chronicle*, Sept. 9: Ore, sparkling with free gold, has been struck in the north level of the central shaft of the Glencoe Con. mine, in Glencoe district, some 10 feet below water level. A few days ago the superintendent, F. Sletcher, Esq., discovered a fine body of first-class ore on the northern portion of the mine, which is now being developed. One of the men employed there states that the discovery is a big thing and the ore worth $40 per ton.

MAGNETIC IRON ORE.—Mr. G. P. Wesson, of this place, has lately discovered a deposit of magnetic iron ore near town. The deposit is said to be very extensive and the ore is certainly extremely rich in iron. Other varieties of iron ore—notably brown hematite—have been previously discovered in this vicinity, but we believe this to be the first instance of the finding of the black oxide of iron. The deposit is valuable.

MILL STARTED.—The mill at the Duryea gravel mine, in Chile gulch, was set in motion on Tuesday last. The battery is composed of five 600-pound stamps. The motive power is furnished by an eight-foot hurdy-gurdy wheel, which is run by water under 300-ft pressure. But very little water is required to run the mill with the great pressure available, from 10 to 15 inches suffices. The machinery runs as well as could be desired, everything connected with the mill being erected in the most substantial manner. Mr. John Rider, the well-known millwright, superintended the work, and machinery put up by him always performs satisfactorily. Simultaneously with the completion of the mill, Messrs. Rigney, Kelly & Co. commenced upon their contract for taking out 5,000 cal loads of gravel, and the stamps were immediately set to work. The battery is to be kept running day and night, Mr. A. B. Pickering, of Railroad Flat, having charge of the milling operations. We confidently expect that the yield of the Duryea claim, large as it has been in the past, will be greatly augmented by the facilities for crushing the grevel now in active operation.

INYO.

ABOUT READY.—Inyo *Independent*, Aug. 29: After undergoing a very thorough overhauling the Kearsarge mill is now ready for operations, and was to start up to-day, or early next week at the latest. It is but a waste of time to prognosticate as to results, but still from what we hear as to the amount and character of the ore on the dump and in sight in the mine, we feel well assured of a very satisfactory run.

LOG SPRINGS.—Messrs. Broder and Moffat have a small force at work upon their mine at Log springs, upon the developments of which depend the furnace operations. It takes rich ore now and plenty of it to justify running the furnace, since silver is at such a discount. This discount is about equivalent to the whole cost of freighting the bullion to San Francisco, in effect doubling that charge as compared to former rates. The prospects in the mine are quite fair, but not enough is shown yet to be considered satisfactory or conclusive either way.

KERN.

THE BUNNEL MINE.—*Southern Californian*, Sept. 7: It was confidently rumored that a compromise had been effected between the claimants to the Bunnell mine. What was known as the Bunnell mine, after it was opened and proved to be of value, it will be remembered, was seized and held by a party of armed jumpers, the latter alleging that the mine was on ground which they had previously located and still claimed. Appeal was had to the courts, and finally the case was transferred to the United States Circuit Court. Last week the case came up for adjudication, but was continued till December. The Bunnel company, being driven out of their mine, went to another part of the lead where there could be no dispute, made an opening and found the lead as rich as ever. Since that time they have prosecuted work upon it, and Mr. Hawley, a mining capitalist, has been induced to erect a mill, and is now a large owner in the mine. A fine mill has been built at a cost of some $70,000, which is now ready for operation, and the work of reduction will at once begin. The compromise alluded to is said to be upon the following basis: Both the claimants are to consolidate all their mining interests, water privileges, etc., upon which capital stock shall be issued to the amount of 10,000,000 shares, of which the Bunnel claimants shall receive three-fifths, and the adverse claimants, or jumpers, two-fifths. The first surplus then received from the reduction of rock shall be applied to the payment of the cost of the mill, and no dividend shall be declared till that first cost is liquidated. The proposition to consolidate and cease litigation, as we have heard it, came from the jumpers. The Bunnel company, however, made the condition of the first product going to the payment for the mill, which, we believe, has not yet been assented to by the party making the proposition. We think it quite probable, however, that this will be the basis of the compromise.

MARIPOSA.

WASHINGTON.—Mariposa *Gazette*, Sept. 9: At this flourishing mine, which is one of the rich resources and auxiliaries to the wealth of the county, ore crushing has been suspended for some time past, for the purpose of making sundry repairs and improvements on the mill. During the stoppage no time has been lost in the mine, the usual force having been employed in extracting ore and sinking the main shaft, which is now down and will be continued to a depth of 1000 feet. The mill being again in fine condition and with renewed and increased facilities, work was fully resumed about 10 days ago. The mine, with its belongings, gives employment to 125 men in the various branches of mining, milling, teaming, wood-chopping, etc. The works are still under the general superintendence of Mr. Geo. E. Webber, ably assisted by Moses L. Rogers as mining foreman.

CAMPODONIA.—This mine, which is located near the town of Hornitos, has a 10-stamp mill upon it, and grinds about 10 tons every 24 hours. A friend informs us that it is worked on a most economical scale, only one white man and three Chinamen being employed about the mine and mill. The chinamen supply the mill with 10 tons per day, which pays $15 per ton. This is an old mine upon which a great amount of work has been done. Evidently its owner has paid well for his learning how to work a quartz mine, and now has it upon a paying basis.

NAPA.

QUICKSILVER.—St. Helena *Star*, Sept. 8: B. U. M. Co. shipped 29 flasks of quicksilver this week, making a total of 84 during the last month. This is considered very good for the number of men they have at work and the quality of ore they are at present smelting.

NEVADA.

BIG CLEAN-UP.—*Foothill Tidings*, Sept. 9: The Centennial company, of whose operations on Osborn hill we have spoken several times of late, recently took 17 loads of rock—such as they are taking out while prospecting—to Smith's mill and had it worked. The result came in day or two since in the shape of a gold brick worth over $1,800, and the sulphurets not yet worked, will, it is estimated, make full $2,000 for the run—at the rate of about $118 to the load. The ledge we understand seems a permanent one and this result of the first clean-up ought not only to encourage the owners of the Centennial but to induce others to prospect.

AT SEBASTOPOL.—San Juan *Times*, Sept. 9: The American mining company, at Sebastopol, are working to their utmost capacity, under the able control of George O. Spooner, superintendent. The company are washing through their new shaft and tunnel. Our reporter intends visiting the mines shortly and will give our readers hereafter a full description of the mine, etc.

QUARTZ IN WASHINGTON TOWNSHIP.—Nevada *Transcript*, Sept. 9: The quartz interests in the upper part of the county are brightening up. From different districts we are receiving intelligence of good paying ledges being struck. In Washington township especially, is quartz mining coming to the front. We are informed by a gentleman just down from the vicinity of Fall creek, that the Yuba mine, situated on the bank of the South Yuba river, and owned by Coleman Brothers & Co., have struck a pay chute of rock in their claims, which has been uncovered for a distence of 300 feet, and prospects taken from different places on the ledge show the rock to be exceedingly rich in free gold and sulphurets. To use our informant's own language, "its perfectly lousy." $200,000 have been offered and refused for this mine. They have a fine 15 stamp mill running night and day, and intend to increase the capacity to 30 stamps in a short time. On the opposite side of the river, and about 1,500 feet above the river, is situated the Lindsey mine. Considerable work has been done on the ledge for several years past, but with poor success, until the claims fell into the hands of the present owners, who, by sinking the incline deeper and running cross-drifts, have opened up a fine body of ore, eight feet thick, which pays from $40 to 50 to the ton, mill process. The owners of the mine have just had a new mill built, by E. A. Wetmore, of this city, which gives good satisfaction, every part working smoothly and evenly. It is now generally conceded that the ledge of the Lindsey mine is a continuation of the Yuba mine, the character of the rock and the thickness of both ledges proving it.

ACCIDENT AT THE FRYER WORKS.—Nevada *Transcript*, Sept. 10: On Thursday, while a charge of Meadow Lake ore was being run through the large furnace at the Fryer works, between here and Grass Valley, Mr. R. M. Fryer opened the door to look down at the fire. About the time the door opened a huge sheet of flame rushed out and struck Mr. Fryer in the face, seriously, although not dangerously, burning his face, neck and hands. It is thought that there must have been an explosion of the gases arising from the rock, and that it was caused by the opening which gave them vent. The burned portions were covered with paint as soon as a doctor could be secured, and Friday Mr. Fryer was feeling better, and was in hopes to be out in a few days. In this connection it might be well enough to state that rock is being worked most of the time at the old works on the mine below Grass Valley, and we are informed, both by the company and by employees, that the results prove in every instance that the Fryer method of treating both free and rebellious ores will work right up to a fire assay, whether the quantity be large or small. There have been found many defects in the working of the machinery, and numerous changes have had to be made, but we are informed that the principle of working has at all times been perfectly satisfactory.

PLACER.

MINING ITEMS.—Dutch Flat *Forum*, Sept. 7: The work of fitting up the Polar Star claim is completed and water was turned on yesterday. The Franklin, Lakamp, and the claims of the Gold Run hydraulic mining company, limited, continue washing a few hours each day. The water running in the ditch of the South Yuba canal company will be turned off on the 15th inst. for the purpose of repairs. This will stop all further washing for the season. The Yankee tunnel was advanced 44 feet last week. Total for August, 160 feet, at a cost of $22.79 per foot. The Baker shaft was sunk 12 feet last week. Total for August, 66 feet (32 feet of which was in bedrock, the balance in gravel); the cost was $16 per foot.

ST. PATRICK.—Placer *Herald*, Sept. 9: The St. Patrick mining company, whose mill was destroyed by fire week before last, are making preparations for the erection of a new mill at once. For the present they have leased Pugh's mill, near the town of Ophir.

THE boys who have been opening the old Peter Walter mine are now taking out ore. They expect soon to make a crushing, when they say they will give us an item worth recording.

WE were shown a few days ago by H. Adams some specimens of rusty, decomposed quartz, which he informed us prospected very rich. The ledge from which it came is somewhere in the vicinity of Clipper Gap, and is at least six feet thick.

PLUMAS.

LIVELY WORK.—Plumas *National*, Sept. 9: They have had a lively time in the hydraulic claims at Dutch hill last week. The big pipe was taken with a fit of "bucking," and knocked one man into the flume, and then whirled round and commenced prospecting for more men to conquer. There was a lively scattering of the hands in the cut, and for a while it was feared that serious damage would result, but by hard labor the "water spirit" was brought under subjugation and made to work again as usual.

SANTA CRUZ.

GOLD MINING.—Santa Cruz *Courier*, Sept. 8: For a long time it has been known that gold, both in quartz and gravel, existed in the neighborhood of the San Lorenzo river, six or eight miles above Santa Cruz. Many years since a rich deposit of gold was found in a large boulder in the same neighborhood; this discovery induced the erection of a five-stamp mill, and the running of an extensive tunnel to find the vein. Some $32,000 in gold was extracted from the boulder, but this sum and much more was spent in fruitless explorations, and the company retired in disgust. Placer gold deposits have been found since that time on the margin of the San Lorenzo river, and worked with more or less success for a year. Last year a gentleman named Jones discovered a gold-bearing quartz ledge near the locality of the rich boulder above alluded to, on the land of George Treat. No effort has been made to test its extent and richness, though mining experts who have examined it declare it as their belief that the discovery is a true fissure vein and rich in gold. Mr. W. N. Cummings, who has had a large experience in mining operations all over the coast, is satisfied that the ore will pay handsomely to work, but inclines to the opinion that no true vein exists in the locality, and that the ore found is in pockets. He proposes to test the matter thoroughly, however, and we understand will send a ton of the ore to San Francisco to be worked. Meantime the old tunnel will be prospected, as it is asserted by some that in mining it a quartz vein was cut.

SHASTA.

RICH DIGGINGS ON THE SACRAMENTO.—Yreka *Journal*, Sept. 6: At Shenanigan gulch, a tributary of Slate creek on the Sacramento river, two men took out 40 ounces of gold dust in one day last week, with at least $2 000 more in sight. The discoverer of this rich spot, whose name we could not learn, and a man named Turner, believed there must be rich diggings above a rich claim worked on Slate creek by a man named Moore and another person some years ago. On prospecting around a little they came upon a thin streak of dirt between slate, which resembled yellow ochre, and as they dug down, the lead kept widening to about two feet wide at last accounts, and still widening as the work progressed. Should this streak of pay dirt prove extansive, we may look for a vast amount of gold from that mining section, and it is doubtless probable that other such streaks may be found in the gulches and ravines all along the Sacramento river running through the northern portion of Shasta county and into Siskiyou county. The gold taken out is also of a yellow ochre appearance. At Portuguese Flet, the present season, several large nuggets have been found, and flattering prospects have also been found at various points in the Sacramento river mining region. At Dog creek, the tunnel run in to strike the pay gravel, is now nearly completed, so we learn, and when finished, the enterprise costing more than was at first anticipated, on account of finding more water than expected. We sincerely hope that the Sacramento river diggings may prove rich and extensive, for in their success will Siskiyou be afforded another good market for our farmers, lumber men and producers generally.

SISKIYOU.

GOOD LEDGE.—Yreka *Journal*, Sept. 6: The workmen cutting the tunnel into the Empire quartz claim at Empire creek, near Humbug, have struck lots of water and a good paying ledge two feet wide. The company keep two shifts steadily at work night and day, and will soon be able to take out plenty of good paying quartz.

SONOMA.

MT. JACKSON MINE.—*Russian River Flag*, Sept 7: The three Eames furnaces were started up about three weeks ago. Two of them have run uninterruptedly ever since, night and day. In the third furnace a flange was broken from the cam rod, causing about a week's delay. All are running at present. Although 30 tons can be run through per day, 18 is deemed the most advisable amount for a day's work at present. The ore on the dump ready to be used is estimated at 3,000 tons, and will be sufficient to supply the three furnaces all winter, even though no more be taken from the lead. The network of tunnels is so arranged that 100 men can be put to work getting out ore if desired. The ore is easy worked and apparently inexhaustible. A shipment of 27 flasks was made last week. From the yield now being realized they will ship about 25 flasks per week. Everything is working satisfactorily, and the mine promises a continuous yield from the Eemes furnaces.

TRINITY.

FINISHED.—Trinity *Journal*, Sept. 7: Miners everywhere in the county have about completed the season's work, the clean-ups invariably proving satisfactory. Money, however is not as plentiful as had been anticipated.

NUGGETS.—Jack Reed, of Mineraville, recently picked up a 9¾ ounce piece of gold in his claim below the mouth of Dutch gulch. F. Bates, of the Minersville store, brought in a nice lot of dust last week, among which were several large pieces.

RICH QUARTZ.—From P. Van Matre we learn that Jack Muncy and another man have lately discovered some very rich quartz on Deadwood gulch, near the lead which has been worked for some time past by George Kloin. Muncy obtained $6 from 12 pounds of the rock, or at the rate of $1,000 per ton. They have sunk on the lode about 25 feet, and it is now eight inches in width and widening as they go down on it. An arastra has been erected and is now in operation.

BULLYCHOOP.—Mr. Henry Spiegelburg, of Indian creek, informs us that quartz matters at Bullychoop are looking very bright and prospects are daily improving. The Original Bullychoop company are now negotiating with parties from below for the erection of a mill of eight tons per day crushing capacity, the parties proposing to erect such a mill for one-fourth interest in the mine. In the Byron mine a vein of quartz eight inches wide has been found, which pays as high as $1.50 to the pound. Ten dollars per day has been made out of this rock by crushing it by hand. In the Wild Pigeon mine the lode is eight feet wide and prospects very well. Mr. Spiegelburg is in high hope and thinks that Bullychoop will yet make a noise in quartz mining circles.

TUOLUMNE.

A GOOD HAUL.—Tuolumne *Independent*, Sept. 9: Blas L. Radonich, the "pocket expert" and lucky miner, has taken out of the "old Patterson vein" over $5,000 the past three weeks. Some of the gold is in beautiful crystallized quartz, containing many rare specimens. We have also been shown pieces weighing several pounds, two-thirds of which being solid gold. Blas has suspended operations for the purpose of driving a tunnel to strike the vein at a depth which makes it necessary to drain the shaft.

Nevada.

RYE PATCH DISTRICT.

IMPORTANT DISCOVERY.—Cor. *Silver State*, Sept. 7: The mines never looked better, with the Rye Patch company at the head, with new and powerful machinery to work their mine to a greater depth than has been attained yet in Humboldt county. The most important news I can relate is that of a new find by those veteran prospectors, "Jackass" Louis and Martin Kearny. This new mine, which will greatly add to the bullion production of Humboldt, is called the Washington. Specimens of rich chloride have been struck, and enough of this valuable milling ore is now in sight to keep a ten-stamp mill running for at least a year. The fortunate possessors of this important strike are going to devote all the spare time they have to develop their find, and bring to the mill what ore they now have in sight.

RYE PATCH BULLION.—The Ryo Patch mining company shipped last Wednesday, bullion valued at $6,300, the result of one week's run with five stamps, one of the batteries being out of repair.

REPAIRING.—The Rye Patch mill has been shut down for repairs. The engine, which has been out of order for some time, is being put in first-class condition.

ANTELOPE DISTRICT.

MANHATTAN MINE.—Eureka *Sentinel*, Sept. 6: Billy Wheelan dropped in yesterday from Antelope district to tell us of the progress being made there. The Manhattan is his claim, and he informs us that it is one of the very best between here and the railroad. The ledge is traceable at short intervals for a distance of three miles. Billy has a shaft down on his claim to the depth of 57 feet. At 26 feet he lost his ledge, but at the above depth it came in again and is now strong and well defined. The ore assays about $65 per ton, and will be easily milled. It is almost a facsimile of the Hidden Treasure ore on Treasure hill. The work of development has been laid over for the season, but the indications warrant the belief that the Manhattan is a valuable mine.

WHITE PINE DISTRICT.

THE TUNNEL.—White Pine *News*, Aug. 26: Captain Frank Drake, superintendent of the Eberhardt & Aurora company's mill and mines, after an absence of several weeks in San Francisco, returned home the first of the week. While absent he made arrangements for extensive and powerful machinery for driving his tunnel through Treasure hill, which is now being prosecuted as fast as possible. The size of the tunnel is seven feet high and nine wide, with double tracks.

BULLION SHIPPED.—During the week the Eberhardt & Aurora company have shipped by Wells, Fargo & Co., bullion amounting to $20,355.16.

WARD DISTRICT.

READY TO MOVE.—White Pine *News*, Aug. 26: From Ned Hauser, who returned from Troy on Tuesday last, we learn that the Martin White mining company, of Ward, who recently purchased the English company's mill and other property at the former place, have it all taken down and ready to be shipped to its future destination. Three teams, carrying 60,000 pounds, had loaded up and were ready to start. The mill will be erected as soon as the machinery can be hauled to Ward district.

JERSEY DISTRICT.

THE JERSEY.—*Silver State*, Aug. 28: The Jersey mine, recently leased by a Salt Lake company, continues to improve as depth is attained. Some 30 men are now employed in extracting and assorting the ore. The first-class ore is being shipped to Salt Lake at the rate of about 15 tons a week, and the inferior ore is piled on the dump to be reduced by smelting or concentrating.

BULL RUN DISTRICT.

A GOOD MINE.—*Silver State*, Sept 5: The Blue Jacket mine, in Bull Run district, is proving itself to be valuable property. It was discovered in 18-0, and almost abandoned at one time, owing to the inability of the then owners to work it to advantage. The company are now employing about 100 men chopping wood to run the furnace during the winter. Notwithstanding this heavy expense, sufficient bullion was produced last month to pay all hands, including those at the mill and mine, and leave $5,000 to be divided among its owners.

WASHOE DISTRICT.

IMPERIAL CON.—Gold Hill *News*, Sept. 7; Daily ore yield, 40 tons; principally from the stopes and breasts of the north winze below the 2000-ft level, which continue showing well both north and south, with improvement as further developed. Superintendent Hardy is pushing the main drift north at the 2000-ft level as lively as possible, in order to effect a connection with the Alpha drift for air circulation and working purposes. The air connection recently completed with the Bullion shaft is being utilized to good advantage by being sent down through the winzes to the 2000-ft level, and up and out through the incline, thus ventilating and cooling a very warm section. Total yield of the mine for August, 1,200 tons of ore, giving a bullion product of about $78,000, of which over one-half was gold.

CON. VIRGINIA.—The yield of ore is being largely increased, owing to better extraction and milling facilities. The shaft is in excellent condition down to the 1550-ft level, where the station has been enlarged and retimbered. The ore breasts and stopes are looking and yielding splendidly, and 150 tons per day is being hoisted through the Gould & Curry shaft. Two more mills are set to work on ore from this mine, and the usual monthly dividend of $2 per share is declared, aggregating $1,080,000. This of course, like two or three of its predecessors, has been paid out of the reserve in the treasury. Such a reserve is good to have. The south drift at the 1400-ft level is being retimbered. The mine is in a more prosperous condition than it has been for months.

JUSTICE.—Yielding 120 tons daily from the ore stopes of the 400, 500 and 600-ft levels, which continue looking and yielding well at all points, assays from the 400-ft level running as high as $300 to the ton. At the 800-ft level, cross-cut No. 1 east has its face now in a fair quality of milling ore which shows constant improvement as further cut into. Cross-cuts Nos. 2 and 3 are also in the same class of ore, evidently the same vein or body.

DIAMOND.—This mine adjoins the Justice and Silver Hill, and is one of the most eligible locations in Gold Hill mining district. The claim was located several years ago and an incline sunk 150 feet, nearly all the way in good pay ore. Over 200 tons of ore from it was worked in the Succor mill, yielding an average of over $30 per ton, two-thirds of which was gold, when, owing to some disagreement among the owners, work was stopped. Various efforts have been made from time to time by parties with capital to obtain possession of the claim, but until now all have failed. The present company intend to commence work on the claim at an early day.

CALIFORNIA.—Daily yield, 700 tons, principally from the 1500 and 1600-ft levels. The ore stopes and breasts are yielding a very rich character of ore. At the 1600-ft level especially, the ore is of exceeding richness, the south drift showing decided improvement in that respect. The main shaft is now in good order, and hoisting is going on through the Ophir shaft. The new mill is being started up, and the yield for the present month will be considerably increased over that of last month. The yield for August was but a little short of $2,000,000. Sinking the C. & O. shaft deeper is resumed. Considerable water is met with, giving the pumps lively work to keep it reduced.

ORIGINAL COMSTOCK.—Work was started np during ths past week to properly open out and develop this valuable mining property, which, for intrinsic worth, as indicated by the amount of good pay ore beretofore extracted and milled, should bave a promising future.

GOULD & CURRY.—The joint winze being sunk below the 1600 ft level, at the Savage line, is down 319 feet, bard blasting rock at bottom. The new surface machinery is being placed in position as expeditiously as expedient.

AMAZON & GLASGOW.—The new surface machinery will be placed in position st once, the tonndation being already completed. The boilers are of the largest size, being 16 feet long by 54 inches in diameter. Everything looks well in the mine, and the ore vein at the 400-ft level will be opened and ore extraction for milling will bs commenced as soon as the machinery is ready for it.

SUTRO TUNNEL.—Face of header in hard rock, with considerable increase of water comiug in the last few days, which interferes with blasting and renders advancement mnch slower than it has been. The tunnel having penetrated already far into the precincts of the great, broad Comstock ore belt, the tapping of a water vein at any time is to be expected, and is not an unfavorable circumstance, as indicating proximity to an ore vein or body. The total length of tunnel last evening was 14,285 feet, and rock becoming softer.

NEW YORK.—Under the direction of acting superintendent Sam Owens, work is actively resumed and driving ahead well. Openings for pump tanks are being cnt out at the 250, 450 and 650-ft stations, and the most effective pumps will be placed in position, with a 12-inch main column.

OPHIR.—Daily yield, 300 tons of ore, principally from the 1600-ft level. The various stopes and breasts are looking well and the east ore body developed at that level shows constant improvement.

WEST BELCHER.—The main drift west is now in good ore, and the upraise west above the 300-ft level is yielding well in excellent paying ore, showing improvement both in quantity and quality. The Vivian mill is to be kept steadily running on ore from this, and as soon as practicable another mill will be put to work, there being a large smount of good paying ore in sight.

TROJAN.—Sinking the main shaft is getting along at a very satisfactory rate, with the bottom in very favorable and promising vein matter, showing rich streaks of sulphuret ore which bids fair to concentrate into a bonanza.

CROWN POINT.—The main incline bas reached the 1800-ft level, and the north drift at the 1700-ft level will complete connection with the Belcher air shaft very shortly.

BULLION.—Face of east crosscut at the 1700-ft level in easy working vein matter, and making good progress toward the ore vein.

CHOLLAR-POTOSI.—Daily yield, 80 tons, from the old ore producing sections. Total bullion yield for August, $46,961. Good work is being done sinking the main incline, although the ground is hard and plenty of water to contend with.

NORTH OPHIR.—Exceedingly good work has been done sinking the main shaft, and the 300-ft level was arrived at sooner than was anticipated. A station has been opened at that point, and the ore vein, which is close at hand, is being drifted into and properly investigated.

COSMOPOLITAN.—Face of main tunnel continues in favorable ledge matter, with streaks of good ore, and the stopes from the upraise continue to yield a considerable quantity of good milling ore.

HALE & NORCROSS.—The new and powerful pumping machinery has started up and is now in full and successful operation, getting the water out of the flooded lower levels of the mine. At the present rate of progress mining work will be resumed at the lower level very shortly.

ALPHA.—Working hard at the 2000-ft level to connect the drift south with Imperial drift coming north. Hot, close work. This connection is of the greatest importance in the ventilation and development of the mine.

YELLOW JACKET.—Face of the drift south from bottom of south winze in porphyry and quartz with small streaks of ore.

MINT.—At the 1200-ft level a station is being put in. As soon as this is completed, sinking the shaft deeper will be resumed.

LADY BRYAN.—The new surface machinery is arriving and the foundations for it are being pushed forward to completion.

BALTIC CONSOLIDATED.—Face of main west tunnel in streaks of low grade ore coming in at the face, indicating an ore body not far off.

PROSPECT.—The diamond drill is still being pushed forward from the 400-ft station to prospect the ledge and ascertain the ore and water possibilities.

BEST & BELCHER.—Main south drift pushing steadily ahead, with considerable good looking quartz in the face. West cross-drift continues in low grade ore.

NORTH CON. VIRGINIA.—The new works are being started up, the pumping arrangements being fully completed and all things else in readiness.

EAST JUSTICE.—Steady progress is being made in the development of the mine. An extra force is soon to be put on to work in the mine and the shaft sunk to a depth of 600 feet before drifting is commenced, as at this depth there is a strong likelihood of cutting the body of ore found in the Woodville.

DAYTON.—Owing to the unfortunate and fatal accident of the past week, sinking the shaft has been considerably interrupted, but it is resumed and going ahead as usual. Considerable water is coming in.

SIERRA NEVADA.—The body of hot water tapped by the drift at the 1750-ft level interferes with work at that point, but it is subsiding and work will be resumed there shortly.

HERALD.—Incline down 135 feet and ledge showing splendidly, growing wider and richer as further sunk upon. At the depth of 150 feet drifts both north and south will be opened for ore extraction.

LADY WASHINGTON.—Sinking the main shaft goes steadily forward without interruption, the shaft being in good condition and the machinery operating splendidly.

JULIA.—East drift at the 1800-ft level driving ahead in splendid looking vein matter, with spots and streaks of good ore.

WARD.—Total depth of shaft to-day, 547 feet. Rock getting a little softer and water increasing; manage to handle it very well, however, with hoisting tanks.

SILVER HILL.—The station at the 750-ft level being completed, a pump hoi is now being put in. Sinking the main incline deeper will be resumed directly.

MELBOURNE.—The grading for the new hoisting works is completed and the machinery expected to arrive at any time.

UNION CON.—Face of drift from bottom of winze at the 1400-ft level in good working ground, with encouraging ore symptoms.

ROCK ISLAND.—A large hoisting tank has been put to work assisting the pumps to free the mine of the great overflow of water.

BELCHER.—Daily yield, 150 tons, from the old ore producing sections. The southern portion of the mine looks and holds out the best. The powerful new pumping machinery is being energetically pushed forward to completion.

MEXICAN.—Face of northwest drift at the 1465 ft level in excellent vein matter with streaks and bunches of ore.

CALEDONIA.—The water being all ont of the shaft a station is being cut out at the 1100-ft level, and the north drift is started forward again.

SAVAGE.—The powerful new pumping machinery is started up and doing excellent work at reducing the huge flood of water in the mine.

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and showing the process of the reduction of orea. A supply of ore sufficient for running the mill for a portion of each day was secured from the Consolidated Virginie, California, Ophir and Belcher mines, and was carefully shipped without change of cars from the minea to the Centennial buildings. The ore ia of the character so well known to all familiar with the Cometock lode—a light gray mixture of quartz, stone and white dust, having no appearance of value to the nninitieted. It ia free milling ore, worked by the Washoe amalgameting process, and of qnite a different character from the refractory ores generally fonnd east of the Comstock lode, which require a preliminery roasting with salt in order to chlorinate the ore, or which must he reduced by the smelting process.

The Machinery on Exhibition

Here consists of a donble-decked hoisting cage and mining cars, a stamp mill with automatic feeder, an amalgamating pan and a retort, all of which are the exact counterparts of those nsed on the Comstock lode.

In the center of the building, and occnpying a space aboot 12 feet square, stends the quartz mill proper. Heevy timbers form the framework, which is about 12 feet high, and in the ceoter of the machine are five "atampa" arranged in a row, side by side. Theae are made of bars of iron, about three inchea in diameter and 14 feet long; the lower ends of each ber are shod with cest steel and are much larger than the body of the bar. Aboot one-fonrth of the way from the top of the machioe a shafting extende acrosa to the row of stamps. On this shafting are five long cams, which work sgainst the tappete on the stamp-stems, raising them about a foot, and allowing them to drop suddenly by their own weight. Aa the stsmps fall in regular snccession they drop into a "mortar" of cast iron, faced with steel in its inner surface. Thia mortar is a aolid casting, weighing 4,400 poonds, while the atamps weigh 775 pounds each. The amalgamator is of wrought iron, circular, about six feet in diameter and four feet deep. A muller making 90 revolutiona e minute is affixed to the strong flat bottom of the pan. The seperator ia similar to the amalgamator iu size and construction. It is provided with a pair of arms or deshers which revolve through iia contents, while an opening in the bottom furnishes escape for the amalgam of mercury, ailver and gold.

The interested spectator having taken in all these poiuts is uow ready to view

The Operation of Reducing the Ore.

An iron hopper, known as the Tnlloch antomatic ore feeder, receivea the ore and passes it into the mill at the proper rate of speed through a chute kept in such constant motion as ie necessary for the proper feeding of the mill. As the ore drope into the mill it ia grouod into fine powderby the descending atampa. At the same time with the ore, a stream of water is admitted into the morter and mixes with the powdered ore. We now have what appeara to he a stream of muddy water, and the splashing cansed by the descending stamps forces this water throngh a very fine screen, wheuce it rnns into the settling tanks, where the powdered ore sinks to the bottom, and the murky water is partly pumped off. The crnshed and washed ore is now pessed ioto the amalgemator, where it is heated by steam. Certain chemicals are added, the muller ie set in motion and the heated mesa ia thoroughly ground for ihree hours. A quantity of pnre mercury is now added. The proportioo of mercury used variea according to the richness of the ore, but must alwaya be sufficient to preserve the mass in a fluid state until the end of the process. The grinding process is then continued one hour louger, after which the mnddy mixture is allowed to run into the separator The matter is again kept in violent agitatiou here by the rapid movements of the arms or dashers; and in e short time the perticles of amalgam, looking like mercory, fall to the bottom by their own weight, and pass off throngh au inverted siphon pipe into an iron bowl. This pipe, of course, prevents the escepe of the sand and water by ita being constantly filled with the heavier substance. The amalgam of gold, silver and mercnry in a fluid state thns obtained, closely resemblea pore quicksilver. It is now atrained through a thick canvaas bag, which allows the free mercury to filter into a vessel placed heneath, and leaves in the bag a mass of the consistency of stiff putty. Though still containing about four fifths of its weight in mercury, this maas is now ready to be handled. It is, therefore, placed in dishes in an iron retort and pot into the furnace, where the mercury ia driven out hy evaporation, and is collected by condensatiou to be used again in a similar process. The eveporation accomplished, we have the "retort bullion" ready for the mint. By a chemical process the gold is there separated from the silver, and the two metals are produced in a state of absolote purity. The entire machinery ia driven hy a small Baxter steam engioe, and the operation is daily witnessed by a crowd of interested spectators who eagerly buy the medals whioh are are struck iron the silver made at this Ceotennial mill.

The Chitean Process.

In remarkable contrast with the treatment of ores just described, is that io use in Chile for the treatment of the immenae depoaite of rich ores abounding in our sister repnblic, and whioh is exhibited in a frame building erected for the pnrpose, west of machinery hall. The system is illustrated by means of a fac-simile of the amalgamating machine in nse at Antofagesta. It is one-sixth of the size of the original, and was erected at a cost of $13,000, while the original at Autofegeata cost $230,000. Though no ores are exhibited in aotoal course of treatment, yet the mechinery is sufficiently interesting to develop the essential difference of treatment as compared with that in use on the Comstock lode.

The Amalgamating Machinery

Is in three sections. The first reduoes and washes the ore; the aecond ia used for amalgamating; and the third aection includes the condensing retorts and smelting fnrnace. In the first section, in place of the "stampa," we find two vertical iron rollers resting on an iron plete, and turning in an iron cnp into which the ore is automatically fed. Water is constently supplied and carries the crnshed ore into open flat tanks below, where the ore ia allowed to settle. The water is then drawo off and the ore is carried to the drying pans. The amalgamating aection is somewhat complicated in its action, and oousists of 12 large and two amall casks revolving horizontally, four upright tanks for mixing the chemicel solntion, a washer and a centrifugal machine. The crushed ore is placed in the large caska and saturated with cold water. The chemicel solution ia made in the tanks with boiling selt water, and this having been passed into the caaks, these are rapidly revolved ao as to transform the silver ore from a snlphate into a chloride. Then quicksilver is added and the entire mass is snbjected to the action of the amelgam.

The contents of the caske are now passed into a washer and freed from any impnrities, acids or other chemicals that may remain, leaving pure silver and qoicksilver.

The Centrifugal Machine

Is now bronght into action and, as thoroughly as thia cao be done by mechanical action, the quicksilver is separated from the silver. If the silver still shows impuritiea it is again returned to the amaller caaks, which amply accommodate the diminished bulk, and is there again washed with boiling salt water, Having thue been thoroughly purified, it is stamped into molda and thus prepered for the third section, comprising the quicksilver condenser and the smelting fnrnece.

The Condenser

Is a cylinder or retort closed at the npper part but open at the lower end. An iron plate supports the retort, two-thirds of which are above the plate. The nppe: part is surronnded by a fire-brick fornece, and below the plate are mechanical appliances, derricks, etc., for cerrying the silver and raiaing it into the retorts. The molds, into which the silver had been stamped when leaving the centrifugal machine, are in two parts, forming an iron oylinder held together by iron pins. These molds are placed on iron staods reeting in water buckets, and these, in tnrn, are supported on railway cara. The molds are removed from about the silver, the cars are run under the part of the retort projecting below the iron plate, and, by anitable meane, the silver bar or column is raised into the retort. The water buckets being likewiae raised, close the retort, whioh nnw stands five or six inches in water. Fire is now applied, and after the silver has been sufficiently heated, should there still remain any portiou of quicksilver not removod by the meohanical action of the centrifugal machine, this remeining portion evaporates and is condensed when brought into contact with the water, and appeera as metallic quicksilver at the bottom of the water bucket. The pure colnmn of silver ia then teken from the retort and oonveyed to the smelting furnace, where it is molded into bricks and bara, and is ready for the mint.

This description may serve to call the attention of your readera to the chief features and

Differences of the Two Systems

Of reduction. Which may be the better system, it is, of conrae delicate and difficult to decide. Either system fiods ita warm defenders and equally warm opponente. Whilet the experience gained in the important works of the Comstock ceuses ns to look with pride on the great improvements made in our mining machinery, it is equally certsin that results no less important and gratifying are claimed by our neighbors for the system in nse hy them. It is claimed that the mechine at Antofagasta, the model of which is here exhibited, reduces the ore so systematically, that the loss does uot exoeed *two* onnces of silver in three tons of ore, whether the ore be rich or poor. If this be so, and if the other excellencies exist which are ao earnestly claimed for the Chilean system and machinery, it is easy to nnderstand the conclusiou arrived at by a scientific gentleman from Valparaiso, largely interested in mining property there, whom your correspondeot met last winter in yonr city, and who, after a visit to Virginia City and a careful inapection of the machinery there in use, determined that for suoh ores, at least, as they were theu treatiog, the machinery then in use by his companies was far preferable to that of the Comatock. Io the meantime the exhibition of the different syetems here serves to atteoh a large daily attendence of interested spectators. Notwithstanding the heat, the attendance at the exhibition contiooes very large, and it is confidently expected that the new regulation of admitting visitors at 25 cents each oo the two last Satnrdaya of each month, will have the effect of enormously increasing the nnmber of visitors on those days.

T.

A Query from "Base Metal."

EDITORS PRESS:—Won't you tell us by all that is wonderful what has become of the "Fryer process?" It arose before the delighted visions of the poor fellows whose hopes rest npon the base metal ranges like the mythical El Dorado of Cortez and Pizarro, presaging an age of silver before which the wildest dreams of Senator Jones became every-day affairs and the lamp of Aladdin turned into a tallow dip. But alas! its glory has departed, and left us as the fair bnt false mirage leeves the thirsty traveler on the great Sahare, and no man illnminates the thick clouds of our ignorance with the smelleat reference aa to its sucoess or failure. Shall we also count this with the thonsend failnres that have preceded it, and must we still wait for the glad tidings of a perfect process yet to come? BASE METAL.

Virginia, Nev., Sept. 6th.

[And echo answers, "yet to come!"—ENS. PRESS.]

The Selby Smelting and Lead Company.

The manufacture of articles from lead has grown to very large proportiona on this coast, although there is only one establishment engaged in it. The rapid development of the base metal mines west of the Rocky Monntains and the immense productiou of lead admita of our exporting lerge qnantities of thet metal; and we are also able to supply the Pacific Statea and Territories with all the mannfactured artioles as well. Mannfactured lead has been shipped from here to the Pacifio islends and Australia. Since the eetablishment in this oity of the Selby lead works all imports of this artiole have ceased, so that now our home markets are supplied with the home product and manufacturea.

Thia is as it should be, and we only wish that as mnch could be said of other departments of trade which, with the same perseverance shown, could now staud in the same position. The Selby lead works were started in Auguat, 1865, and have continned in snccessful operation ever since. On the death of Mr. Selby a company was organized to carry on the works, nnder the name of the Selby smelting and lead Co. The principal owners are J. C. Flood, W. S. O'Brien, A. J. Ralston, N. K. Maaten, and Prentiss Selby. Mr. Ralston is president, and Mr. Selby general anperintendent. The company own the large smelting and refining works at North Beach, and the shot tower and manufactory on the corner of Howard and First streets. Of the latter Mr. John Layug ia snperintendent, as he has been ever since the works were started.

The exhibit made by this company at the Mechanics' fair is au index of the articles manufactnred by them. Shot, lead pipe, sheet and bar lead, eto., are made in all the different varieties. All sizes of lead pipe are made, from one-eighth to six inchea in internal diameter, and of all thicknessea. It is safe to say that there are from ninety to one hundred sizes of lead pipe menufactured. Shot of every size is made and has driven all the imported shot out of the market. They also make buck shot, bulleja, etc. The shot tower at the works is 225 feet high from the foundations to the bell on top.

The company also manufecture block tin pipe for dwellings, etc. The block tin is more expensive than the lead by weight, but it is not necessary to have it so heavy for proportionate strength. The block tin pipe is preferable to tin-lined lead. It is difficult to get an even coating of tin over the interior of lead pipe so thst the lead will not come through in placee, and the tin lining makes it no stronger. Moreover half the weight of block tin is stronger than twice the weight of lead pipe. The tin nsed is all Australian. Although these Australian tin minea were only discovered a few years ago it is taking the place of all other tio. The tin in England is almost mined out. Before the disoovery of these miues in Australia block tin was very high but now it is qnite cheap. The block tio pipe is mede at the mannfactory of the Selby smelting and lead oompeny. They also meke solder of all kiuds, and in fact all the articles made of lead which can be enumerated.

At the smelting worke at North Beech they tske the crude bullion, separate the precious metals and refine them for the market. The surplus pig lead, not nsed here, is shipped away in large quaotities. The worke are quite extensive end are kept running continually The crude bullion comes mainly from California, Nevada, and Utah, and is prepared for the market at these works. Aa before stated, these works and the manofactory are a good instance of the success attendant on preparing and mannfecturing a hnme prodnct, their articlea of mannfacture having driven imported articles ont of the merket, while at the same time a valoable raw material, prodnced at home, is ntilized.

An advertisement is the next thing to immediate cash returns in your business. It is the means of storing up future profits in the only way it can be done. The farmer sows his crop some time before he expects to reap it, bnt the advertiser can expect returns for what he scatters broadcast, almost immediately. The advertisement is a faithful servant who works continually and needs no rest. Night and day it is serving your interests in every direction and aids continually in building up your business.

California Wooden Ware.

Among the notable exhibits of home manufacture at the fair, that of E. K. Howes & Co.] manufacturers of wooden ware, is prominent. This firm make a handsome display of all sorts of wooden ware, every piece of which is California manufacture. They make every kind of wooden ware that is used for bonsebold, farm or dairy purposes, a small variety of which only is exhibited. In the manufacture of these articles native woods only are used. They consume annually about 2,000 cords of bolts, comprising cedar from Puget sound and Truckee, sugar pine from the coast, and redwood, spruce, cottonwood, alder, maple, ash and fir.

We paid a visit to the factory this week, on the corner of Main and Mission streets, and were much interested in the process of manufacture of the various articles. Almost everything is done by machinery in some simple way. The factory and grounds cover over a fifty-vara lot, the building being three stories high. An engine of 150 horse-power furnishes the power to all the machinery. There are five brick drying kilns heated by steam and furnaces, in which the wood used is seasoned before being made up, There are 40 men employed in the factory, and about sixty or seventy thousand dollars invested in it. A view of the factory accompanies this article.

The business of the firm extends all over the Pacific coast, to Mexico, South America, Sandwich Islands, China, Japan and Australia. At the exhibition in the latter place in 1875, they obtained the bronze medal of the society, for superior workmanship in wooden ware. They have also had five other gold and silver medals awarded by the Mechanics' Institute and State fair, over all other competitors. There is one other manufactory of like character here, and one in Sacramento, but E. K. Howes & Co. state that they manufacture more than the other two together, having the most complete establishment this side of the Rocky mountains.

The factory is complete in its organization, having fire-walls, brick engine rooms, steam and water pipes throughout. They keep 400 feet of hose attached at all times, and a watchman is on duty day and night. Among the large articles manufactured by this firm is the Eureka refrigerator and water cooler combined, (which we recently illustrated and described). This has had such a sale that four men are kept constantly employed in their manufacture by machinery, the demand increasing all the time. The celebrated Eureka matches are also manufactured by E. K. Howes & Co. at their factory. At the salesroom and store, 118, 120 and 122 Front street, a very large assortment of everything in their line is kept. Buckets, tubs, churns of all sizes, and things of a similar character in endless variety may be seen. Twine nets and seines, fishing tackle, brushes, etc., are also on hand. It is also the agency of the Pacific cordage company.

Without going into detail of the process of manufacture of the various articles, which our space does not permit, it would be very interesting for any one who has not seen it to make a visit to the factory. Even the simple operation of making an ordinary water bucket by machinery is interesting. The modes operandi of the different branches of manufacture will be shown to any one who will call upon Mr. Howes, who will take great pleasure in showing them the model wooden ware manufactory of the Pacific coast.

The Menai Suspension Bridge.

The most stupendous undertaking in which Telford was engaged, and perhaps the most imperishable monument of engineering fame, is the Menai suspension bridge over the Menai strait, one of the most magnificent works in the world. It was full time that some such means of crossing the strait were constructed, as between the years 1661 and 1842, no less than 180 persons had been drowned at the ferry of Moel-y-don. So early as 1810 more than one design for a bridge had been designed, and rejected as impracticable; and it was not until the completion of the great Holyhead road by Telford that he saw the absolute necessity of devising some safe means of crossing. He selected a spot called Ynys-y-moch, where the rock and rocky shores on each side gave opportunities for a lofty roadway, which was carried 100 feet above high water mark, so as to allow vessels of the largest size to pass underneath. It is difficult for the eye to estimate the colossal proportions of this wonderful bridge in the air, and it is only after attentively observing vehicles and human figures crossing it, and looking in the distance through the high trellis work of iron like flies in the web of a spider or sparrows fluttering in a net, that it is fully appreciated. A sensible vibration is produced by the passage of a vehicle, or even a man and horse; but it has withstood the greatest storms of wind almost without injury. The weight which the chains support is calculated at 489 tons, and that which they are capable of supporting at 2,016 tons, leaving an available power of 1,520 tons to resist any unusual strain. The total cost of its construction was £120,000. The masonry is of hard limestone from Penmaen in Anglesea. *Cassell's Technical Educator for July.*

Useful Information.

How to Keep Flour Sweet.

The *Milling Journal* addressed an inquiry to a leading miller as to the best method of keeping flour sweet. The following is his reply: "If the wheat is perfectly dry when put into a bin or garner, it will keep a long while without heating; it will, however, keep much longer in a bin where a current of fresh air is admitted than where it is perfectly close.

"Second. 'As to the vessel used for flour,' we have had no experience, except with the ordinary flour barrel. The best are made of oak, either white or red, made in the usual way of perfectly seasoned stuff. The moisture from green wood has a very injurious effect on the keeping properties of flour.

"Third. 'Of the building or room used for storing.' We believe from our experience that flour keeps better in a cool, dry, airy room than anywhere else. During the heat of summer, flour should not be stored either in a cellar or garret, but in the central stories of a building, kept open so as to have a free circulation of fresh air among the flour.

"Fourth. 'Of any other special requirements, precautions, or peculiarities, necessary to perfect preservation.' We may observe that it is very important to keep the flour from exposure to hot sun or to wet. If shipped to distant ports, even in the United States, great care should be observed with regard to the vessel and other kinds of cargo; the hold should be dry and well ventilated during the voyage. If stowed with corn or oats that become heated, the flour will also heat and sour. Many other articles have this effect on flour. We have had flour soured on a voyage to Boston by being stowed in contact with some deleterious article.

"This is a very important subject,—one that has claimed our attention for many years, and we regret we cannot give you more valuable information."

The Heat of Fire Rooms.

To the toilers before the glowing furnaces and heated boiler plates of the fire room there seldom comes a breath of air, and seldom a hint that the outside world cares a mite for their comfort. We are pleased to find in the *Industrial Monthly* the following: "As to the heat of the fire rooms, we seldom, if ever, see any steps taken for their ventilation, or for reducing their temperature. The general plan of lagging cylinders and pipes with felt and wood, or covering them and the boilers with non-conducting materials, is familiar to all, but these are only partially effective. Windsails cannot always be used, and are often troublesome and in the way. There are parts which cannot be covered with non-conducting materials. The fronts of boilers, for instance, have generally to be exposed for the purpose of cleaning tubes, etc., and the heat radiates directly into the fire room. But it is quite practicable to have a movable plate iron shield, with an intervening space filled with non-conducting material, placed in front of the boiler, that may be made to slide up and down or sideways, as most convenient, and thus check the radiation of heat against the firemen's faces and bodies, and it is a practicable and so inexpensive plan, available in every case, to have a blower worked by machinery, that shall introduce without intermission a current of cool, fresh air. Add to these extra facilities for firing, short watches, suitable clothing, an unlimited quantity of good oatmeal and water, and the discomforts of engineers and firemen will be greatly diminished.

Pull Cords with Care.—An English medical journal contains the following disagreeable but interesting information: "A man was last week admitted into Croydon general hospital with one of his eyes so damaged by the cork of a ginger-beer bottle which he was opening, that it was found necessary to remove the eyeball. We have also heard of many other injuries produced in this way. But it is not, as a rule, the operator of the bottle who is the victim. People have generally sufficient consideration for themselves to point the dangerous weapon in another direction. Barmaids, especially, are very careful not to incur any damage from fugitive corks, but they are, unfortunately, not equally careful about other people who may be in the line of fire. We think that much more care ought to be exercised in dealing with all explosive agencies, including soda-water bottles. The careless way in which the corks are now pried out in many refreshment rooms, and allowed to go where they list, is very censurable."

Coal Burning.—To determine the amount of coal in pounds which will be burned per square foot per hour with chimneys of good proportions, Professor Thurston's rule is to subtract one from twice the square root of the hight of the chimney. To determine the hight of chimney required to give a certain rate of combustion, add one to the weight to be burned per square foot per hour; divide by two and square the quotient.

Remarkable Artesian Well.—At Prairie du Chien, Wisconsin, an artesian well daily discharges 869,616 gallons of water. The well is only 960 feet deep, but has head enough to raise the water 900 feet above the ground.

Hints for Handling Dynamite.

The *Revue Industrielle* gives the following useful information to those who may be called to handle the explosive dynamite: The dangers of handling dynamite may be comprised under two leading heads. The dynamite, and especially the cartridges, ought to be kept in a warm place, that they may not harden, and it is often necessary to heat the primed cartridges that have been for some time in the trenches. This is done by putting them on a hot stove, and as this operation is often repeated several times, it happens that the fulminate of mercury detonates and causes the explosion of the dynamite. Another cause of accidental detonation arises from the property which fulminate of mercury possesses of crystallizing into long needles in the mixture of alcohol and nitrate of mercury employed in its preparation. These needles, which consist of octahedral crystals, easily break and crack, and the more so the larger they are. To avoid this danger the fulminate of mercury is worked up with water and sulphur, or saltpetre on a marble table. By this operation crystallization is prevented as long as the capsules are kept in a dry place. But when they come into prolonged contact with damp air, the fulminate of mercury gets into needles, which are deposited on the inside surfaces of the cartridges. When they are pinched with pincers, as is customary, the crystals break and crack, to the fatal injury of the workman. It is equally dangerous to keep primed cartridges long. In consequence of the pressure of the capsule the explosive material, which was compact, becomes disintegrated, and presents a much larger surface to the damp air. Hence results a crystallization of the fulminate, which may occasion an explosion when the hole in the mine is charged. The above two kinds of danger may be obviated by the use of oiled paper primers, which contain a long tin capsule with a very fine mixture of chlorate of potass and sulphide of antimony. The explosive material is simply poured into the capsules, to which it does not adhere, and they are protected from shocks. The explosive material itself is a mixture and chemical combination of such a character that the crystallization of one of the elements cannot have serious results, because no one of them is explosive by itself. Such a capsule may be flattened on a stove with a piece of wood without any explosion. When the holes in the mines are charged, the dynamite cartridges are simply fastened on the primers. As in this process the two are in contact for only a very short time, and as on the other other hand explosion cannot then be caused without the electric spark, this method ought to have the preference everywhere.

How to Grain Quickly and Well.—J. J. Callow, of Cleveland, Ohio, is the inventor of a novel method for graining with metallic stencil plates. It is as follows: The graining color is rubbed in as usual on the doors or work intended to be grained, and combed for the lights or champs, but not for the walnut, ash or oak hearts. A small piece of Canton flannel (rough side out), or old cloth, is laid over the teeth of the four-inch finest steel comb: the plate is then laid over the panel or work to be executed (or wiped out) with the left hand, while with the other hand the comb and cloth are drawn or combed over the outside of the plate two or three times, and the work is executed instantly, even by the most inexperienced person having one hour's practice, while one grainer can do the work of six grainers in the same time, with an average better job into the bargain. Over 20 different designs or figures can be produced from a single plate by using a slide movement and wiping out at the same time.

Good Health.

Cures for Neuralgia.—Neuralgia is a painful affection of one or more nerves, occurring in some particular habits, but more generally arising from cold in a carious tooth. The pain attending this disease is at times most excruciating, causing at the moment great irritability of mind and body. It comes on with a sudden and shooting pain, which as suddenly subsides, to come on again with greater force, like so many lancets lacerating the parts by a unanimous consent of inflicting torture of the most intense description in a given space of time. Many remedies have been prescribed for this agonizing complaint, often attended with benefit, and at other times with none at all. The best local remedy is the application of iced water, which alleviates the pain instantaneously, possibly to return again; but who, in suffering thus, would not give their all for a few moments' ease? When the pain is centered in the vicinity of the temple, a gentle emetic, with the application of a small belladonna plaster over the temple, is sure to give relief; or a leech or two will produce a good effect, if applied early in the attack; they seldom fail giving ease, by drawing off the inflamed blood; or the frequent use of the following evaporating lotion succeeds better in many cases, than any other known remedy, and should be applied as often as the cloth becomes warm from the intense heat of the parts: Solution of acetate of ammonia, two ounces; spirits of wine, two ounces; sulphuric ether, two drachms; camphor mixture, two ounces; mix, and keep in a well-stoppered bottle.

Hints for the Care of the Teeth.

We find in an exchange an article on care and treatment of the teeth, from which we draw several points: Persons with decayed teeth should never drink anything too hot or too cold, as either will attack the nerve and bring on toothache. In having decayed teeth stopped, take care that all the decayed parts are previously cleaned out. Observe, also, that the stopping used is not of mercurial preparation.

In cleaning the teeth, never use any gritty substance, as tending to destroy the enamel coating of the teeth.

To prevent the formation of tartar, rub the teeth on going to bed, and also the first thing in the morning. Pay particular attention to the stomach, and when you find the tongue furred take some proper medicine.

Exposure to cold is the most frequent cause of rheumatism in the face and toothache; therefore, avoid, when possible, being out in the damp air.

When you have the toothache, do not be persuaded to try creosote; it gives temporary relief to the carious tooth at the expense of destroying the sound members.

In using fomentations, take care your face is not exposed to a draft of cold air, the parts being more sensitive of outward influence at that time.

When determined on having a troublesome tooth out, consider if it is worth stopping, for, after all, a natural tooth is best. Never have a tooth out during inflammation of the gums; and also take care, after extraction, to keep out the cold air. More abscesses occur from neglect of this than any other cause.

The worst of all bad habits is picking the teeth with a pin, and nothing is so predisposing to toothache. If such a habit must be indulged in, use a quill. And, lastly, he it observed that the future perfection of the teeth depends upon the attention bestowed upon them in youth. Parents cannot be too strongly impressed with the importance of this advice; nor can youth be too frequently reminded of any carelessness or neglect to themselves.

Oxygen and Health.

Andrew Roy, in a recent address on the importance of good air in mines, frames the following forcible paragraph:

Jules Verne, one of the ablest writers of our time, has drawn a picture of a peaceful village whose inhabitants had lived for centuries in harmony and contentment. By a peculiar process Dr. Ox extracted from the air its due proportion of oxygen. The simple villagers who had lived for centuries in peace at once became fretful and quarrelsome; fanciful wrongs which formerly were passed by without concern, assumed large proportions; neighbors who had been life-long friends became enemies, and the whole village came to dagger's points. The quarrel did not end here, but extended to all the surrounding villages, whose people were regarded as enemies, war ensued, and there was no end to the quarrel until the doctor was discovered at his nefarious work and got rid of.

This picture, like Macbeth's dagger, presents itself every year in many mining villages of the United States, and it will not be clutched until the nefarious practice of bad ventilation has been got rid of. Mines in which the atmosphere has been deprived of its due proportion of oxygen by the formation of carbonic acid gas will continue to possess a restless and unreasonable population, at dagger's points with their employers and others. Until thorough searching, never ceasing ventilating currents of pure air are made to sweep the places where miners are employed underground, it will be to no purpose to hope to see miners become as reasonable and contented as other citizens of the republic. Fanciful wrongs, magnified one hundred fold, will be used as a pretext to get up strikes as an escape from the foul and poisonous gases of the mine, and lawless acts will accompany strikes, particularly when attempts are made to supplant the strikers with new laborers, as surely as the night follows the day.

The Grinder's Danger.—Dr. J. C. Hall, in a paper read before the British medical association at Sheffield, called attention to the diseases arising from certain trades in the town, with special reference to inhaled irritants. There are three kinds of grinders at Sheffield, wet, dry, and mixed, and it appears that the most fatal kind of work is razor, scissor and fork grinding. Particles of grit are frequently discovered in the lungs of those who had died of grinder's disease, but the speaker had never, even after the most careful microscopical examination, detected a particle of steel. The appearance of a dry grinder's lungs and bronchial glands was illustrated by diagrams. The report stated that no less than 111 of this class of grinders died in Sheffield last year. Dr. Hall considers, however, that a properly constructed fan in a well ventilated room will render the dust perfectly innocuous, by causing it to be driven off as fast as formed, and carried up a shaft to the outside of the building. Boys under 10 years of age are now, by legislation, prevented from working at the grinding mills. Papers of analogous kind were read at the same meeting by Dr. Purdon, on the injurious effects produced on the lungs by flax and dust; by Dr. Beveridge, on the occurrence of phthisis in granite masons; by Dr. Elam, on the presence and tolerance of foreign matters in the lungs; and by Dr. Arlidge, on potters' diseases from inhalation.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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Our latest forms go to press on Thursday evening.

San Francisco:

Saturday Morning, Sept. 16, 1876.

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BULLION SHIPMENTS. — Bullion shipments have been made since our last report from the following mines: Ophir, Sept. 6th, $18,663; Tybo, Aug. 31st, two shipments, $9,231.70; Tybo Con., $4,692.95; Comanche, 5th, $7,691.70; Northern Belle, $10,100.06; Con. Virginia, Sept. 9th, 70,202.04; California, Sept. 9th, $176,530.43; Northern Belle, Sept. 7th, $8,392.24; Virtue, Sept. 9th, $4,000; Ophir, Sept. 9th, $19,783 40; Tybo Con., Sept. 6th, $4,665.50, Sept. 7th, $4,503.77.

CAESIAR.—The returning miners bring very little news from Caesiar. The claims reported by last advices as paying well still continue taking the metal out in good quantities. Sylveeter, who owned in one of the best claims, is reported to have sold his interest for $5,000 and turned fur trader. No new diggings are reported, but new newe was weekly expected from prospecting parties out in various directions. A number of men are prospecting on the Tecoo river, where the Indians say there are large deposits of gold.

SUBSCRIPTIONS are being taken up in Philadelphia for the relief of yellow fever sufferers in Savannah. At a meeting on Monday night $1,000 was subscribed.

THE proposed trip to the United States on board one of the ships of the White Star line by a group of members of Parliament has been abandoned.

THE President has proclaimed the Hawaiian treaty to be in full force, so island products now enter our harbor free of duty.

A DELEGATION of workingmen arrived in New York from Germany on Sunday, and proceeded to Philadelphia.

Foundry Notes.

As a general thing there is very little doing at the foundries and machine shops compared with the activity of the past summer. The bulk of the season's work is done, and although they all seem to be busy enough, few have any large contracts on hand. At

The Fulton Foundry,

(Hinckley & Co.) they are at work on considerable mining machinery, and have on hand several orders from Mexico. They are building a 12x24 cut-off engine for the planing mills of Powers & Ough. This is of the same pattern as the one which furnishes the motive power to the machinery at the Mechanics' fair, that also having been made at these works. One of the same size as that for Powers & Ough is being made for a quartz mill in Arizona. They are making, to go with this, amalgamating machinery, pulleys, etc. Another engine of the same size and style is being manufactured to be shipped to Mexico.

They are also constructing a set of hoisting works, six feet gear, and double reels for flat wire rope, to go to a mine in Nevada. They have in course of construction an ordinary seven-inch plunger mining pump, five-foot stroke, for the New Almaden quicksilver mine.

A Brodie's patent crusher is being built to go to Mexico with the engine above referred to. A set of Cornish rollers is being supplied to the Great Eastern quicksilver mine. After the ore is put through a crusher it is passed through these rolls. The foundry is also making castings for the Manhattan silver mining company, and has a number of other small orders on hand.

The Aetna Iron Works

Are making several of the White revolving furnaces for different mines, in addition to the other work in the shops. White's patent revolving cylinder furnace for roasting ores was patented first in 1864, and subsequently in 1865, covering any arrangement of an incline cylinder furnace. It consists of an iron cylinder mounted upon bearing drums or wheels at a suitable inclination, with a fireplace at either the upper or lower end of the cylinder as desired. The cylinder is revolved by suitable power, and the ore is fed into the upper end of the cylinder continuously, and passes through its entire length. During its passage the ore is raised by projections on the inside of the cylinder and allowed to drop through the passing heat, thus completely roasting it. The operation is continuous and requires but comparatively little skill and attention in working. It is simply constructed in sections, easily transported, and can be moved and reset at moderate cost. After thorough trial it is found to reduce a large variety of ores economically, and is now superseding furnaces of perhaps greater, but briefer notoriety. The Aetna iron works have made arrangements with the patentees by which they have the sole right to manufacture these furnaces.

Titles of Patents.

EDITORS PRESS:—In your issue of September 9th, my name is published in your weekly list of United States Patents as having received a patent for "meal bins." I never applied for any such article, but I have been successful in obtaining a patent for an article called a "pastry bureau," and if my patent is mentioned in the PRESS, I must respectfully request that the proper name be given. If there is any advantage to inventors in having their patents published, it is all destroyed in having their articles misquoted. JACOB R. FELTER.

San Bernardino, California.

A published answer to the complaint of our correspondent may be the means of affording some information to others on the subject of the titles of patents. The title which our paper gave the invention referred to is the one given it by the United States Patent Office. In the application papers it was styled "pastry bureau," but the Patent Office reserves the right to give their own title to inventions so as to classify titles and make the index of patents uniform. They, therefore, and not us, called Mr. Felter's invention a "meal bin," and they have issued his patent for a meal bin. They do not recognize such an article or class of articles as pastry bureaus. Mr. Felter can call it what he pleases, but the Patent Office classifies it with meal bins, and calls it by that name in order to bring it in its proper class, and no amount of coaxing or arguing will alter matters. If a man should send on a model of a wagon, accompanied by a description of a wagon, and should call it a "dirt cart," the Patent Office would change the title so that it would be indexed with other articles of its class. This is an arbitrary rule of the office. It does not affect Mr. Felter's right to call it a "pastry bureau." He might secure a trademark patent on the words "pastry bureau," and thus prevent any one else from using the name for any other bin. It there were in the Patent Office such a class of articles as "pastry bureaus" then they would have named the invention a "pastry bureau." The description and illustration of the invention in question remain unchanged, so the inventor loses nothing by the change of name. We merely conformed to the title given it by the Patent Office.

The Wilcox Pumps.

Among the notable articles on exhibition at the Mechanics' fair is a fine display of steam pumps from the shop of W. C. Wilcox & Co., 114 and 116 Beale street. In the short space of one year that has elapsed since the gold medal of the Mechanics' Institute was awarded to this pump over all competitors, after one of the most thoroughly contested working trials, it has obtained a reputation that usually can only be had by long years of hard labor and experience. Without going into details of construction or operation, suffice it to say it is a direct-acting steam pump made on the simplest mechanical principles, easily understood and not likely to get out of order.

The pumps on exhibition were not constructed especially for show, but were selected from the common stock of the shop; just such as are turned out every day for the trade. They range in capacity from 1,000 to 40,000 gallons per hour.

One very important feature of the exhibit of Messrs. Wilcox & Co. is liable to be passed by unnoticed by the casual observer. We refer to the upright, deep-well, direct-acting steam pump, which works by an engine standing perpendicularly over an artesian bore or mining shaft, and working the pump, which is attached to the column pipe, and lowered down the well or mine to any required depth.

This last mentioned pump is an invention of Mr. Wilcox, made this year, involving entirely new principles, upon which application for letters patent has been filed. A number of these pumps are now in use in this city, and can be seen by any one interested, by calling at the basement of the Hammam bath-house, the Grand hotel or Palace hotel, where they have been running for several months, and more than meeting the most sanguine expectations of the inventor.

Mr. Wilcox has lately made another new application of the power of steam pumps, which is a great success. A finely finished Wilcox pump is placed in the engine room of the Grand hotel, and forces water into a large tank made of boiler iron, under a pressure of 70 pounds to the square inch. The water is taken from this tank, which serves for both air and water chambers, through several hundred feet of pipe to the cylinders of one of Hinkle's elevators in the hotel. It thus runs the elevator with entire satisfaction and in a very economical manner. This system is now being applied in other cases as the best method to economize the use of water for elevators.

Mr. Wilcox has a number of inventions in the pump line, all of which he has applied in practical work. The deep well pump to which we have referred is a most excellent one, and which will come into great general use. The steam pump that bears his name, after one of the most thorough working trials in a contest against what had been previously considered the best pumps in the world, came off victorious; and the Mechanics' Institute, under whose auspices the competitive trial was held, awarded him the gold medal at their fair in 1875, for the best steam pump. The firm have a fine large shop, now engaged almost entirely in the manufacture of pumps. They have a good outfit of first-class tools, and are kept busy with their special work. During a visit to the works this week we examined a new valve invented by Mr. Wilcox, for use on his deep well pumps, which is the simplest and most effective thing of the kind in use. In fact, all the different kinds of pumps invented and manufactured by him are successful and show great progress in that department.

SILVER BULLION PURCHASE.—The following order regarding the purchase of silver bullion for coinage was issued from the Treasury department on the 11th inst.: Until further notice silver bullion, in form of fine or imparted bars, foreign coin, etc., will be purchased at the mints of Philadelphia, San Francisco and Carson, and the assay office at New York. The purchasing rate will be 101 cents per standard ounce at Philadelphia, San Francisco, and New York, and 100⅛ cents at Carson, payable in United States gold coin, on the determination of value by a mint assay, the seller paying mint charges for melting, refining, and parting, conformably to law and regulations.

THE following is from the Nevada *Transcript*: It was pretty generally said about town yesterday, that the whole property of the South Yuba canal company has been sold to the capitalist, Alvinza Hayward, of San Francisco. Mr. Hayward is largely interested in mining ground in Little York and adjoining townships in Placer county, and it is thought that the purchase of the South Yuba is for the purpose of obtaining more water to open and work them.

DISPATCHES from New York state that on the 11th inst. the work of charging with explosives the columns that uphold the roof of Hell Gate began.

THE troops in the Indian country are hunting winter quarters instead of the Sioux.

HENRY A. WISE died at Richmond, Virginia, on the 12th inst.

Facts About Peat.

[Written for the PRESS by SAMUEL PURNELL.—No. 5.]

Peat for Locomotives.

About six years ago, on the locomotive *C. L. Pond*, a coal burner running between Hartford and Springfield on passenger express, these results were obtained: 6.95 pounds of water were evaporated by one pound of air-dried peat; average pressure of steam 105 pounds. On another occasion, 7.75 pounds were evaporated by the same amount of fuel. A less exhaust or draft was required than when using coal.

Some five or six years ago, on the Grand Trunk railway of Canada, a number of experiments were made with peat, the result of which was that it was regularly introduced on the line and used for seven years. At the beginning of the year 1875, however, coal from the Nova Scotia mines had become comparatively cheap, and the use of peat was discontinued. They are now using wood and coal—Nova Scotia and Anthracite. During early experiments the results were as follows: Engine, five-feet drivers, 16x26 cylinders, drawing 12 loaded cars; distance run per ton of peat (2 240 pounds), 40 33 miles; fuel used per mile, 55.54 pounds; pressure of steam, 100 to 140 pounds. At another trial with imperfectly dried peat, containing 25 per cent. of water: Engine, six-feet wheels, 15x21 cylinders, train of nine heavily loaded passenger cars; distance run, 101 miles; fuel need, 8,000 pounds; fuel used per mile, 79 pounds; average speed, including stops, 23 miles per hour; average pressure of steam, 123 pounds. At another trial, the peat costing $3.50 per ton (2,240 pounds): Six passenger cars; 177 miles run; consumption of fuel, 7,936 pounds, or 45 pounds per mile; speed, 25¼ miles per hour. The cost of fuel per mile run was seven cents. On the Three Rivers branch of the Grand Trunk it was reported that the average distance run per ton of peat was 50 37 miles, or 44 pounds of fuel per mile. An experiment on the main line with a train of 18 cars, on an upgrade, gave a cost per train mile of 10 cents.

From official figures recently furnished by the Grand Trunk railway company, the following is condensed: From June, 1873, to December, 1874, the average cost of peat per train mile was $17.54; average pounds per train mile, 87.70. A comparison between the coal, wood and peat used during portions of two years may be tabulated as follows:

Fuel.	Price.	Lbs.	Engine miles.	Lbs of Fuel consmd.	Lbs per Engine Mile.	Cost in Cts per Mile
Wood....	$4.56	3712	3,190,562	236,963,712	95.08	11.45
Coal.....	6.40	2000	2,324,951	135,240,800	47.80	15.30
Peat.....	4.00	2000	131,670	15,570,850	118.26	23.60

The reader will not fail to be struck with the varying results of these several statements. There seems to be no process of entirely reconciling them. The comparisons between peat and wood were made in the same locomotives—wood burners—without change of grates, etc. There can be no question that to secure the best results of any fuel, the grates, fire-boxes, draft, etc., of a locomotive should be especially adapted to it. It is not a fair test to burn a strange fuel in a locomotive adapted to an altogether different kind of fuel. For instance, although the coast coals and those of the Rocky mountain region are almost identically the same, yet on the Central Pacific railroad locomotives it is found best to burn them with different styles of grates; and for wood still another style of grate is used. The above table also shows a very small use of peat as compared with either wood or coal; certainly not enough was consumed to allow of a fair comparison being made. It is also reported that the engine men were displeased with peat because it clinkered and gave them more labor in shoveling in fuel to keep up steam; they had, therefore, strong inducements to cause the peat to give a low duty and the other fuels a high one.

To show a few facts as to the different coats of fuel for train service, the following figures from official sources are furnished: One pound of Illinois coal will evaporate a little over seven pounds of water. The Rocky mountain and Seattle (coast) coals have been proved to do about the same duty. A test of Mount Diablo coal showed that its evaporative power was about five pounds of water. The average of number of miles run on the Central Pacific railroad with Seattle coal is, per ton, 45.28 miles; with bituminous coal from Pittsburg the average run in the East has been 37 miles per ton. The average cost of fuel per train mile was 7.78 cents on the Atlantic and Great Western railway, and the cost per ton of coal $2.83. On the Louisville and Nashville railroad the cost of coal per ton was $3 50, and the cost of fuel per train mile 10 cents. On the Central Pacific railroad the cost of coal is $8 per ton, and the cost of fuel per train mile 17.65 cents. These latter figures suggest that an increased economy would be desirable. It remains to be seen whether peat will afford this increased economy.

THERE is a very bitter feeling among the Black Hills miners against the peace commissioners, and the other day when they were going from Cheyenne to Fort Laramie they were hooted at by the incoming miners, who told them they hoped the Indians would take their scalps before they got through with their cowardly peace mission.

Mining and Engineering Works in the Mountains.

Culbertson's Station, South Yuba.

Ens. Press:—The acenery in these mountains ia inexpressibly grend, and everything is npon auch an immense scale that all our usnal experience in judging hights and distances seems to fail ns altogether here. The clear, pure atmosphare adds to the difficulty, end one is astonished to find thet they have walked three or four miles to reach a point apparently only half that distauce away.

South Yuba Canal Company's Flume.

Less than one mile ahove Culbertson's station ia the dam which tnrns the water from the river into the great fleme of the celebreted Sonth Yuba osnal compeny, whose water privileges and facilitiea have letely been examined hy a committee oppointed to report upon the different sonrses from which Son Francisco mey obtain her future supply of fresh water.

This flume winds aronnd the side of the mountaina 200 feet ebove, elmost overhead, end lu sight of the window where I em now writing, and 120 feet below it is the flume of the Blue Tent grevel mining oompany, which takes its weter from the river ebont half a mile above here. About one-half a mile below here commences the flnme of the Omega weter and mining company, which rnns in the seme direction with the Blue Tent flume, end is ahout 180 feet below it, so you will see that I em in close proximity with some of the most celebrated miniog and engineeriog works of the Stete.

There ore four

Water Privileges

Upon this stream; first, that of the South Yuba company, which controls Meedow lake, Fordyce Valley lake, White Rock lake and Devil's Peak lake. Their flume is six feet wide and five feet deep, and has a capacity of 7,500 minera' inchea of weter, end when their Fordyce Valley dam is raised, about 20 feet oan furnish thot amount the whole yeer round. To any one who is not familiar with miners' measurement of water, it will be more intelligible to eey that et its full oepacity the flume is full of water running at a velocity of 10 or 12 milea an hour. This flome is very solidly built, and hea been in existence ebout 21 yeers. It will be rel nilt during this year and next. This oompany furnish water for Nevada, You Bet, Dutch Flat and the neighboring aections of oountry.

The Omega Company.

The second privilege is thet of the Omega company, who take the snrplns from the Sonth Yuba and nse it at their claims, abont 12 miles below here. Their flume is four feet wide, and at present will allow 22 iuches depth of water, rnnning ebout 1,200 inches. They have also aome small lakes, which are tapped es the river becomes low, to keep up their supply.

The Bear River Mining Ditch

Has the third privilege, taking what water can be spsred by the Omega oompany. This ditch tak s its weter abont aix miles above here end carriea it about six miles to Bear river, into which it emptiea. It is egain taken out below by ditch end helps to snpply Dntch Flet end Gold Rnn. The capacity of this ditch is about 2,000 inches.

The fourth privilege ia that of the

Blue Tent Gravel Mining Company,

Situated north of Neveda and distant abont 30 miles from here. This flume was completed thia Spring, and ia aix feet wide and four end a helf feet deep, heving, when full, a capacity of abont 4,500 inches.

As the three last mentioned privilegea cen only nse the snrplns water which runa in the river, they can only work a portion of the seaaon (from three to five or aix months), but from the above you will aee that this river ia about as industrious as it can well be.

As Engineering Works

These mining ditches end flumes are most wonderful. Starting at the point where they take their water from the river, they wind aronnd the mountain sides so as to preserve the proper grade, end although they often meke snch abrnpt cnrvea es must greatly decrease their carrying cepacity, yet an exemination will at once show that it could not be avoided, es it would either involve the expense of tunneling through the herd granite of a mountain 2,000 feet or more in hight, or the carrying of the flume across an abyss of 500 to 1,000 feet in depth, with no point from which to obtain a supnort. The mounteins ere very steep, and overheng in auch a precipitons menner, thut as you look np from below the greet flume seems a narrow thread clinging to the side of the rock without any epparent support.

Yesterdey I walked down the flume of the Blue Tent company to a point about three milea below here, known as

Cape Horn,

A name, hy the wey, which seems to be eppropriated for all grend end precipitous points. A nerrow board or two is nailed upon the esp timhera of the flume, giving a foot peth only 12 inchea in width, sometimes rnnning dangerously near the outer edge, and with a sheer deecent of from two to five hundred feet. It tekes a steady nerve and cool head to walk a flume, especially when the wind hlowa. This particular Cape Horn appeers to be bnt little known, as I have met a number of old residents in the neighborhood who have never seen it, but for magnificent grandeur of aceuery it cen hardly be equalled in the State. The femous Cape Horn upon the Central Pacific ia almost insignificant beside it.

At thia point the flume is built along the side of a solid wall of granite with an almost vertical descent of at least seven hundred feet. Down the monntain the workmen crept to the edge of this precipice, end were lowered by ropes to drill holes in the smooth wells which efforded hurdly a crevice as large aa might be found in the wall of a room. Into these holes when drilled were inserted iron eye-bolts, and from these the workmen were suspended by ropes, fifteen hnndred feet ebove the rocky bed of the river below, and so the flume was built.

Looking down from the flume the river is dwarfed to a brook. Pine and spruce trees upon its banks two or three hundred feet in hight appeer like lawn shrubs. Cataracts falling thirty or forty feet appear like the weterfall which a child would meke with e shingle. A rock dropped from the flume strikes et points and bounds downward, growing smeller and smaller until it disappeers from sight, bnt it cen be heard long after. Upon the opposite side of the river the monntein rises in an almost sheer wall two thousand feet in hight. The river runs for some miles between these gigantic walls of rock, with new snrprises at every turn, and all along the finmes are carried with more or less difficulty. S.

Jumping Seeds.

During the past week considerable wonderment hes been creeted by the appearance of small minnte seeds, which keep up a continnal jumping, as if possessed of life and animation. To give them a nsme has befiled all our doctors and scientists, and cnrio-ity hea run wild to know what they ere, and whet mekes them jump. We have thought over the matter end tried to explore the mystery, bnt cen only arrive at the conclnsion that they are persaitea that grow on the oek leaf, end when ripe fall to the ground. The life which is exhibited is, perhaps, derived from a combination of animal and vegeteble matter producing electricity. They ere picked np in varioua perts of the city, on the ground nnder oak trees. Some of them have been corked np in viale for over a week and still they jump.—*Chico Enterprise.*

OYNIPS SALTATORIUS.

These "flea seeds" were brought to notice acme two yeers ago, and were described at length in the Mining and Scientific Press and Pacific Rural Press. It aeems, however, thet they have mede their appearance in Butte county, and are the object of some curiosity, being considered something new. As a matter of general information we give an illustration of the "seed" and the insect, and extract from the report of C. Mason Kinne, of the San Francisco Microscopical Society, who followed their development throngh to the perfect insect. He says:

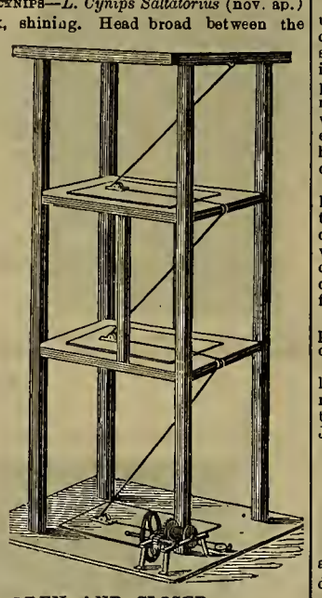
The seeds are very minnte, presenting the appearance of a mnstard seed, and are of a brown color. On placing them in the open hend the "seeds" jump ahont from one place to another in a very lively manner. Even when in a vial or small bottle the same charecteristic is manifest, and aa they were somewhet peculior the "flea seeds" have attracted considerable attention.

The gell or coccon is fonnd lightly etteched to the leaf of the oek, and in time falls to the gronnd, when the noise occasioned by the thousends leaping about, without any apparent cense or organa of motion, sounds very much like the falling of fine rein on the leaves. An exumination shows that the extraordinary activity displeyed is caused by the spaemodic contraction and concussion of the abdominal parts of the occupant against the side of the shell, which movement does not cease even after the covering is nearly split in halves, if the tender structure of the chryaalis be not injured. That it is the chrysalis and not the larvæ hsa been shown by the microscope, end ita change to the perfect insect haa been noted at weekly stages.

The average length of the inaect is five-hnndredths of an inch, and in each has been found from 60 to 80 peer-shaped ove. The engraving gives ita general appearance, with wings raised somewhat nnneturslly, for the purpose of showing their size and shepe. It was drawn on the wood, from the microscope, by Mr. Kinne, and is enlarged 20 diameters. Its ovipositor ia a tiny, though perfect, piece of Nature's mechanism, and lies encased in a sheath at the lower part of the abdomen. Mr. Henry Edwards, of the Microscopical Society, furnished the following technical description of the curiosity:

GENUS CYNIPS—*L. Cynips Saltatorius* (nov. ap.)

Black, shining. Head broad between the eyes, which are very prominent. Antennæ 14-jointed, the first and second joints being much swollen, and the third joint larger than the other two; the remaining joints are long, simple and nearly equal. Thorax densely but finely punctured, very globose in front, projecting so far aa to almost hide the head. Abdomen globose, shining. Ovipositor cases, short, spetulate received into mergined groove in the body. Ovipositor itself flesh color, curved inwerdly towards its middle. The abdomen is six-jointed. Terminal joint of palpi, hatchet-shaped. Tarsi very heiry throughout, the anterior pair with six end the remainder with seven joints. Coxæ very globose. Tibæ long, with lerge end powerful spines at the base.



SINCLAIR'S SAFETY ATTACHMENT—OPEN AND CLOSED.

Hot Shot in Railway Cars.—A Chicago man has an idea which is startling, if not original. He says: "I have a plan to heat cars of all kinds that entirely does away with the chances of burning, in case of accident. I would use no stoves, hot water, or steam, but would use red-hot shot, that weigh 100 pounds each, placed in a box under the car, with regisiters in the floor of the car. Five balls would heat the car for four hours, the furneces for heating to be placed along the stations, 100 miles apart. In case of accident there would be no stove in the car to burn the passengers, as in the recent case of the proprietor of the Sherman house, on the Harlem road. Mr. Holmes of the South Side horse railroad company, has given it a trial, and is pleased with its working."

The reunion of the Californians under the auspices of the Pioneers of the Territorial days of California, was celebrated at the Pacific coast Centennial hall, on the exhibition grounds, on Saturday. About 700 persons were present. General Sutter presided, and speeches were made by General Hooker, Colin M. Boyd and others.

A mortgage of seven million dollars has been placed on the property of the Spring Valley water company.

Leaching Processes.

Editors Press:—Permit me to reply through the Mining and Scientific Press to certain letters of inquiry in regard to the best and most economical leaching process known et the present time, and adepted to all classes of ores, no matter how refreotory, (lead ores excepted.)

Of the leaching processes which I have used two of them are well known to the public, viz.: the Augustin and Patera; of the Hunt & Douglas process very little is known at present.

The Augustin process (in which brine only is used) is applicable to very few classes of ores, hence it cannot be called a profitable process.

The Potera process consists in the use of a hyposulphite of soda or calcium solution. This process is applicable to all classes of ores, (lead ores excepted.) But in attempting to precipitate the silver with sulphide of sodium or calcium solution, all the base metals are precipiteted et the same time, hence we obtain a large bulky precipitate, which, as a general thing, is not richer in silver than the rich silver ores. And to dry, roast, melt and refine this precipitate I would rather smelt and refine the rich silver ores in a crucible, as I do not consider this process profitable or economicel.

The Hunt & Douglas process consists in the use of a solution of salt, chloride of iron and copper, using also, in connection with this, sulphurous acid fumes in regenerating the salt, iron and copper solntion. This process is applicable to all kinds of ores, no matter of what nature and how refreotory they may be, or whether the ores contain large amounts of lime and zinc, even 15 per cent. of lead would not hinder or injure the operation of working the ores.

Of this last process very little is known. I have used it for some time on the most refractory ores known, and find it far superior to any other process. All that is required to start with is in prepering the brine; this becomes charged with iron and copper existing in the ores. The sulphurous acid gas can be made from iron pyrites.

The silver can be precipitated by cement copper, which is also a natural product from the ores, and which is precipitated by iron, etc.

Works can be erected with comperatively little capital, and few hands are required to run it. Any and all information in regard to this last process can be obtained by addressing J. O. Steward, Georgetown, Coloredo.

H. Schafer.

Georgetown, Coloredo.

Sinclair's Safety Attachment.

In view of the fact that many fatal accidents are each year occurring from persons falling down uncovered hoistways, elevator shafts, etc., a need has been felt for some effectual preventive that should not at the same time hamper the operations of commerce. The danger to life alone was not the only thing to be taken into consideration. In cases of fire these open ways communicating from story to story have constituted a convenient pathway for the devouring element, and by the draft they induced accelerated its march and directed its course right along the only way of escape. Firemen have often fallen through them when in the discharge of their duty. The coroners of New York report fifteen inquests for 1875, upon the bodies of those killed by falling through hoistways. And to this number may be added dozens maimed for life. Nor are these accidents confined to New York, as our own city has contributed a similar proportion to the army of the dead and crippled from this cause. Under these circumstances the invention of Mr. Sinclair's simple and economical trap-closing apparatus is a boon to every humane man and a safeguard to his employees. By reference to the illustration, we publish herewith, it will readily be seen that a person may manage all the traps from one floor, opening and shutting them at pleasure, without the necessity of going up or down stairs. They are in use in many of the best buildings in our Eastern cities, and are applied to ventiletor shafts, elevators and stairways, as well as hoistways.

Mr. William G. Fowler, 415 Sansome street, manufactures and applies them, to whom all orders should be addressed. He has already placed them in position in the buildings of Reddington & Co. and Stein, Simpson & Co. corner of Market and Second streets, where they can be seen in operation.

Storing Barley.—A son of an old subscriber of ours, at School House station, San Mateo county, while hunting, last Saturday, shot a squirrel and found 427 barley grains stored away in his chops.

The *Consuelo* won the Ashbury cup in the regatta of the San Francisco yacht club on Admission day. The *Pearl* won the second prize, a silver punch bowl.

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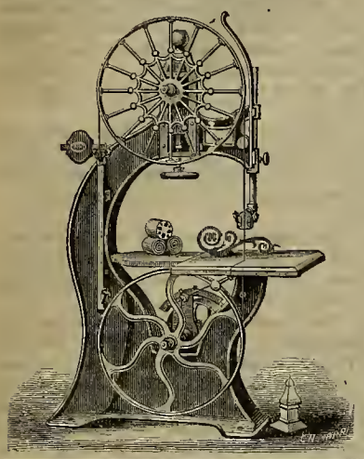

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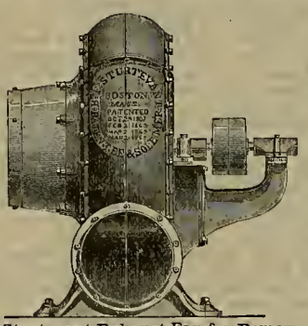

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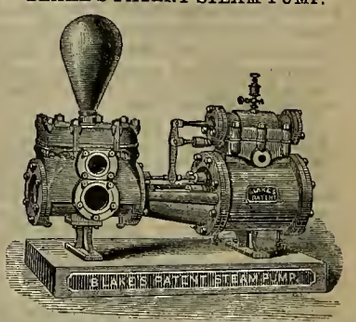

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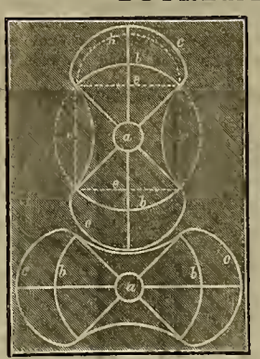

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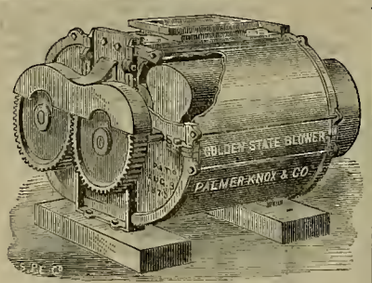

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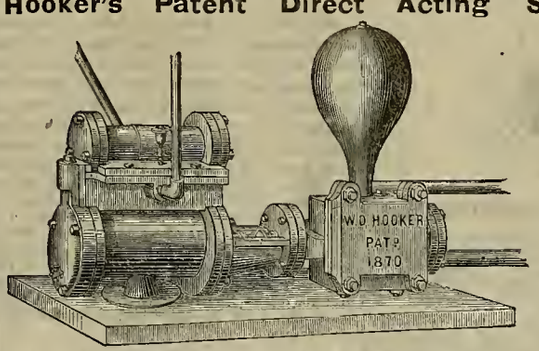

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Having struggled twenty years between life and death with **ASTHMA**, I experimented by compounding roots and herbs and inhaling the medicine. I fortunately discovered a sure cure for **ASTHMA** and **CATARRH.** Warranted to relieve any case of Asthma instantly, so the patient can lie down to sleep. By mail, $1.00 per box. Address **D. LANGELL,** Apple Creek, Ohio. For sale by Druggists.

SACRAMENTO, May 29th, 1875.

MESSRS. DEWEY & Co.—*Gentlemen:* Yours of the 27th inst. is received. The patent came duly to hand yesterday, by express. Please accept thanks for your promptness in obtaining the same.

Very respectfully, DUNCAN BEAUMONT.

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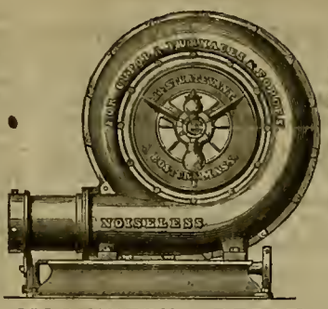

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CAST STEEL SHOES AND DIES.

Guaranteed Cheaper than the Best Iron.

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Owing to our largely increased business, the present low price of Iron from which our Steel is manufactured and the improved facilities for casting and forging, we take great pleasure in announcing that from and after this date we will supply our IMPROVED CAST AND FORGED STEEL SHOES AND DIES FOR QUARTZ MILLS at 12 cents per pound, delivered at San Francisco or Sacramento, instead of 16 cents, as heretofore.

We also furnish Steel Plates for Blake and other Ore Crushers, Steel Gut Gearing, etc., for Mills and Hoisting Works, Steel Pan Shoes, Battery Cams and Tappets, etc.

Address all orders, with dimensions or drawings, to

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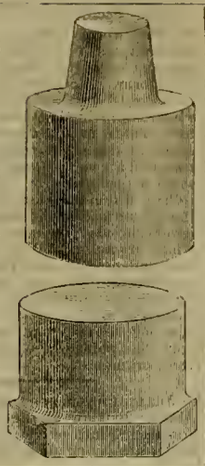

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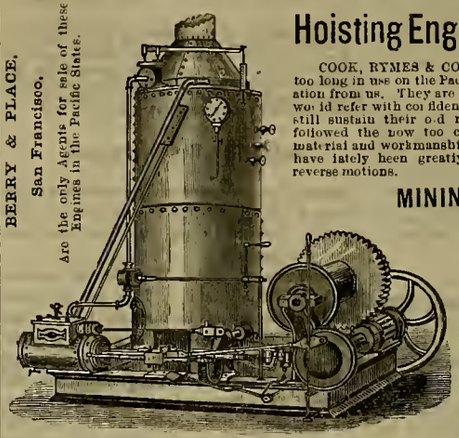
Are the only Agents for sale of these Engines in the Pacific States.



Hoisting Engines. Mining Engines.

COOK, RYMES & CO.'S celebrated Hoisting Engines have been too long in use on the Pacific coast to require any special recommendation from us. They are well known from Alaska to Mexico. We would refer with confidence to any one of the hundreds in use. They still sustain their old reputation, the manufacturers not having followed the now too common practice of reducing the quality of material and workmanship to compete with cheaper engines. They have lately been greatly improved by adding large drums, and reverse motions.

MINING HOISTING ENGINES.

(Manufactured by the same parties.)
Our new Mining Engine is built from plans and specifications of several of our MOST SUCCESSFUL MINING ENGINEERS, and the result is the most complete

Double Drum Hoisting Engine

Ever built. Their advantages will be seen at a glance by any one familiar with the necessities of a mine. These engines may be seen in use in Ophir, Con. Virginia, Chollar, Europa, Niagara, Leviathan, Phil Sheridan, and several other mines on the Comstock Lode. For sale only at

BERRY & PLACE,
(Successors to Treadwell & Co.)

THE BUCKMINSTER ROCK DRILL.

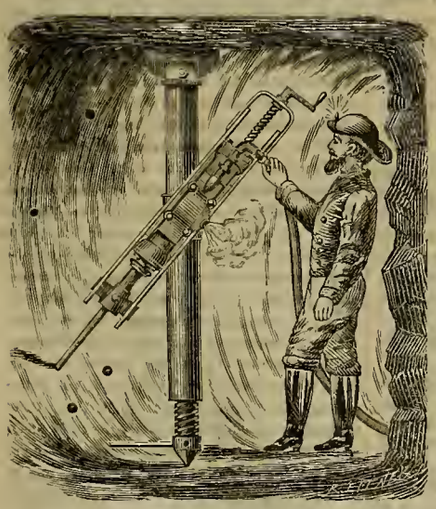
The Most Efficient Rock Drill in the Market.

LIGHT, STRONG and DURABLE.

No External Machinery Liable to Injury from Rough Usage, as all the Working Parts are Enclosed in the Cylinder and Valve Chest.

A TRUE SMOOTH HOLE EVERY TIME. THE MOST ECONOMICAL DRILL YET MADE.

THE WORKING PARTS OF THE DRILL ARE FEW AND SIMPLE IN ARRANGEMENT, SO THERE IS NO LIABILITY OF INJURY. THE CLAMPS FOR HOLDING THE DRILL ON THE TRIPOD, FOR HOLDING THE DRILL TOOL IN POSITION, AND FOR FIXING THE WEIGHTS ON THE LEGS OF TRIPOD, ARE ALL IMPROVED AND VERY EFECTIVE.



This device for rotating this Drill has few parts, and can not get out of order. There is no chance for wear. The motion is positive, and never fails of action. The Drill Carriage can be turned clear round the column, and can also turn in a complete circle on the head of this clamp.

All parts subject to wear are of the Best Cast Steel, and all made to gauge and interchangeable.

This is the Lightest and Strongest Rock Drill yet invented. Being nearly all Cast Steel, it is easily handled and moved, as all superfluous metal is dispensed with.

We also call the attention of those interested to the Horizontal Air Compressor furnished with the Buckminster Drill when desired. It is Economical, Light, Easily Run and conveniently portable.

We claim that the Buckminster Drill will do as good work as any in the market, at a much less expenditure of power, and a great decrease in first cost of machinery. Drills made all the usual sizes.

Mining Companies Desiring Rock Drilling Machinery should Examine this Drill and Air Compressor, and we are confident that it will give satisfaction. Address,

PACIFIC IRON WORKS,

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Deposits of bullion received, melted into bars, and returns made in from 24 to 48 hours.

Bullion can be forwarded to this Office from any part of the interior by Express, and returns made in the same manner.

Careful Analyses made of Ores, Metals, Soils, Waters, Industrial Products, Etc. Mines examined and reported upon. Consultations on Chemical and Metallurgical questions.

Continued from Page 190.

Arizona.

RICH ORE FROM THE KEYSTONE.—Wallapai *Enterprise*, Aug. 25: Some of the richest ore ever taken from this valuable mine was worked at the Mineral Park mill this week. John Corin, who has for some time past been tributing on the lower level, had two tons and a half of second-class ore worked that yielded $240 per ton; and 1,700 pounds of first-class ore "panned out" at the rate of $795 per ton. Thomas Steen and John Penherthy, who have been working under a lease on the first level, had over two tons of ore that went $568 per ton. Two tons of ore out of the winze yielded Messrs Morton, Bracken and Williams $742. Morton and Bracken had two tons worked that paid $425 per ton. W. R. Jones sorted from a pile of third-class Keystone ore 2,700 pounds that pulped $307 per ton.

SMELTING WORKS.—Cor. Arizona *Miner*: The Foster grist mill is being put in first-rate condition, and is capable of grinding three tons of wheat per day and from one to two tons of corn. The water power is excellent and permanent the year round, making it a valuable property. Attached to the mill is the necessary machinery for working the Perkins & Shæffer smelting furnace. They have to date, since February 12th, worked 60 tons of ore from the Peck, Silver Belt and a few other mines, giving a total yield of bullion of over $17 000, or of nearly $300 per ton average. Some important additions and improvements are now being made to the furnace, which, when completed, will add much to its capacity.

Oregon.

TRAIL CREEK MINES.—*Bedrock Democrat*, Sept. 6: Mr. J. B. Gardner, of this city, returned from the Trail Creek diggings last Sunday week. He informed us that he and Mr. W. H. Thompson have purchased the Trail Creek diggings, formerly owned by Harvey Robbins and Ike Nail, for $24,000. They have three years' time in which to pay for them, but will pay sooner if the money is taken out of the claims. Mr. Gardner thinks the above amount can be taken out the first season. We hope they may not be disappointed in their expectations.

[Copyrighted.]

Mechanical Ore Concentration and Separation.—No. 6.

(Written for the PRESS by FRANCIS F. M. CAZIN, M. E., Santa Fe, New Mexico.)

Of What Mineral Dressing Principally Consists.

The exposition in previous articles of the principles by the application of which successful mineral dressing has been carried out, prove that by necessity the action of mineral dressing must be divided into three equally indispensable actions: 1st, the breaking into proper sizes; 2d, the assorting according to size; 3d, the separation or concentration proper.

In the following sections I propose to show for each of the three actions how it should be done efficaciously and profitably. But before doing so I deem proper here to examine where either of these actions should be done.

The breaking begins in the mine or quarry, and it is part of proper management and economy that the material requiring further breaking than the balance should not remain with what has to be subjected to only a further limited amount of breaking. In the mine, when loading the hoisting vessel, as well as on the dump, therefore, the small rock and dirt (usually the richest) should be kept separate, and even be further separated as far as this can be done without extra expense.

The proper handling of the ore for the purpose of hoisting or wheeling it out of the mine should be utilized with the utmost care, for picking out all hand pieces of poor rock should never be lost sight of. Every ton of poor rock thus thrown out is so much saved in transportation and future handling. The ore thereby will become richer and be more easily treated. First-class ore, consisting of rich hand pieces, should be kept out as often and as long as possible. It can then be sooner disposed of and the percentage of loss, small as it may be, but which is always unavoidably connected with mechanical concentration, will be saved on the first-class thus picked out.

If at all practicable, the total action of mineral dressing should be on the mine. In some mineral dressing works which I have in mind, the works are erected over the mine shaft, so that the cages are lifted until under the roof of the high building and there dumped on a turn-table. By this means all further transporting and handling is saved and an opportunity is given to pick the dead rock as well as the first-class ore. All the rest is scraped from the turn-table into the machinery for dressing, so as to pass the different machines by its own gravity, down 81 feet—the hight of the building. Even more profitable than this arrangement is the case where the slope of a hill can be utilized in the immediate vicinity of the shaft or tunnel. In both cases the required machinery for further breaking of the ore should be connected with the dressing works proper.

Where by circumstances it becomes unavoidable necessity to locate the dressing works at some distance from the mine, (as for instance, the utilizing of water power and hill slope, the presence of water for dressing purposes, the requirement of fuel for steam power, etc.,) it may, in special cases, be advisable (where the hoisting power can be thus further utilized), to pursue the breaking to some extent, especially so if a large amount of dead rock can thereby be held out, (picked), and transportation thus be saved. Breaking to a size which will be carried along in gutters or flumes by the water floating from the tunnel or mine pumps will be advisable, where such water can be utilized, as the cheapest medium of transportation from the mine to the dressing works.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING SEPTEMBER 5TH, 1876.

TURN TABLES FOR ENDLESS TRACTION WAYS.—Joseph Britton, S. F.

TREE TRANSPLANTERS.—Timothy Carroll, Anaheim, Cal.

METHODS OF SETTING HAIR-TRIGGERS OF RIFLES, ETC.—George C. Leonard, Red Bluff, Cal.

PROTECTORS FOR CHANDELIERS.—Frank J. Symmes, S. F.

MACHINES FOR COMPACTING LOOSE GRANULAR SUGAR INTO CUBES.—Thirsy L. Wadsworth (executrix of Wadsworth, deceased), Sacramento, Cal.

ORE ROASTING FURNACES.—John Winterburn, Cambria, Cal.

—The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

ORE FURNACE.—John Winterburn, Cambria, San Luis Obispo county. This patent covers certain improvements in furnaces for roasting ores which contain volatile substances of value, such as the ores of mercury. The invention consists in the introduction above the fire arches of a prism-shaped exit pipe, which serves as a combined distributor for the ore and discharge pipe for the vapors, which it leads into the condenser. The invention further consists of a steam pipe which opens into the upper part of the furnace, leading thence into the condenser, and this pipe conducts away the steam arising from the drying of wet ore, so that no especial drying apparatus need to be used previous to its introduction into the furnace. The inventor states that practical use proves that with this device wet ore can be reduced with the same facility and speed that can be accomplished with dry ore in ordinary furnaces, and with dry ore the capacity is nearly doubled. The device is also of great assistence to the condensers, because, instead of allowing all the heat to rush into the condenser, a large part of it passes above the exit pipe, and becomes latent, in converting the ore of the water into steam. This steam may either pass directly to the main condenser or it may be led into separate condensers, so that the steam and vapors may be condensed separately from the mercurial fumes. The device acts as a separator because the steam and other fumes or vapors are carried off above the pipe at a heat of less than four hundred degrees, while the mercury is volatilized at a higher heat below this pipe and is carried to the condenser by itself. It is claimed to take one-fourth the fuel, makes less soot, and also a better product of mercury than other forms of furnace. The mercury is easier to condense than when in the presence of steam, which tends to float and carry off some portion of the mercurial vapors.

DEVICE FOR TRANSPLANTING TREES.—Timothy Carroll, Anaheim. This invention relates to a novel device for transplanting fruit trees, and consists in connecting a vertically moving tube and guide rod or rods with a frame, whereby said tube may be operated for the purpose of taking up the tree; also in a lever pivoted to the frame and a loose ring arranged within the tube whereby the ball of earth around the roots of a tree may be forced out into the hole prepared for its final reception. A hinged piece is at the lower end of the frame, which during the operation of taking up the tree is bolted in line therewith, but which after the tube and tree have been re-set, may be unbolted and swung out of the way in order that the frame may be lowered and the lever brought down to act on the rods of the tube so as to raise the same.

TURN-TABLE FOR ENDLESS TRACTION RAILWAY. Joseph Britton, San Francisco. This invention relates to improvements in turn-tables such as are used for transferring cars from one railway track to another where an endless wire rope is used for propelling the cars along the track or tracks. The only instance we are aware of where duplicate turn-tables have been used for this purpose is on the Clay Street Hill railway in this city. As these tables have been heretofore constructed, the wire rope which gives traction to the cars passes beneath the center of the turn-tables, so that it is necessary not only to release the rope from the gripping apparatus or device which connects it with the car, but it is necessary also to raise the gripper by means of a screw or otherwise, so that it can pass over the turn-table. When thus raised the moving of the car from the track to the turn-table, the turning of the tables, transferring the car from one table to another, and finally moving the car again upon the track from the turn-table, are all accomplished by hand at the expense of time and labor, besides the wear upon the screw or other mechanism by which the gripper is elevated. The invention under consideration contemplates such a construction of the turn-table that the endless wire rope can be passed above the center or bearing point, and thus permit the car to be drawn by the rope to the position upon the table before it is released by the gripper. The arrangement saves time and labor. As the slot in the tables and the spaces beneath them correspond with the tube and slot of the track, these tables can be placed at any point on the length of the track without in any way interfering with the passage of the cars in ordinary travel, and thus provide a means of transferring the cars from one track to another when desired, without sending them to the end of the track to be transferred.

SUGAR COMPACTING MACHINE.—W. Wadsworth (deceased), by T. L. Wadsworth, administrator, Sacramento. The invention of said W. Wadsworth (deceased), combines certain improvements in machines for converting loose granular sugar into blocks or cubes or other solid form. It consists in the employment of a rotating drum or cylinder, the face or rim of which is provided with cavities or cells which form molds, in and upon which the granular sugar is deposited from a hopper which is mounted above the drum and into which the sugar is compacted or condensed by pressure rollers, which are so arranged as to press upon the rim or face of the wheel as it rotates. The invention also includes a system of pistons which are automatically operated so as to force the condensed blocks or cubes out of the molds and deposit them upon an endless belt. The operation is continuous. The wheel deposits the sugar in the trays on the endless belt while the belt moves continuously and carries the trays to a point where they can be removed by the workmen.

ARRANGEMENTS are now being made by the Marine division of the Treasury Department for placing into active operation, and immediately, life-saving stations on the lakes.

THE American team won the International rifle match at Creedmoor.

THE Mechanics' Institute fair closes to-day, Saturday, September 16th.

$1,000 Challenge Ore Feeder.

J. HENDY, ESQ., San Francisco, Cal.—*Sir* On visiting the Mechanics' Institute fair on Thursday P. M. of this week (I had not been there since Saturday last), I found put up on your ore feeder a $1,000 challenge in the form of a handsome little gilt sign. The whole sign is: "$1,000 CHALLENGE ORE FEEDER," as though you might mean simply to give your feeder a *name*. If such was and is your object, the device is a good one, and I do not see how it can fail to draw attention. If, however, you are seeking a trial of your feeder against all others, I will say, on my own part, that I am ready.

Please enlighten me fully as to your objects and oblige,

Yours very respectfully,
C. P. STANFORD, 2401 Buchenan St.

San Francisco, Sept. 9th, 1876.

C. P. STANFORD, ESQ.—*Sir:* In reply to yours (9th inst.) respecting the handsome little gilt sign, as you call it, on my feeder, it means precisely what it has inscribed on it, not as a title to the machine, but a challenge for any and all ore feeders now on exhibition at the Mechanics' fair, now held in San Francisco. The machine, to be subject to trial in every kind of rock or gouge, or whatever may come in contact in the general use of ore feeders.

Further, as regards the gilt sign I will now state, that as for gilt you will find that you are in error, as I have not had any means to spare in decorations since I paid you $2,950 U. S. gold coin for your patent on ore feeders, which you represented as covering the adjustable lever on all ore feeders, and that you claimed to be inventor of the same, but you still continue to use it under the pretence that it is not an adjustable lever, but some other mechanical appliance. Now, sir, I am willing to risk an additional sum of $500 U. S. gold coin against a like amount, and leave the decision to three or five competent judges as to whether you are using that which you sold me, viz., the adjustable lever for ore feeders.

Should they decide that it is not an adjustable lever that you are using on your feeder, I will forfeit $500; should they decide to the contrary, then you will forfeit $500.

Hoping that this will sufficiently enlighten you and bring you to test your machine on its merits at your earliest convenience.

I remain, respectfully etc.,
JOSHUA HENDY.

Francisco, Sept. 11th, 1876.

Gems and Precious Stones.

[Written for the PRESS by HENRY G. HANKS.]

O. Idocrase, Vesuvianite, Xanthite, Cyprine.

Idocrase, named vesuvianite by Dana, is a silicate of lime, alumina and iron, with magnesia, mangeness and potash in small quantities.

The following analysis will give a general idea of its composition, although as the composition of the different varieties differs it is impossible to write any formula which will exactly represent it: Silica, 37.36; lime, 29.68; alumina, 23.53; protoxide of iron, 3 99; magnesia, protoxide of manganese and potash, 5.21;=99.77.

The crystalline form of idocrase is tetregonal. Luster, vitreous. Color, brown, green, blue. Streak, white. Sub-transparent; fracture uneven. Double refraction feeble. Hardness, 6.5. Specific gravity, 3.349–3.45. B. B. fuses with intumescence, yielding a greenish gloss. Gives a strong reaction for iron with reagents. Some varieties react strongly of manganese. Partly decomposed by muriatic acid. If the mineral is first ignited it becomes wholly soluble in muriatic acid.

The purest samples of idocrase are found in the lava of Vesuvius, whence the name vesuvianite. It is in color hair brown to olive green. This variety is sometimes used as jewelry, and is called Italian chrysolite in the trade.

It occurs in a few localities in the Eastern States of the Union, and in at least one on the Pacific coast, from which a beautiful specimen has been sent to San Francisco.

Xanthite (from its yellow color,) is a yellowish brown variety from Amity, New York.

Cyprine is blue idocrase, said to owe its color to the presence of copper, whence the name. It occurs at Tellmark, Norway. There seems to be some doubt as to this veriety. Thomson maintains that it is a variety of grossularite and contains no copper. The following is his analysis: Silica, 38.80; alumina, 20.40; protoxide of iron, 8.35; lime, 32.00;=99.55.

Idocrase of pure green or brown is somewhat in demand, but does not find many admirers, nor does it command a high price. It is more interesting as a beautiful mineral than valuable as a gem.

ABOUT a dozen men are now at work in the cinnaber mines on Beever creek, Jackson county, Oregon.

Testing and Working Silver Ores.

The above is the title of an illustrated work for miners and prospectors by Chas. H. Aaron, which will be issued next Wednesday by Dewey & Co. Mr. Aaron has managed to give a great many useful hints and suggestions, free from all technicalities, and in such a style as to be easily comprehended. It is written for the miner, with no chemical symbols or metallurgical technicalities to confuse those who are not chemists or metallurgists. The following summary of the contents of the work will give an idea of its scope:

Under the heading of the first chapter, "Testing Ores for Silver," we find paragraphs on ore formation, test for silver, with heat and water, acid or blow pipe. In speaking of testing for a process, the extent and richness of ore is considered, smelting ores, selecting and working sample, appliances for testing, roasting, etc. Under the head of "Working Ores" the author describes Aaron's process, has something to say of superheated steam, preparation of dichloride of copper and protochloride of copper, use of copper and iron, quantity of chemicals, carbonate of lime, chloride ores, amalgam, Patchen's process, etc. He also describes the methods of working roasted ores, treatment of base metals, stirring, heat of furnace, want of sulphur, etc. Under the head of "Leaching Processes" are the titles, Smelting, Mexican process, Kroencke's process, Chilean process, etc. Under "Pulverizing Machines" are described the arastra and its construction and operation, stamp batteries, screens, Crocker's trip-hammer battery, Paul's pulverizing barrel, Kendall's battery, Nolce's pulverizer, a cheap rock breaker, etc.

In speaking of amalgamators the author describes a cheap amalgamator, grinding the ore, directions for making a barrel, preventing mechanical wear, use of quicksilver, copper in bars, Freiberg barrel, cheap barrel, trough, barrel on rollers, Aaron's amalgamator, separator, etc.

He describes an improved retort, roasting furnace, furnace tools and furnace building. Among the miscellaneous mention may be found Aaron's leaching apparatus, with two or three different arrangements a small mill, sampling tailings and settling tanks, dichloride of copper, etc.

The book is a serviceable one for miner's and prospector's use. Price, post free, (in leather,) $2.00. Address Dewey & Co., MINING AND SCIENTIFIC PRESS, 224 Sansome street, San Francisco.

KNIGHT'S American Mechanical Diotionary is a book for all persons who make, bny, sell, use, or want to know anything abont tools for machines, or are onrions as to the history and development of mechanic art. It is a descriptive word-book of tools, instrnments, machines, chemical and mechanical processes; civil, mechsnical, rsilway, hydraulic and military engineering; a history of inventions; general technological vocabnlary; and digest of mechanical applinnces in science and the indnstrial and fine arts, etc. For circnlars or price address or apply to A. Roman & Co., wholesale and retail booksellers, 11 Montgomery street, San Francisco.

The McCormick Self-Binder.

C. H. & L. J. McCormick, tho most celebrated inventors snd manufncturers of mowing nnd harvestiag machinery in the world, are aot behind the times in producing s thorough working, durnble and reliablo self-biader sttachment to their well-known and justly celebrsted reaping machines.

After haviag heca carefully tested in the West ern Stntes, where the mnufactory is located, during tho past seasoa, a most perfect working mschiae will bo offered to the farmers of the Pacific const next senson, at very favorable rntes.

The editors of this journal have seen dozcas of favorable testimonials from parties who have witncssed the operations of these binders or used them in the field in Iown, Missouri, Illinois, Indiana, Minnesota and Nebr nska.

Further information can be had by addressing or calling upon Mr. P. Mohan, McCormick's, general ngent, st No. 6 Dsvis street, S. F.

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EVERYONE afflicted with those maledies for which the external application of enlphur hae long been known to be efficacione, can prepare a sulphur hath without resorting to puhlic bething honscs. GLENN'S SULPEUR SOAP furnishee the meane. Sold everywhere.

DOMESTIC PRODUCE.

[WHOLESALE.]

WEDNESDAY M., Sept. 13, 1878.

BEANS.		Pecannts	17 @ 18
Sayo, ₱ ctl	4 00@ —	Peannts per lb	8 @ 9
Butter	1 90@2 25	Filberts	15 @ 16
Pea	1 92½@ —	**ONIONS.**	
Pink	2 50@3 00	Union City ctl	—@—
Sn't white	1 80@1 90	Stockton	50 @— 75
Lima	1 90 @2 00	New Red	50 @—
BROOM CORN.		Silver Skins	50 @— 60
Common, ₱ lb	2 @ 3	**POTATOES.**	
Choice, do	4 @ 5	Petalnme, ₱ ctl	— @ —
COTTON.		Salt Lake	— @ —
Cotton, ₱ lb	15 @ 18	Humboldt	— @ —
DAIRY PRODUCE, ETC.		Half Moon bay	80 @ 65
BUTTER.		Coffey Cove	1 07½@ —
Oal. Fresh Roll per lb	42½@ 45	Early Rose new	50 @ 65
Point Reyes	45 @ 47½	Sweet	1 90 @ —
Pickle Roll	32½@ 35	**POULTRY & GAME.**	
Firkin	25 @ 30	Hens, per dz	7 00 @@ 50
W'st'n Reserve	16 @ 25	Roosters	5 50 @@ 50
Naw York	— @ —	Broilers	3 00 @@ 50
CHEESE.		Ducks, teme.dz	7 00 @@ 50
Cheese, Cal., lb	10 @ 15	do Muscovy	9 00 @@ 00
do Old	— @ —	do Canvess	— @@ 00
Eastarn	12½@ 15	Geese, per pair	2 00 @@ 50
EGGS.		Wild Gray dz	3 00 @@ 00
Cal. fresh ₱ doz	40 @ 45	White	1 50 @@ 00
Ducks'	40 @ —	Turkeys, Live, lb	15 @@ 15
Oregon	37½@ —	do Dressed	20 @@ 22
Eastern	21 @ —	Quail, per doz	— @@ —
FEED.		Snipe, Enz., doz	— @@ —
Bran, per ton	17 00 @17 50	Doves, per dozen	50 @@ 57
Corn Meal	28 00 @@ —	Rabbits	1 00 @@1 00
Hay	7 00 @13 00	Hare, per doz	1 50 @@ 10
Middlings	24 00 @@ —	**PROVISIONS.**	
Oil cake meal	— @33 50	Cal. Secon. L't, lb	16 @ 17
Straw, ₱ bale	55 @ 60	do Medium	15½@ 16
FLOUR.		do Heavy	— @ 15½
Extra ₱ bbl	4 50 @5 00	Lard	14 @ 16½
Superfine	4 00 @4 25	Cal. Smoked Beef	12½@ 15
Graham, ₱ bbl	4 75 @ —	Eastern do	@ —
FRESH MEAT.		East'n Shonld's	@ 12
Beef 1st quality lb	6 @ 7½	Hame, Cal	15 @ 15½
Second do	5 @ 5¾	do Armonr	@ 17
Third do	3½@ 4	do Worst'rs	19 @ 19½
Spring Lamb	5½@ 6	do Dupee's	19 @ 10½
Mutton	5½@ 6	do Davis Bros	19 @ 19½
Pork, undressed	8 @ 6½	**SEEDS.**	
do, dressed	9 @ 9½	Alfelfa, Chile lb	8 @ 10
Veal	5½@ 6	do California	11 @ 12
Milk Calves	5½@ 7	Canary	9 @ 10
GRAIN, ETC.		Clover Red	@ 12
Barley, feed ctl	80 @ 1 00	do White	50 @ 55
do brewing	1 00 @ 1 10	Onion	8 @ 10
Chevalier	1 25 @ 1 30	Flaxseed	@ 3½
Corn, White	1 20 @1 25	Hemp	12½@@ —
do Yellow	1 20 @ 1 30	Italian Rye Grass	25 @@ 30
Oats	1 40 @ 1 60	Perennial do	20 @@ 30
Milling	1 80 @ 1 90	Millet	10 @@ 12
Rye	1 35 @ 1 40	Mustard, white	5 @@ 6
Wheat shipping	1 50 @1 52½	do. Brown	3 @@ 3½
do milling	1 55 @1 60	Rape	5 @@ 6
HIDES.		Ky. Blue Grass	30 @@ —
Hides, dry	13 @ 13½	do 2d quality	29 @@ —
do wet salted	5½@ 7	Sweet V Grass	— @@ 75
HONEY, ETC.		Orchard do	30 @@ 35
Seaswax, per lb	25 @ 30	Red Top do	@@ 25
Honey in comb	10 @ 12½	Hungarian do	8 @@ 12
do Strained	6 @ 8	Lawn do	50 @@ —
HOPS.		Mesquit do	20 @@ 25
New crop	18 @ 20	Timothy	11 @@ 13
NUTS—Jobbing.		**TALLOW.**	
Alm'de b'rd sh'l lb	8 @ 10	Crude, ₱ lb	5 @ 6¼
do, soft sh'l	18 @ 20	Refined	8¾@ 9
Brazil do	14 @ 16	**WOOL, ETC.**	
Cal. Walnuts	14 @ 14	**FALL—**	
Chile Walnuts	11 @ 12½	Free	11 @ 13
		Choice	14 @ 15
		Burry	9 @ 11
		Oregon	17 @ 23

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, Sept. 13, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 91 to 91½. Silver 5⅝@5¾.

Gold in N. Y., 110 .

GOLD BARS, 890 to 890. SILVER BARS, 11@21 per cent. discount.

EXCHANGE on N.Y., 50-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five franse per dollar; Mexican dollars, 5 per cent. discount.

LONDON.—Consols, 96½; Bonds, 102½

QUICKSILVER in S. F., by the flask, par ₱, 45o

METALS.

[WHOLESALE.

THURSDAY, M., Sept. 14, 1878.

American Pig Iron, ₱ ton	32 00	@ —	
Scotch Pig Iron, ₱ ton	31 50	@ 32 00	
White Pig, ₱ ton	40 00	@ 50 00	
Oregon Pig, ₱ ton	31 50	@ 32 50	
Refined Bar	— —	@ —	4¼
Boiler, No. 1 to 4	— —	@ —	5½
Plate, No. 5 to 9	— —	@ —	5¾
Sheet, No. 10 to 14	— —	@ —	5¾
Sheet, No. 15 to 20	— 5¾	@ —	—
Sheet, No. 22 to 24	— 6	@ —	—
Sheet, No. 26 to 28	— 6¼	@ —	—
Horse Shoes, per keg	7 00	@ 8 50	
Nail Rod	— 10	@ —	—
Norway Iron	— 8½	@ —	9½
Rolled Iron	— 4	@ —	8
Other Irons for Blacksmiths, Miners, etc.	— —	@ —	4¼
COPPER.—			
Copper Tin'd	— 37	@ —	40
Sheathing, ₱ lb	— 24	@ —	40
Sheathing, Yellow	— 21	@ —	12½
Shaathing, Old Yallow	— 10	@ —	11
Composition Nails	— 21	@ —	—
Composition Bolts	— 24	@ —	—
STEEL.—Engliah Cast, ₱ lb	— 20	@ —	25
Anderson & Woods' ordinary sizes	— —	@ —	15
Drill	— —	@ —	16½
Flat Bar	— 16	@ —	19
Plow Steel	— 8¾	@ —	9
TIN PLATES.—			
10x14 I C Charcoal	11 00	@ —	—
10x14 I X Charcoal	13 00	@ —	—
Roofing Plate I C Charcoal	10 00	@ 10 50	
Banca Tin	— 24	@ —	—
Australian	— 25	@ —	—
ZINC.—By the Cask	— —	@ —	11
Zinc, Sheet 7x3 ft, No 7 to 10 ₱ lb	— —	@ —	11
do do 7x3 ft, No 11 to 14	— —	@ —	11½
do do 8x1 ft, No 8 to 10	— —	@ —	12½
do do 8x1 ft, No 11 to 14	— —	@ —	13
NAILS Assorted sizes	3 60	@ 3 75	
QUICKSILVER, per ₱	— 43	@ 45	—

LEATHER.

[WHOLESALE.]

WEDNESDAY M., Sept. 13, 1876.

Sole Leather, heavy ₱ lb	24@29
do do light ₱ lb	20@25
Jodot, 8 Kil., per doz	48 00@ 50 00
Jodot, 11 to 13 Kil., per doz	68 00@ 72 00
Jodot 14 to 19 Kil., per doz	82 00@ 84 00
Jodot, second choice, 11 to 16 Kil. ₱ doz	57 00@ 74 00
Cornellian, 12 to 18 Ko	57 00@ 67 00
Cornellian Females, 12 to 13	63 00@ 67 00
Cornellian Females, 14 to 16 Kil	71 00@ 76 50
Simon Ulimo Females, 12 to 13, Kil	58 00@ 62 00
Simon Ulimo Females, 14 to 15, Kil	66 00@ 70 00
Simon Ulimo Females, 16 to 17, Kil	72 00@ 74 00
Simon, 18 Kil., ₱ doz	61 00@ 62 00
Simon, 20 Kil. ₱ doz	65 00@ 67 00
Simon. 24 Kil. ₱ doz	72 00@ 74 00
Sohert Calf, 7 and 9 Kil	35 00@ 40 00
French Kips, ₱ lb	1 00@ 1 10
California Kip, ₱ doz	40 00@ 40
French Sheep, all colors, ₱ doz	8 00@ 15 00
Eastern Calf for Backs, ₱ lb	1 00@ 1 25
Sheep Roans for Topping, all colors, ₱ doz	9 00@ 13 00
Sheep Roans for Linings, ₱ doz	5 50@ 10 50
California Russett Sheep Linings	1 75@ 4 50
Best Jodot Calf Boot Legs, ₱ pair	5 00@ 5 25
Good French Calf Boot Legs, ₱ pair	4 00@ 4 75
French Calf Boot Legs, ₱ pair	4 00@ —
Harness Leather, ₱ lb	24@ 27½
Fair Bridle Leather, ₱ doz	48 00@ 72 —
Skirting Leather, ₱ lb	33@ 37½
Welt Leather, ₱ doz	30 00@ 50 00
Calf Leather, ₱ foot	17@ ¾
War Side Leather, ₱ foot	17@ —

LUMBER.

CARGO PRICES OF REDWOOD.

Rough, ₱ M	$18 00
Rough refuse, ₱ M	14 00
Rough clear, ₱ M	30 00
Rough clear refuse, M	20 00
Rustic, ₱ M	32 50
Rustic, refuse, ₱ M	22 50
Surfaced, ₱ M	30 00
Surfaced refuse, ₱ M	20 00
Flooring, ₱ M	28 00
Flooring, refuse, ₱ M	18 00
Beeded flooring, ₱ M	30 00
Beaded floor, refuse, M	20 00
Half-inch Siding, M	20 00
Half-inch siding, ref. M	16 00
Half-inch, Surfaced, M	25 00
Half-inch Smrt. ref., M	20 00
Half-inch Battens, M	20 50
Pickets, rough, ₱ M	11 00
Pickets, rough, p'ntd	13 00
Pickets, fancy, p'ntd	25 00
Shingles ₱ M	35 00

PUGET SOUND PINE Retail Price.

Rough, ₱ M	22 50
Fencing, ₱ M	22 50
Flooring and Step, ₱ M	32 50
Flooring, narrow, ₱ M	35 00
Flooring, 2d quality, M	25
Laths, ₱ M	3 50
Furring, ₱ lineel ft	—¾

REDWOOD—Retail.

Rough, ₱ M	22 50
Rough refuse, ₱ M	18 00
Rough Pickets, ₱ M	18 00
Rough Pickets, p'd, M	20
Fancy Pickets, ₱ M	30
Siding, ₱ M	25 00
Surfaced and Long Beaded	37 50
Flooring	35 00
Do do refuse, ₱ M	25 00
Half-inch surfaced, M	32 50
Rustic, No. 1, ₱ M	40 00
Battens, ₱ lineal foot	—¾
Shingles ₱ M	3c

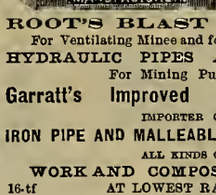
W. T. GARRATT'S BRASS and BELL FOUNDRY

SAN FRANCISCO,

MANUFACTURER AND IMPORTER OF

Church and Steamboat BELLS and GONGS,
BRASS CASTINGS of all kinds,
WATER GATES, GAS GATES,
FIRE HYDRANTS,
DOCK HYDRANTS,
GARDEN HYDRANTS.

A General Assortment of Engineers' Finding.



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STEAM PUMP

☞ The Best and Most Durable in use. Also, a variety of other

PUMPS

For Mining and Farming Purposes.

ROOT'S BLAST BLOWERS,

For Ventilating Mines and for Smelting Works.

HYDRAULIC PIPES AND NOZZLES,

For Mining Purposes.

Garratt's Improved Journal Metal.

IMPORTER OF

IRON PIPE AND MALLEABLE IRON FITTINGS.

ALL KINDS OF

WORK AND COMPOSITION NAILS,

16-tf AT LOWEST RATES.

Much Obliged, Etc.

PORTLAND, OGN., June 26th, 1875.

DEWEY & Co., Patent Solicitors, S. F.—*Gents:* I am much obliged to you for courtesy ehown me, and am well pleased with the manner in which you have done my hueiness, and a eure you, will cheerfnlly recommend you to my a quaintances needing each services. Hope to have a case again before long, of my own. I have heen an inventor all my life, but let others reap the benefit, or had work stolen from me. Please have the extra copies of my patent, etc., mailed to me direct, and oblige Youra truly, J. H. WOONBUM.

Newspaper Fileholders.

Dewey's new elastic fileholders (block walnut), aize of the PRESS, *Harper's Weekly* and *Scientific American*, for 50 cts. Larger sizes, to suit any newspaper, 75 cts. By mail, postpald, 10 cts. extra. Cash with all orders. Patent allowed. Address, DEWEY & Co., Fnhlishers, San Francisco.

Amusements.

WADE'S OPERA HOUSE, Mission Street, near Third. Open every evening with first-class Dramatic Company. Box Office open from 9 A. M. to 10 P. M. Doors open at half past seven. Commence at eight o'clock. TONY DENIER.

CALIFORNIA THEATER, Bush Street, above Kearny. Open every evening with the best Dramatic Company in the United States. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance. Doors open at half past seven. Monday, September 4th, EDWIN BOOTH.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Cincinnati Gold and Silver Mining Co.—

Principal place of business, San Francisco, Cal. Location of works, Kelsey Mining District, El Dorado Co., Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 29th day of August, 1876, an assessment, No. 3, of ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 535 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 29th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 16th day of October, 1878, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

WM. SMALL, Secretary.

Office, Room 2½, No. 535 California street, San Francisco, Cal.

Kearsarge Con. Quicksilver Mining Co.—

Location of principal place of business, San Francisco, Cal. Location of works, Lake Mining District, Lake County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. —), levied on the first day of July, 1878, the several amounts set oppoeite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
James McHaffie, Trustee	6	100	$ 15 00
James McHaffie, Trustee	7	25	3 75
James McHaffie, Trustee	8	150	22 50
James McHaffie, Trustee	9	58	9 90
James McHaffie, Trustee	10	100	15 00
James McHaffie, Trustee	11	91	13 65
James McHaffie, Trustee	24	1000	150 00
James McHaffie, Trustee	25	1000	150 00
James McHaffie, Trustee	25	1000	150 00
James McHaffie, Trustee	27	1000	150 00
James McHaffie, Trustee	28	100	15 00
J M Davis	32	100	15 00
James McHaffie, Trustee	36	110	15 50
James McHaffie, Trustee	38	100	15 00
James McHaffie, Trustee	39	100	15 00
James McHaffie, Trustee	39	100	15 00
James McHaffie, Trustee	40	100	15 00
Jemes McHaffie, Trustee	45	50	7 50
John C Hanscom	47	400	60 00
Mrs Joseph C Perkine	49	100	15 00
Jamee McHaffie, Trustee	51	49	7 35
Jno O Hanscom, Trustee	52	500	75 00
Jno O Hanecom, Trustee	53	400	60 00
Jno O Haneoom, Trustee	54	100	15 00
Jno C Henecom, Trustee	55	250	37 50
Jno O Hanecom, Trustee	55	100	15 00
Jno O Hanecom, Trustee	57	50	7 50
Jno C Hanscom, Trustee	58	50	7 50
James McHaffie, Trustee	59	250	37 50
James McHaffie, Trustee	60	120	19 50
Jemes McHaffie, Trustee	51	28	4 20
Jemes McHaffie, Trustee	54	10	1 50
J M Davis, Trustee	82	58	10 20
J M Davis, Trustee	83	300	45 00
J M Davis, Trustee	84	200	30 00
J M Davis, Trustee	85	100	15 00
J M Davis, Trustee	85	100	15 00
J M Davis, Trustee	87	100	15 00
J M Davis, Trustee	88	50	7 50
J M Davis, Trustee	89	50	7 50
J M Davis, Trustee	90	50	7 50
J M Davis, Trustee	91	50	7 50
James McHaffie, Trustee	93	100	15 00
James McHaffie, Trustee	94	100	15 00
James McHaffie, Trustee	96	300	45 00
Henry Philip, Trustee	96	1000	150 00
James McHaffie, Trustee	97	1000	150 00
James McHaffie, Trustee	101	100	15 00
James McHaffie, Trustee	102	100	15 00
James McHaffie, Trustee	103	100	15 00
James McHaffie, Trustee	104	50	7 50
James McHaffie, Trustee	105	50	7 50
James McHaffie, Trustee	107	50	7 50
James McHaffie, Trustee	108	150	22 50
James McHaffie, Trustee	109	250	37 50
James McHaffie, Trustee	110	2500	376 00
James McHaffie, Trustee	111	5000	750 00
James McHaffie, Trustee	112	5000	750 00
James McHaffie, Trustee	113	200	30 00
James McHaffie, Trustee	114	100	15 00
O D Fitzhugh	115	3334	499 95
Henry Philip, Trustee	116	500	75 00
Henry Philip, Trustee	117	600	76 00
James McHaffie, Trustee	118	10000	1500 00
Jamee McHeffie, Trustee	119	1910	286 55
W G Hughee, Trustee	124	3334	500 10
Jno Brownlie, Trustee	125	760	112 50
Jno Brownlie, Trustee	126	2500	375 00
Jno Brownlie, Trustee	127	1000	150 00
James McHeffie, Trustee	128	10	1 50
James McHaffie, Trustee	129	10	1 50
James McHaffie, Trustee	130	10	1 50
James McHaffie, Trustee	131	10	1 50

And in accordance with law, and an order of the Board of Directors, made on the first day of July, 1876, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, room 10 Steveneon Block, on the 18th day of September, 1876, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

JAMES McHAFFIE, Secretary.

Office, Room 10 Stevenson Block, San Francisco, Cal.

POSTPONEMENT.—By order of the Board of Trustees of Kearsage Conecolidated Quicksilver Mining Company, the above sale is hereby postponed until Monday, the twenty-fifth day of September, at one o'clock P. M. JAMES McHAFFIE, Secretary.

Mariposa Land and Mining Company

of California. Location of principal place of business, San Francieco, Cal. Location of works, Mariposa county, Cal. Notice is hereby given, that at a meeting of the Board of Directors, held on the seventh day of September, 1876, an assessment, No. 7, of one dollar ($1) per share was levied upon the capital stock of the Corporation, payable immediately in United States currency, to the Secretary, at the office of the Company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary at the office, No. 9 Nassau street, New York, N. Y.

Any stock upon which this assessment shall remain unpaid on the ninth day of October, 1878, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Monday the thirtieth (30th) day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

LEANDER LEAVITT, Secretary.

Office, Room No. 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal.

Mariposa South Mining Company—Location of principal place of business, San Francisco, Cal. Location of works, Spanish Selt Mining District, Nye county, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the eighth day of August, 1876, an assessment, No. 1, of ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, 418 California street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 19th day of September, 1878, will be delinquent, and advertised for sale at public auction, and unless payment is made before will be sold on Tuesday, the seventeenth (17) day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Secretary.

Office, Room No. 2, 418 California street, San Francisco, California.

Northerly Five Cent Hill Gravel Mining Company. Location of principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock in said company, on account of an assessment, levied on the ninth day of August, 1876, the several amounts set oppoeite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
T G Belty	9	20	$ 15 00
T G Belty	50	200	150 00
T G Belty	62	200	150 00
T G Belty	89	3060	2250 00
T G Belty	122	20	15 00
T G Belty	123	10	7 50
T G Belty	186	300	225 00
J M Buffington, Trustee	149	500	375 00
Warren Bryant,	188	3000	2250 00
Werren Bryant, Trustee	192	875	656 25
F O Oerter	162	525	468 75
G M Oondee, Trustee	177	100	75 00
G M Oondee, Trustee	178	100	75 00
G M Oondee, Trustee	179	100	76 00
G M Oondee, Trustee	179½	100	75 00
G M Oondee, Trnstee	180	100	75 00
G M Oondee, Trustee	181	100	75 00
G M Oondee, Trustee	182	100	75 00
G M Oondee, Trustee	183	100	75 00
G M Oondee, Trustee	184	50	37 50
G M Oondee, Trustee	185	20	15 00
W A Cornwell	13	100	75 00
W A Cornwell	14	100	75 00
W A Cornwall	15	50	37 50
W A Cornwell	16	50	37 50
W A Cornwall	17	20	15 00
W A Cornwall	18	20	15 00
W A Cornwall	21	10	7 50
W A Oornwall	22	10	7 50
W A Cornwall	76	100	75 00
W A Cornwall	84	20	15 00
D W Frary	171	100	75 00
D W Frary	172	100	76 00
D W Frary	173	50	37 50
D W Frary	174	30	22 50
C Marchant	26	100	75 00
Peter McConaghey	175	20	15 00
A H Stineon	175	500	375 00
N H Stinson	104	2000	1500 00
N H Stinson	105	1800	1350 00
N H Stinson	106	200	150 00
N H Stinson	107	875	858 25
N H Stinson	111	25	18 75
N H Stinson	125	50	37 50
N H Stinson	128	20	15 00
N H Stinson	129	10	7 50
N H Stinson	131	10	7 50
N H Stinson	187	3000	2250 00
J A Upton	170	500	375 00
J Warner	189	3000	2250 00
V P Yelmine	49	50	37 50
V P Yelmine	50	50	37 50
V P Yelmine	53	20	15 00
V P Yelmine	135	10	7 50
V P Yelmine	136	10	7 50
V P Yelmine	138	10	7 50

And in accordance with law, and an order of the Board of Directors of said company, made on the 11th day of September, 1876, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, room No. 33, Merchents' Exchange Building, San Francisco, Cal., on Monday, the second day of October, 1876, at the hour of one o'clock, P. M., of that day, to pay the delinquent assessment thereon, together with costs of advertising and expenses of the sale.

WARREN BRYANT, Secretary,

Office, Room No. 33, Merchants' Exchange, San Francisco, Cal.

Sierra Iron Company—Location of principal place of business, San Francisco, Cal. Location of works, Sierra and Plumas counties. Cal.

Notice is hereby given, that at a meeting of the Trustees of said company, held on the 18th day of August, 1876, an assessment of $1 per share was levied upon the capital stock of the corporation, payable immediately, in gold coin of the United States, to the Secretary, at the office of the company.

Any stock upon which this assessment shall remain unpaid on the 20th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday the 26th day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

CLEE T. FAY, Secretary.

Office, No. 9 Halleck Block, 318 Sansome street, San Francisco, Cal.

Tintic Milling and Mining Co.—Notice

to Stockholders. In accordance with a resolution adopted at a meeting of the Trustees of the Tintic Milling and Mining Company on the 14th day of August, 1876, a special meeting of the stockholders of said company is hereby called, the same to be held at the office of the company, No. 310 Sansome street, San Francisco, Cal., on Monday, September 18th, 1876, at two o'clock P. M., to decide upon the propoeition to increase the capital stock of said company from $3,000,000, divided into 30,000 shares, being the present capital, to $10,000,000, divided into 100,000 shares.

JOHN F. MILLER,
WM. H. PATTERSON,
O. H. LAGRANGE,
N. HAMILTON,
C. C. MILLER,
} Trustees.

San Francisco, Cal., August 14th, 1876.

Union Stone Company of California—

(Sorel Patent).—Location of principal place of business and works, city and county of San Francisco, Cal.

Notice is hereby given, that at a meeting of the Board of Directors of this company, held on Tuesday, the 22d day of August, 1876, an assessment (No. 4) of 20 cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 19 First street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Tuesday, the 26th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 11th day of October, 1876, to pay delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors.

R. F. KNOX, Secretary.

Office, No. 19 First street, San Francisco, Cal.

Iron and Machine Works.

WM. HAWKINS. T. G. CANTRELL

HAWKINS & CANTRELL,

MACHINE WORKS,

210 & 212 Beale St.,

Near Howard. - - - SAN FRANCISCO.

MANUFACTURERS OF

Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horse Power.

N. B.—Jobbing and Repairing done with Dispatch.

FULTON

Foundry and Iron Works.

HINCKLEY & CO.,

MANUFACTURERS OF

STEAM ENGINES,

Quartz, Flour and Saw Mills,

Hayes' Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard, San Francisco.

THE RISDON

Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,

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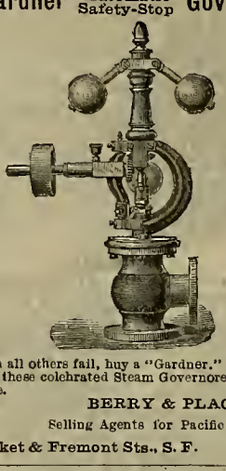

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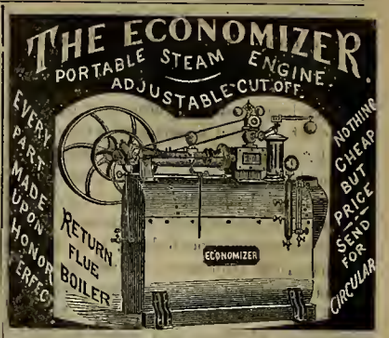

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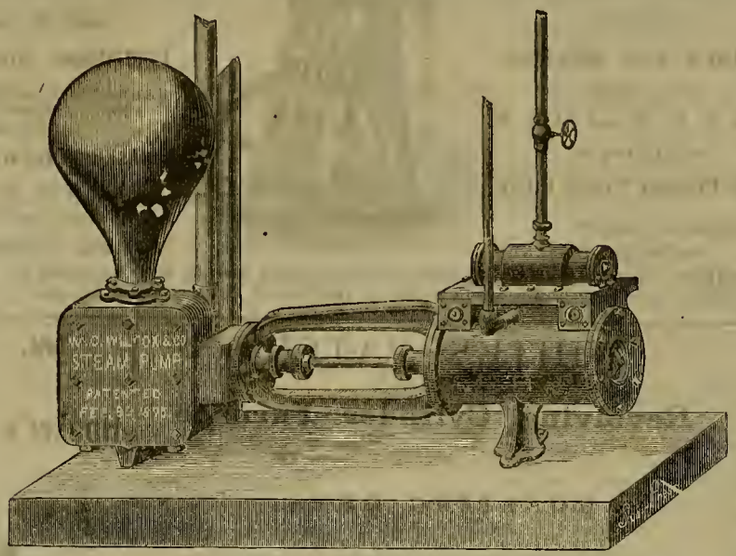

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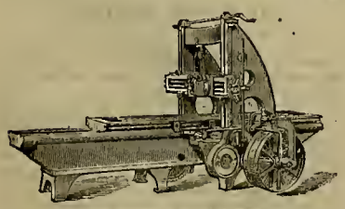

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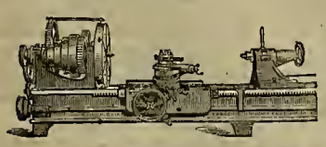

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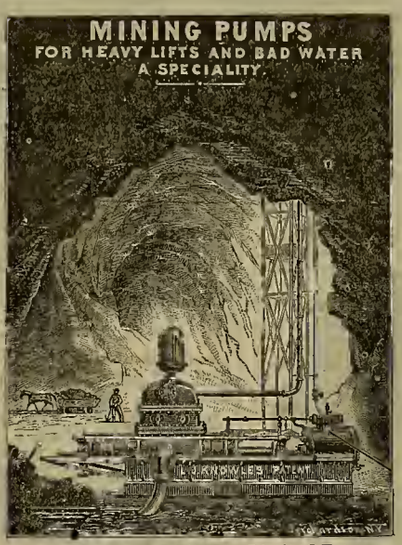

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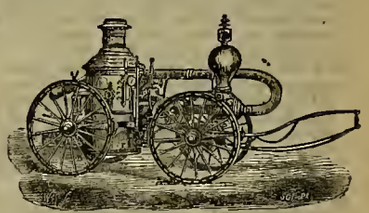

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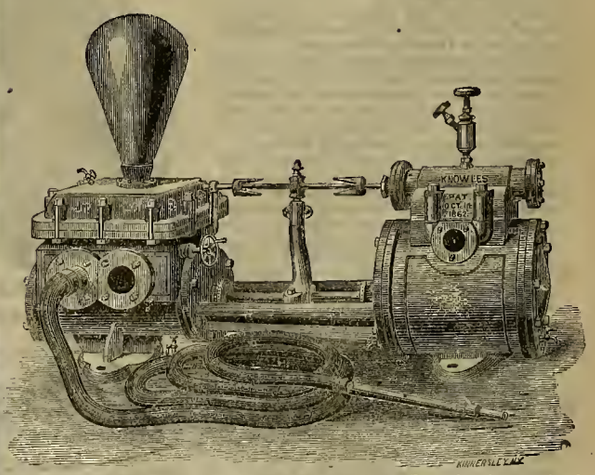

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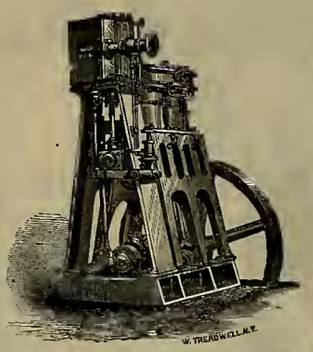

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This Furnace was patented first in 1864, and subsequently in 1865, covering any arrangement of an incline cylinder furnace. It consists of an iron cylinder mounted upon bearing drums or wheels at a suitable inclination, with a fireplace at either the upper or lower end of the cylinder as desired. The cylinder is revolved by suitable power, and the ore is fed into the upper end of the cylinder continuously, and passes through its entire length.

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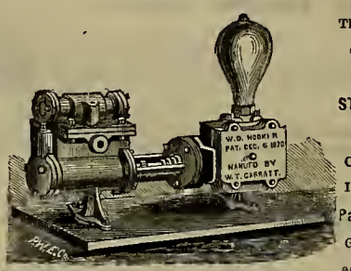

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SAN FRANCISCO, SATURDAY, SEPTEMBER 23, 1876.

VOLUME XXXIII. Number 13.

Facts About Peat.

[Written for the PRESS by SAMUEL PURNELL.—No. 6.]

On the Wurtemberg railway peat has entirely supplanted coal for locomotive use. On the Bavarian railways the use of coal and coke has been nearly discontinued and the use of peat has taken its place; it was found to be only half as expensive as coal. The use of condensed peat has more than doubled while that of ordinary peat has declined. On the Belfast & Northern Counties railway a peet trisl gave the following results: Total mileage, 74 miles; weight of train, including engine, 70 tons; ordinary amount of English coal used per mile, 25¼ pounds; peat consumed per mile, 21 47 pounds. Commencement of journey was up an incline of one to 80, four miles long with double curves; while going up the incline the firesure rose from 100 to 120 pounds, with the fire door open all the time. Speed, when permitted, 40 miles per hour. While in motion no smoke was emitted, and very little while standing at stations. There was no more clinker than from coal. Smokestack free from cinders and dost. One ton of peat gave a mileage of 100 miles. This is the most favorable report of peat that has come to hand, and it must have been a very superior article. Peat is in constant use on the railways between Berlin Dresden. Condensed peat occupies about one-half the space in a tender that wood does. No sparks or cinders fly from a peat-burning locomotive, thus reducing the number of fires along a line, and rendering traveling more pleasant to passengers. An increased economy results from experience in its use by engineers, and when locomotives are specially adapted to its peculiar requirements. Peat fuel fires are more easily managed than coal fires when once understood, require but little stoking and the heat is regular. One day during October, 1875, on the Central Pacific railroad, a train was run from Oakland wharf to San Jose with uncondensed and air dried surface peat from Venice island. The engine steamed easily, but it was pronounced impossible for one man to keep the furnace supplied. The run consumed 3,000 pounds of this peat, as against 1,600 pounds of Seattle coal commonly used. During the same month and with the same variety of peat, on shifting engine No. 116, 13,296 pounds of peat were used. Mileage, 336 miles; 39.57 pounds of peat used per mile run, This same engine was accustomed to consume 26.51 pounds of Seattle coal per mile run. This shows that the peat was but two-thirds as valuable as the coal; closely bearing out the views before expressed.

The discrepancies and differences in valuation and cost of peat in the foregoing statements are not susceptible of accurate adjustment. The only method of partially reconciling them is to consider these facts: that the composition of peat is not constant; that it not only differs in different countries and places, but even in the same bog; that in different places it varies greatly in its preparation for market; in dryness; in mode of combustion; in density; in foreign matters, etc. It has nearly always the prejudices of engine men and others to contend with, because of its extra labor and strangeness, who are apt to exaggerate its faults and overlook its merits. If it can be furnished at a less price relatively than coal, there is no reason why it should not be introduced. At $4, wholesale, per ton, peat condensed and thoroughly air dried would surely be cheaper than the coast coals at $8, cargo rate. As compared with the coal at $8 per ton, the peat at $6 would be at about an equal price. At $4 per ton, the use of peat would be a saving of some 50 per cent. in train mileage.

Other Uses.

Peat dust is a valuable absorbent of liquid manures, and is largely used in France for this purpose. By distillation peat yields gas, tar, paraffine and light oils abundantly. These oils are of low gravity and burn well in lamps with a brilliant white flame. Irish bog peat yields 3 57 gallons of refined oil per ton. Peat yields about 8,000 cubic feet per ton of illuminating gas of a low candle power: its coke answers well for maintaining the fires under the retorts. It has been proposed to utilize peat for gas purposes by mixing it with very rich coals. The ashes of peat constitute an excellent fertilizer for all kinds of crops. In Ireland peat charcoal has been highly esteemed as a medicine in dyspepsia, sick headache, etc. It is an admirable antiseptic. For glass melting, peat is a fine fuel, by reason of its smokeless flame. For paper making peat answers very well, the paper closely resembling that made from straw; it can be made tough by the addition of 10 or 15 per cent. of rags, as is done in Germany.

Peat in California.

This State is abundantly supplied with peat. The moss-plant grows in the Sierras, in the valleys, and on the coast. The islands of the Sacramento and San Joaquin, the tule and swamp lands along the rivers and bays, are in great part formed of peat. Much of this peat is quite inferior, by reason of its containing salt or sand in large quantities, but the most of it is available for fuel. Mountain peat, by reason of heavy rains and washes of sand and clay, is generally inferior to that of the valleys. The peat deposits of the lower San Joaquin, and of the coast counties of California, are very extensive and of fine quality, and if utilized would undoubtedly furnish a cheap fuel for many years. One thousand acres of these bogs have been estimated to be capable of producing 200 tons per day for 20 years; and a space 40 by 12 by 17 feet, to produce 45 tons of dried peat. One cubic foot of this peat condensed and perfectly dried will weigh from

Dead Chimney of Geyser.

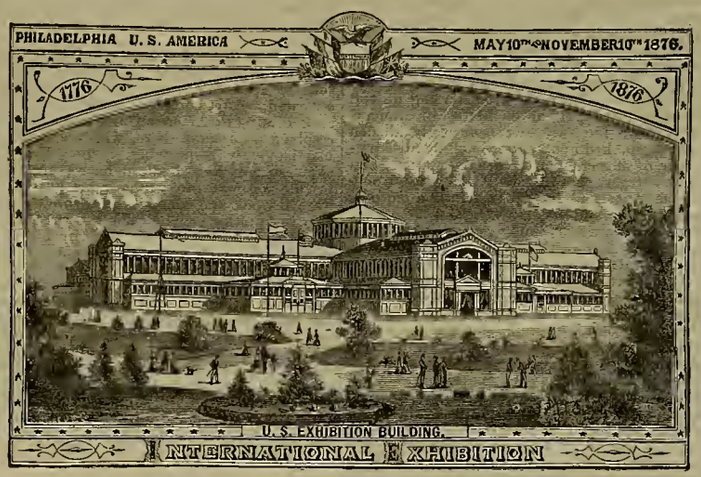
30 to 34 pounds and contain from six to ten per cent. of ash.

Since the peat resources of California are almost unlimited, the climate admirably adapted to peat manufacture, and the coast coals of an inferior quality, it would seem that the production of peat on a commercial scale might prove profitable. That it is a good fuel when well prepared is incontestable; the only question is, whether it can be produced at a figure which will permit of its undersselling the coast coals. If so, it would find a ready sale; but it seems that for this purpose it should not cost per ton more than two-thirds, or at most three-fourths as much as the coast coals.

S. CAMERON, of the Cable mine, has forwarded the richest and most magnificent specimens of gold to the Centennial that have ever been taken from a Montana mine.

The Government Building.

One of the most interesting and instructive features connected with the Centennial is the United States Government building. This building has been erected by the United States Government at a cost of about $110,000, that amount being derived from the fund of $500,000 which was appropriated by Congress to enable the Government to become an exhibitor at the Centennial. The construction of the building is in the general form of a Latin cross—the larger dimensions of which are 360 in length, the smaller 300, each being 180 feet wide; the whole covering an area of about 81,000 square feet. The building presents quite an imposing appearance, with its large dome and its conspicuous display of national hunting. It is filled with exhibits from the army, navy and treasury departments, and from the Patent Office and Smithsonian Institute, each exhibit being under the general supervision of an officer or person especially detailed for that purpose. The Smithsonian Institute, which covers also a general mineral exhibit, is under the special



direction of Prof. Wm. P. Blake, formerly of California. The illustration on this page gives a general view of the building. Our editorial correspondence from Philadelphia, in our issue of Sept. 2d, gave a summary of the contents of the Government building.

Hopkins' Improved Rails for Street Railways.

Mr. C. T. Hopkins, (President of the California Insurance Co., No. 318 California street,) has lately patented through our office an invention which when generally adopted will be

Improved Railway Track.

hailed with satisfaction by thousands who ride in vehicles about our city in peril of being thrown out, or of having their carriage upset by the wheels sliding in attempting to cross street railways.

The accompanying engraving shows in how simple a manner Mr. Hopkins accomplishes his object, with little if any extra expense, *i. e.*, by constructing rails with notches efficient to take the wheels over the track in an easy manner.

A DISPATCH from Cheyenne of the 16th inst. says: The Wheele Brothers, who have been working their famous claim No. 2, below Gayville, on Deadwood creek, arrived at Laramie last night, with a paid escort of 20 men. They bring, as the proceeds of their work for seven months, over $300,000 and 1,900 pounds of dust. They will bring their escort to the railroad at this city.

[Copyrighted.]

Mechanical Ore Concentration and Separation.—No. 7.

(Written for the PRESS by FRANCIS F. M. CAZIN, M. E., Santa Fe, New Mexico.)

The sizing is an inseperable appendix to the separation proper, and while the breaking in part is independent of the dressing, sizing can never be so, because the loosening of particles resulting from all sizing operations should immediately and uninterruptedly be utilized for the separating action, and no settling should be allowed between the two if at all avoidable. It therefore results that although the breaking part may be locally isolated from the separating machinery, the classifying (sizing, washing) part should not be.

Here, also, should be an answer given to the very important question

What Mines Should Work Their Ore

By mechanical concentration? This question may be very distinctly answered: All mines producing ore enumerated as belonging to the first class, containing no valuable parts, unless they surpass in specific gravity for one unit all other mineral matter in the ore. On coal and slate the same is applicable, with the difference that the waste (slate) separates as the heavier part.

In all these cases, under circumstances normally favorable, mineral dressing, independent or preliminary to any reduction process, is the most economical.

Breaking of the Ore.

We will now discuss how far this should go, and with what machinery it should be done.

The question how fine ore should be broken for the purpose of dressing can never be considered a general one, but will remain in all cases where ore is to be dressed a special one, to be answered with regard to the special quality of the ors.

In ore having the appearance and character of a conglomerate, wherein the rock particles and metallic particles are present in about the size of peas, would it not be waste of labor (mechanical or manual) to break it further than to allow the particles of different qualities to break the one from the other. Nature favors such action by the cleavage between different materials, being usually more brittle and apt to separate than of the materials within themselves, or of one of the materials within itself. But independently of the waste of labor, the breaking into smaller particles than required by the nature of the ore is accompanied by other disadvantages besides, because the percentage of loss in dressing operations increases as the size treated decreases. This fact has been established by long experience where mineral dressing is a part of all mining operations successfully carried on.

Extinct Geysers.

In speaking of the geysers of the Yellow stone country and their geological features, Professor Hayden states that traces of even greater activity than we see at present are found in some localities, and it is more than probable that the force is gradually dying out from year to year, and that finally it will cease entirely. We have numerous localities in this West where there have been vast groups of hot springs and geysers, but at the present time only ruins are left. It would seem probable that the heat that gives the temperature to the atmospheric waters, rises through numerous fissures from one common source in the interior of the earth, so that when from some cause this heat is checked in its upward progress in one place, it finds vent in another, and thus passes from point to point over a district. It is probable that they have existed since the period of volcanic activity, and that now they are diminishing in force, so that eventually nothing but the deposit will remain. Large numbers of old chimneys, such as the one shown on this page, are scattered over the surface, formed by what may properly be called pulsating geysers.

CORRESPONDENCE.

[Editorial Correspondence.]

Summering by the Seaside.

Worn down with the nnnsual heat of this extraordinary aeason, your Centennial correspendent hss joined the great *hegira* to the sea side and country resorts for a little relief and recuperation. A sndden transition by rail and steamer from Philadelphia to the interior of Maine rendered the substitution of an overcoat for the nsual summer wear an essential to comfort; bnt the change was qnite too great, and we sought a change of locality in a quiet retreat among the uniqne attraotions of Martha's Vineyard—a locality which has no superior for refreshing and invigorating air, sea bathing, fishing, free sociability and all the varied enjoyments aought for by those who visit places of summer resort. This island, looated jnst off the aontheastern portion of Massachusetts, has long been noted throughout the maritime world for its great hsrbor of refuge for sea going vessels, and for its pretty nestling villages at "the head of the harb or"—formerly known aa Holmes' Hole, but recently rechristened with the more euphoneons title of Vineyard Haven. Bnt its later and now most leading attraction is its celebrated seaside resort and "city of cottages" at Oak Blnffs, on the esst side of the harbor, and about two miles distant from the village. I have thonght that the general interest attached to this locality is amply sufficient to make it a proper subject for a letter to the PRESS.

"City of Cottages"

Is a most appropriate title for this great watering place. When we arrived it was just entering npon the full tide of its summer prosperity, and was literally crowded with visitors. Some 20 yachts were lying in the offing or in the neighboring harbors of Vineyard Haven snd Edgarton. Six or eight large steamers arrived during the day loaded with pleasure seekers from Boston, New York, New Bedford, Providence and other distant places, and the neighboring harbor was crowded with its usual fleet of transient shipping.

This watering place, although generally known as "Oak Blnffs," is really divided into three more or less distinct commnnities. The principal landing place is at the Oak Bluff wharf, immediately adjscent to a large hotel known as the Sea View house, the largest structure on the island, and one which forms a conspicuous object to all who approach the locality either by sea or land. It is an elegant and ornamental strnctnre, four or five stories high, and is crowded with guests dnring the entire season. The grounds in its immediate vicinity are laid out in winding avennes, walks, squares, circles, etc., and mostly bnilt np with highly ornamental cottages of one and two stories in hight. There are seversl other hotels besides the one mentioned, also stores of various kinds, hakeries, restanrants, etc., a fine ornamental strncture for pnblic worship and other assemblies, and a postoffice.

Jnst beyond this, and separated by a line fence only, with numerous convenient openings, is located what is known as the Methodist Vineyard camp gronnd, covered with a dense and thrifty growth of oaks, mostly small and somewhat scrnbby, but well filled with leaves, and shady. The present season is tbe semi-centennial anniversary of its occupation as a camp ground. These grounds are also tastily laid out and bnilt np. A large tent, capable of sesting some 3,500 people, occnpies a central position, and is used as a place for pnblic worship. I have jnst learned that the managers have pnrchased one of the Centennisl buildings at Philadelphis, and will take it down in sections and remove it to this locality, to hereafter take the place of the tent. The camp meeting season continnes for one week, bnt the cottages are mostly occupied for about three months.

A few rods beyond thia, and separated therefrom by a beantiful sheet of water known as the Lagoon pond, is the Baptist csmp gronnd, which having bnt recently heen occnpied, is not yet bnilt np to any great extent. This place is also covered with thrifty yonng osks, and will, no doubt, soon become as densely populated and as fnll of life as its neighbor across the pond.

From the above it will be seen thst we have here qnite a "peculiar institution"—a Methodiat and a Baptist associstion intimately connected with a Gentile commnnity—for the residents at the Blnffs are known here ss "Gentiles." These different communities, esch under its separate municipal or religions management, form a harmonions whole, each carefully striving to avoid any collision or interference with the other. The times for the camp meetings are set for different weeks, and the Gentile commnnity is as csreful as possible to avoid all "unpleasantness" which might naturally arise between those who visit the locality to seek plessnre alone and those who aeek to mingle innocent pleasure and social enjoyment with religious worship. The entire community constitntes a great "happy family," striving to harmonize, as far as possible, different instincts and various social inclinations. The locality can justly olsim all the natursl attractions possessed by any similar plaos, and many others that are fonnd nowhers elss.

A Fairy Scene.

There is a pecnliar freedom, esse and free sociability here which is not met with at any other watering place, and which is in marked contrast with such places as Newport, Long Branch, etc. It is impossible to conceive of an orderly community more entirely given up to innocent and health-giving plessure, or ons more completely contented and happy than are the people who freqnent this grest summer city by the sea, numbering at timea from 20,000 to 30,000 sonls, gathered promiscnonsly from almost all parts of the conntry.

The cottages are pecnliar to this locality. With great diversity in minor details, they are much alike in their general festnres. They are bird-like structnres, with pretty bnt somewhat fsntastic ontlines, and are mostly constrncted with broad, folding front doors, which are generally kept wide open, presenting a sort of *fete* appearance, and revealing to the passer by an endless diversity in taste and ornamentation within, and a seeming invitation to pause and stndy them ss one would a display in one of the great exhibition bnildings on the Centennial gronnds. Some of these interiors are marvels of simple beauty, ease and comfort, especially when they are brilliantly lighted, as they are in the evsning. There are but few cnrtains here to shut ont the stranger's view. Snites of rooms are divided by looped-up drapery of lace and damask, all open to pnblic gsze and stretchiog far bsck from room to room in charming vistas of simple, home-like loveliness. The open piano or organ, odd and nnique pieces of furnitnre, pictures and paintings, birds, flowers, etc., are chsrmingly arranged, while the occnpants, with their families and visitors, sit at tbeir ease in picturesque gronps within and without the doors, pnblicly but not ostentstiously exposed to view. Not nnfrequently, in the cool of the closing day, the vista is closed by a party at a tea-table tastily set and covered with viands, flowers and fruits. No offense is taken if the passer by slacks his pace a little or even stops a moment to gaze npon the charming, unique scene before him. Music, singing and innocent langhter is heard without and within. Now the mnsic from a passing band swells ont npon the breeze; then, afar off, is heard a thonsand voices in the great tabernacle, singing, to the accompaniment of cornet and organ, some grand old sacred melody, or, perhaps, the sweeter modern hymn, "Nearer, My God, to Thee." Troops of ladies and gentlemen and children are constantly promenading np and down the principal thoronghfares, or wsndering throngh the leafy and beautifnlly shsded byways, flanked npon either haud by little parterres of flowers, rnstic ornamentations and open cottsges, gay with simple hangings, trooping children and happy fathers and mothers and brothers and sisters. These promenades remind me mnch of similar scenes at the Centsnnial grounds, or the evening promenades at the Institnte exhibitions in San Francisco.

The bnsiness man here throws care to the winds; the grave and thoughtful lay aside their dignity as a garment not fitted for the occasion; old men become boys, old ladies girls, and each seems to vie with the other in trying to make everybody happy. Children fairly run riot here in innocent gaiety. I am told it is not nncommon for mothers to place a csrd, bearing the name of the parent and plsce where the cottage is sitnated, on the dresses of very young children and allow them to wander off at will among the crowd. If they get lost, as they often must among the mazy labyrinth of streets and cottages, some one, a police officer or other person, will be snre to bring them bsck. The leafy, sheltering oaks almost completely shnt out the sun, and except in the principal avenuea no horses or carriages or cars are allowed to endanger life or limb. The glowing faces and bounding steps of the little innocents fully attest to the rich store of health which they are gathering up from the pure sir and invigorating breezes of

"This island of pleasure, of love and of song."

To one coming npon this scene for the first time, in the evening, when the thoussnds of cottages and tents are lighted np so as to display everything to the follest extent, it is truly like entering npon a fairy land. The world nowhere else presents snch a scene of lovely enchantment and delight. And what is most remarkable, dnring my protracted stay here I never witnessed a single act of disturbance, incivility, coarseness or impropriety. If there are policemen around—and I am told there are—they are not known from any other citizen by either dress or insignis. It is really wonderful that a commnnity so large, so mixed and so constantly changing, and gathered from all parts of the conntry, should be kept so orderly and quiet with so little apparent effort. I can compare it to nothing hnt the early times in California, when we had neither laws nor lawyers—when every man was law to himself, and when the lesst encroachment npon the rights of another met with sure and swift retribntion from an indignant commnnity, without the intervention of either jndge or jury.

During some days I am told that from six to eight thonsand persons arrive and depart within 24 houra The arrivals on two different days since I have been here were estimated at about 10,000 for each day. The nnmber of steamer arrivals on those days were some 12 or 15, to say nothing of sailing vessels. The railroad, here as elsewhere, has been bronght into requisition for the convsnience of visitors. A circular horss railway runs aronnd and about the gronnds, by which visitors may very easily get a general view of the same. It is abont three miles long, and no doubt gave the idea for the steam narrow gauge at the Centennial grounds in Philadelphia, which has been constrncted for a similar purpose. A steam narrow gange railway, some eight miles long, connects this place with the neighboring town of Edgarton, and the sonth beaoh at Katama, where lovers of clambakes and an open sea view with heavy beach rollers love to congregate. Clambakes are served np there every day.

A Bathing Scene.

A sesside watering place ia nothing without conveniences for bathing, and here that luxury can be enjoyed to the fullest extent and with the greatest safety. Eleven o'clock is the nsual bathing honr, snd always affords a most jovial scene. Lovely woman is lovely anywhere, bot by many she is considered most lovely when in salt water, if she only knows how to dress herself properly for the occasion. A jolly democracy is a bathing crowd of lsdies. One cannot, on snch an occasion, tell the wife of a railroad king from that of a horse jockey, nor a senator's daughter from a conntry schoolmarm. Such a crowd is also nsnally an amusing as well ss an enlivening spectacle.

A few days ago qnite a little sensation was created among the bsthers and lookers on at the "Blnffs." For the convenience of those who wish to enter deep water, a platform hss been reared just above high tide, with a flight of steps at its outer extremity from which tbe fair swimmers may descend gently to the sea. But a few days since, just ss a number of ladies had appeared npon the platform, one of them msde a sudden stsrt, rushed swiftly along the planks, and without stopping to descend the steps plnnged boldly, man fashion, into the sea. There was a hushed silence for a moment; msny thonght it was a case of snicide, and some gentlemen in a boat were abont to rnsh to the rescue; bnt in due time the fair swimmer rose to the surface, shook the salt spray from her dark tresses, strnck boldly out for a swim, and by her skillful manenvers soon proved that she was an expert in snch aqnstic exercises. "Who is she?" was the inquiry which passed from month to month. It was subsequently msde known that she was a native of Honolnln, in the Ssndwich islands, where almost every female learns to buffet the snrf eqnal to the boldest man.

This lady, for she is a lady snd is trested as snch in "society," is of "royal blood," and was sent to New Bedford, maoy years ago, to be educated. After completing her edncstion sbe took a liking to American life and society and resolved to remain here, which she did, and married very respsctsbly. When King Kalakana was in New Bedford he was tendered s private reception, to which none hut the *elite* were invited, and among the favored was the lady in qnestion. When she was presented to the king she addressed him in his native tongne, calling him by his given name with the prefix of cousin, which term expressed the relationship between them. He at once recognized her, expressed moch pleasnre at meeting her, and remarked that her friends were very anxious that she should return to Honolnlu, and that he wonld be happy to have her go back in his company. She respectfully declined, however, and assured him of her fixed determination to remain and pass the remsinder of her days among those who hsd been so kind to her in this her adopted home. W. B. E.

Vineyard Haven, Sept. 1st, 1876.

Lieu Lands.

Modified Decision by Secretary Chandler.

The State Board of Lsnd Commissioners received on Friday, from the Department of the Interior, Washington, the following modified decision in the case of Selby, et al., pre-emptors, vs. the State of California:

DEPARTMENT OF THE INTERIOR,
WASHINGTON, Angnst 18, 1876.

Sir: The case of George C. Selby et al., pre-emptors, vs. State of Csliforna was decided by me under date of March 10, 1876, in favor of the pre-emptora.

It having been shown that this decision affected the title of the State to a very large and valuable body of lands, and that the State anthorities, being nnaware of the pendency of the case, had fsiled to present any argument in support of its title, a rehearing wss ordered by me, and very full and exhanstive arguments have been presented in behalf of both parties. Never doobting that all sections of lands made by the State of California in lieu of the 16th and 36th sections embraced within the limits of a private grant before the approval of the snrvey of such grant were irregnlar, and not in conformity with law, and being informed that the subject of confirming such selections was pending in Congress, I have withheld my decision in the case for the action of that body.

Congress having adjonrned without legislating on the snbject, it becomes my duty to dispose of the case. It cannot be doubted, and I do not nnderstand it to be questioned by the attorneys for the State, that the right of the State to make their selections only attaches when the finsl snrvey of the grant is made. Whether a snrvey is final or not can only be known when it receives the approval of the commissioner of the general land office; consequently the right to select can only be exercised by the State npon snoh approval. Tested by this rule, the selections made by the Stste of the lsnds in question were prsmatnre and irregular, and if the liats containiog the same were now presented to me for approval, I should be compelled to reject the aame. But I learn that the State, in many instancss, hss proceeded to make selections without obtaining lists from the Surveyor-General, and these selections have subsequently been certified by yonr office and approved hy this department, and on the faith of snch spproval thonsands of acrss have been sold to bona fide pnrchasers. On many of these lsnds improvements have been made by such pnrchasers, and their valne therehy become greatly enhanced. From the date of the approval of these selections the lands have been treated by your office as the property of the Stste, and not subject to entry noder the homestead and pre-emption laws of the United States.

Under these circnmstances no settler who has gone npon the selected lands snbsequent to tbe approval of the selection can complain that he did not hsve full notice of the claim of the State and of the action of this department. If any person enteriug adversely to the State hss msde improvements on the land, it has been done with fnll knowledge that nnder the rulings and practices of your office no entry by him wonld be permitted.

It is contended by counsel for the State thst the approval of the selectious by this department relates back to the date of selection, and is not snbject to revision, but is conclusive npon me. I am not prepsred to yield full assent to this doctrine. The selection was not made by any officer of the United Ststes, and could not bind the government.

It wss made without authority of law and possessed no validity until it received the approvsl of the Secretary. From the date of its spproval it operated as a reservation of the lands from private entry, bnt the approval under such circumstances should not be held to relste back to the date of selection to the injnry of adverse claims to the lsnd. In this case it appears that the township plats were filed in the land office at San Francisco, April 22d, 1868, and the greater part of the lands were selected by the State on the ssme day; one tract was selected May 12th, 1868, and on the 27th of May, 1868, the plats were withdrawn by the Surveyor-General. The plats being withdrawn, from the record it also appears that the selections were entered np by the Register. The plats remained withdrawn nntil November 21st, 1871, when they were filed in the Los Angeles district, within which the lands in question were tben sitnated. In the meantime the parties olaiming under the pre-emption laws allege that they settled npon the land in good faith, without notice of any claim by the State. The selections were approved by Secretary Delano on the 24th of November, 1871, with the exception of southeast qoarter section 29, townsbip 2 sonth, range 13 west, which was approved Octobsr 26th, 1872.

Selby, Wilkinson, McClain, Green, Foster, McCreary, Ketchum, Douglas and Hand were each allowed to file D S. for the lands occnpied by them. Their filings were promptly offered, in some instances before the approval of the selections, and in every instaoce within 15 days after the filing of the plats, and each allege settlement long prior to November 21st, 1874, thongh snbsequent to April 2nd, 1868.

I cannot learn that their filings were csnceled by yonr office, or that any objection was made thereto, until they offored to prove np and pay for the land, when the entries were held by you for cancelation, and the case is now here on appeal from thst order.

Jamea Pierce applied to file Febrnary 14th, 1873, alleging settlement July 25th, 1870, and Joseph McEvoy applied to file March 29th, 1872, alleging settlement October 21st, 1871.

In view of the facts above stated, I am of the opinion that my decision of March 10th, 1876, shonld be vacated, and the selections approved by this department to the Stste before final snrvey of said grants should be permitted to stand, snbject to the followiog qualifications.

First.—All subsisting homestead or pre-emption rights which antedate the approval of the selections shonld be allowed priority over the claim of the State.

Second.—Whenever upon approval by your office of the snrvey of a private grant, it ahall be fonnd that any section or part of section for which lien lands have been selected, falls without the survey, the selections so made shall be deemed invalid unless the State ahall substitute therefor another sixteenth or thirty-sixth section, for which it shall then be entitled to make selections. No further selections shonld be permitted in advance of the approval of the snrvey, and the Snrveyor-General of California shonld be instructed not to frnrnisb lists to the States of the sixteenth and thirty-sixth aections inclnded witbin the limits of any private grant, until he shall have received official information from yon that tbe snrvey thereof has been approved. Selections by the State should only be permitted upon the lists received from the Snrveyor-General.

Applying the rules above indicsted, I direct that Selby, Wilkinson, McClain, Green, Foster, McCreary, Ketchum, Douglas and Hand be allowed to make their final proof, and upon showing fnll complisnce with the law, they be permitted to mske payment and receive patent for their land.

The applications of Pierce and McAvoy came too late and shonld be rejected.

I retnrn herewith the papers transmitted with your decision. Respectfully,

Z. CHANDLER, Secretary.

To the Commissioner of the general land office.

SCIENTIFIC PROGRESS.

Hints for Amateur Chemists.

We have no doubt some of our younger readers who have a taste for amateur chemical work and are thrown upon their own resources for making a laboratory will thank us for the following hints on the subject. We reproduce them from a new book by W. W. Goodwin, on the analysis of coal gas. Mr. Goodwin writes:

Cleanliness is of the utmost importance; never put away anything dirty. It takes twice the time to cleanse glass vessels when chemicals have dried on them, that it does if washed directly after they are done with. Many persons have thrown away bits of dirty apparatus which they would have looked upon with pride had they polished them before putting them away. Do everything and arrange everything in order. Never be in a hurry or flurry; serious accidents may occur at times through not keeping cool. Have a place for everything, and put everything in its place. It is a good plan to make a list of all apparatus and materials required for the experiments which are to engage the attention. Satisfy yourself beforehand why you do everything, and never be content with making a thing merely do, if it is not done properly. Badly fitting corks, requiring lutes or sealing wax to stop the leaks, must not be suffered at any time; another should be fitted. Many a serious explosion has occurred for want of these precautions. In all cases use the simplest form of apparatus for an experiment; unnecessary complications are confusing.

Take careful notes of experiments as they proceed, on paper or in a rough note book. Dr. Hofman used to say, "the scrap of paper well stained with acids is of much greater value than the half worked out though clean notes, written after the experiment has passed away." The rough notes should be reproduced in a more finished form in a book kept solely for that purpose. The mere copying of scientific facts and formulæ, previously learned in a practical way, is a great help toward remembering them.

Chemical operations should be carried on, if possible, in a room set apart for that purpose; it is better to have it on the ground floor, if possible, as water is more easily obtained, and waste carried off by drains. It should be well ventilated, with a flue in which there is a fire burning, or furnished with a ring of gas jets, to produce an ascending current. The flue may be furnished with a hood, under which experiments may be performed where noxious vapors arise. A zinc tube about two and a half inches in diameter, arranged over the bench, about a foot from the ceiling, with inverted funnel tubes over the gaslights leading into it, can be arranged to produce an upward current, and will keep the room clear. This may be carried into the flue or out of doors. A chamber about two by one and one-half feet, with glass doors, should be fitted up in every laboratory, however humble, in connection with the flue, in which the experiments with sulphureted hydrogen, etc., can be carried on. This, however, can be made to lead out of doors also, by having a Bunsen constantly burning, the waste heat being used for a sand bath in which evaporations may be carried on if the chamber be divided by a partition. The principal sink may be either in the laboratory or just outside, and should be of glazed stoneware to resist acids. A small leaden or japanned iron basin may be let into the bench to carry off waste.

The room should be furnished with a working bench, say two and one-half feet broad, round the wall, and, if necessary, down the center. A nozzle with a stop-cock should be connected with the gas-pipe for attaching the flexible tube; narrow shelves should be fixed along the walls and over the bench, to hold the bottles containing materials and reagents. A cupboard or shelves may be put under the bench, and drawers fitted, to hold the various kinds of apparatus. Water must be at hand in a trough that can be emptied, or in pails.

The Damage by Frost.

We have formerly urged the advantage of protection against frost and recorded practical success with the employment of smoke clouds. We read that in some of our mountain counties and in Nevada the frost has already nipped garden crops. In this connection we print the following important facts in reference to the surface temperature of the earth, and the effect of shelter, which Dr. Barham communicates to the Royal Institute of Cornwall, England. He says that the very considerable difference between the lowest temperature, as indicated by the self-registering thermometer placed within a thermometer screen, and that shown by a similar instrument exposed on the grass and radiating freely into space, is an illustration of the influence of shelter. The common estimate of the greatest cold of night is derived from the record of the thermometer screened from radiation. This is what passes current as the minimum temperature, and that not only among the public, but also generally with those who pay a good deal of attention to meteorology. Yet when the sky is clear, the temperature of the grass, and that to which vegetables, men, and animals out of doors are exposed, will be from five to ten degrees lower, and sometimes more; and it is just these additional degrees of cold that, when an ordinarily sheltered thermometer indicates pretty sharp frost, destroy tender plants and often more or less seriously affect the health of the delicate, the old, and the very young. According to the records of Captain Liddell the radiating thermometer was, during 1872 and 1873, on 25 occasions, from 10 degrees to 13 degrees colder than the sheltered thermometer. Most of these cases occurred during April, July, and August. Owing to the different powers of absorption and radiation possessed by different kinds of earth, it is found that garden loam has the power of receiving and retaining heat superior to that of any other naked soil. The temperature of peat is nearly equal to that of garden loam although it is wet and cold to the sense of touch. A covering defends the naked soil from these extreme effects of radiation, no matter whether the covering be a natural one of grass, or an artificial one, such as screens of muslin, straw matting, clouds of smoke, or mist. The beneficial effect of a covering of muslin is not quite equal to that of straw matting, but the amount of protective influence of so slight a material is worthy of notice, amounting on the average to nearly one and one-half degrees, and in some cases to three degrees. It is said, as a general result, that in the climate of Cornwall the soil covered with vegetation will be from eight to ten degrees warmer in sharp frosts if screened from the sky by straw matting or other moderately thick materials spread over it three or four feet from the ground.

The Irwin-Ainsa Meteorite.

Some one sends us a copy of the Philadelphia *Inquirer* containing a paragraph descriptive of the famous Arizona meteorite which will interest some of our readers: This celebrated ring-shaped meteorite from Arizona, sometimes called the signet meteorite, now occupies a place in the Smithsonian department of the Government building. It was found in the early part of the last century in the Sierra Madre, somewhere near Tucson, Arizona Territory. There is a tradition among the old residents of Tucson that there was a shower of meteorites in the mountains there some 200 years ago.

In 1735 Captain Juan Bautista Ainsa, who then visited the region, undertook to transport this large meteorite to Spain. After getting it as far as Tucson he abandoned the undertaking, and the meteorite remained in that town, and was used as a kind of public anvil by the people. At length it fell into disuse and became partially buried in the ground in one of the side streets. It was found there by Dr. Irwin, of the United States Army, in 1857, and by the aid of Mr. Ainsa, a grandson of the Captain Ainsa here spoken of, it was transported to Hermosillo, in Sonora, and thence shipped to San Francisco, on its way to the Smithsonian Institute at Washington, D. C., where it has since been an object of great interest to all visitors, and especially to experts familiar with meteorites, who have readily remembered it by reason of its annular shape, and the large hole, some two feet in diameter, through its center.

It is the only annular meteorite of which there is any record, and is the property of the National museum at Washington. Its total weight is 1,400 pounds. One of the distinguished scientists at the exhibition inclines to the opinion that the large cavity in this specimen was originally occupied by sulphurous or earthy minerals, such as are often found in meteorites in a more or less globular condition, and which, by decomposition in the soil, leave the iron free and with a pitted surface.

PURIFICATION OF THE MORE FUSIBLE METALS BY FILTRATION.—Prof. Lampadius, of Freiberg, concluded that at a certain low temperature of fusion, the metallic impurities present in the more easily fusible of metals would separate, partially as such, and partially as definite, crystalline compounds, and float in the fused mass, from which they could be removed by filtration. Experiments by him in this direction were so far successful that the expected definite compounds were found upon the filter, but the metallic filtrate was still very impure. The filter was made of quartz-sand, slag, etc., which was not wet by the molten metal. Cutter, however, according to a communication by him, in trying to adapt this principle to the purification of Bohemian tin, on a commercial scale, sought for material for a filter, which would be wet by the metal to be purified without being dissolved in it. Iron, with its comparatively high temperature of fusion, and its adhesion for tin, as manifested in the tinning of iron, was employed for the filter. Five hundred strips of tinned iron, as thin as paper, about six-tenths of an inch long, and one-fourth as broad, were packed tightly in a square iron frame by the aid of wedges, and the frame was then luted into a suitable opening in the bottom of a graphite crucible. The tin, melted in a second crucible, was allowed to cool until the separation of fine crystals on the surface was noticed, and the thickening metallic mass was then poured into the filtering crucible, when the still fluid pure metal passed through, and a pasty magma was left, in which iron, arsenic, and copper, concentrated to a great degree, were found combined with tin, while the filtered tin proved to be almost chemically pure. Fifty hundredweight were purified in the crucible described. Other forms and other materials for filters are suggested, and other possible applications of the method, as in the separation of silver from lead containing the former metal.

MECHANICAL PROGRESS.

Hints to Carriage Makers.

From the *Hub* we quote a few hints to carriage makers, some of which will be found valuable in other lines of work:

Never, in welding light steel or iron tires, "edge up" or hammer on the edges at the weld. Weld solidly on the flat surface; trim the edges with a sharp chisel, and dress with a file. This method saves time and insures success.

In welding very light steel or iron tires, use a flat and smooth-surfaced cast or wrought iron block, in size about four inches square, and two inches thick. Warm the same in the fire, and place securely on the gauge, as near as is practicable to the fire. Then prepare your tires for welding, and weld them on the improvised anvil—or iron block—and dress up after welding on the anvil.

When putting in your buggy bottoms, have not less than three-fourths of an inch of open joints. This will allow ample room for the bottom to swell, and prevent it from warping.

The small pieces of carpet, known in the trimming shop as scraps, form a good material with which to cushion benches, trestles, and other appliances about the factory, and they will save many dollars in a year, by preventing bruises to bodies and other work.

Iron and steel hammers are quite appropriate for iron work. Leather-covered mallets will not do half as much damage about wood work as ordinary hammers, and this suggestion is particularly applicable if the operative is not a very careful man.

Cold and other chisels made from old files cost four times as much as those made from good cast steel. Moreover, the work done with them costs more, and is not done so well.

Good files do not cost nearly as much as labor. One man with a file, three days in use, will do more work in one day than two men will do with files that have commenced their fifth week of slipping and scrubbing.

A few pounds of coal spent in heating an iron occasionally is much cheaper than the labor spent in hammering cold iron.

A mixture of charcoal and bituminous coal makes the best kind of fire for steel tires.

A little water put on the glass in the factory windows, and a little more of the same liquid, mixed with lime, and applied to the walls and ceilings of the factory, will not cost much, and will give a better light, help to preserve the health of the operatives, and also produce more work than all the gas you can burn in the daytime.

Foreign Tribute to American Skill.

A marked tribute to the skill of our American mechanics has been accidentally uncovered in an order from France for duplicate parts of some rubber machinery. About 20 years ago an American mechanic, Alexander Hutchinson, left Trenton, N. J., with a set of rubber machinery to introduce that industry into France. From time to time sundry duplicate parts have been sent thither, while parts of new machines have been got out in that country. The factory being now the largest one in France and national pride instigating a desire that nothing further should be imported, they have been able to secure all the parts but the calender rolls; but as these are cast in an iron mold, the molten iron running against cold iron to make a hard surface, French mechanics have given over this job as impossible, and the order is now placed in the United States by Mr. Hutchinson himself. The casting in these molds is a high order of the mechanic arts, as the work is liable to crackle in the turn-out, while the tools to dress it off must be of the very hardest steel, and all set in the most powerful lathes, running so slowly as to be hardly perceptible. There is one foundry in Trenton, N. J., one in Pittsburgh, Pa., and one in Boston, Mass., which have successfully done this work.—*Boston Commercial Bulletin.*

ALARM SIGNAL APPARATUS.—Messrs. Cherry, of Hull, have introduced a new apparatus of this description for the prevention of collisions on railways. It consists of a tube to be fixed along the up and down line terminating at each station. Air pumps and alarm whistles, or similar appliances, are fixed on the tubes at equal distances from each other, so that when a train breaks down on the line, or is overdue and compelled to shunt to let another train pass, any of the officials, by working the nearest pump, which forces air through the tubes to the whistles, can give an alarm to the drivers or guards of the approaching trains either up or down the line, and at any distance between the stations, thus enabling them to stop the train and prevent collision. Stop-valves are fixed in the tubes, so that if desired one station only can be communicated with. The pumps may be protected with iron cases, the officials being provided with a key for access to them when necessary.

LOOSE RAILS.—A newly invented gong, that is constructed to warn engineers when they have passed over any rail that is loosened at the end, or in any way out of order, the gong indicating the fact to him and enabling him to give information of the fact, is being tested on the lines of the Pennsylvania railroad.

Cutting Cold Steel With Soft Iron.

B. S. Hedrick, of Washington, writes on this subject to the *Manufacturer and Builder*. We quote the following interesting points: The development of heat by friction has been long known. For some time it has also been known that the operation of rolling and rubbing had the effect of changing the molecular structure of iron and steel. These operations will toughen and compact cold iron, and will harden and condense steel. Some time since Mr. Jacob Reese, of Pittsburg, Pa., had occasion to construct a machine for cutting bars of cold hardened steel. For this purpose he mounted a disc, made of soft wrought iron, upon a horizontal axis, so as to be rotated with great velocity. With any moderate speed no cutting was produced. But, on giving the disc such a speed of rotation as to cause the periphery of the disc to move with a velocity of about 25,000 feet per minute (nearly five miles), the steel was rapidly cut, especially when the bar to be cut was slowly rotated against the disc. Sparks in a steady stream were thrown off. At first it was supposed that the steel was simply rubbed or ground off. But on examining the pile of accumulated particles beneath the machine, they were found to be welded together in the shape of a long cone, similar to the stalagmites in the limestone caves. They were nearly like the spikes of frost as formed in winter on Mount Washington, and illustrated at the Troy meeting. Real fusion takes place. The steel is melted by the swiftly moving smooth edge of the soft iron disc, but the disc itself is but little heated. The bar of steel on each side of the cut receives but a slight heat, and the ends are left with a fine blue smooth finish. By this process a rolled, polished and hardened steel bar of two or three inches in diameter, may be cut in two in a few minutes. The soft metal disc of iron used was about 42 inches in diameter, and three-sixteenths of an inch thick. The particles fly off in a thick jet or steam, apparently white hot, through which the naked hand may be passed without injury, and a sheet of white writing-paper held in the steam for a minute is not burned nor colored in the least. They glance off without burning the hand, having assumed the condition which causes the spheroidal state of liquids. The explanation of this curious phenomenon lies in the fact that the very rapidly rotating iron disc causes great numbers of particles of iron to come into contact with comparatively very few particles of steel, every particle of which has to stand the impact of thousands of iron particles; it thus gives way to superior numbers, this impact at the same time developing heat enough not only to melt the detached particles of steel, but to bring it in the spheroidal state.

TELEGRAPHIC IMPROVEMENTS.—G. W. Trabue reports in the *Journal of Telegraphy* his experience in using lightning rods along the several telegraph lines in western Tennessee to prevent accident and damage from lightning. On several of the routes in that part of the State, lightning rods were used, averaging two for every mile of wire for about 400 miles. He reports that the number of interruptions from lightning does not seem to have been lessened. No case of damage to a pole bearing a rod is reported, but the lightning has damaged poles in the near vicinity of these rods. Mr. Trabue thinks that to prevent lightning striking in between the rods, the latter should not be further apart than five or six poles. He intends to experiment with rods on every fifth pole on some of the lines under his direction. He also reports facts which seem to disprove the theory that the liability to damage increases as the number of wires decreases, as he shows that in several cases the lightning damaged poles bearing from four to seven wires, while lines with less wires in the immediate vicinity suffered no damage at all.

COSTLY PLATE FOR JAPAN.—Messrs. Garrard, the queen's goldsmiths, of the Haymarket, have just completed a most elaborate and valuable service of silver-gilt plate for the Mikado of Japan. It consists of a fountain as a center piece, supported on tortoise feet, with the traditional dragon and phœnix which recur so frequently in Japanese art and fiction as accessories. Within the fountain is an ingenious piece of mechanism, by which it will play and sprinkle rosewater or other perfumes for a considerable time. Then follow large and small candelabra, fruit stands, candlesticks, entree dishes, sauce boats, and other smaller pieces necessary to complete such a service. On all of these one or other of the traditional emblems of Japan, the tortoise, dragon and phœnix, have been introduced, while the minor ornamentation is generally floral, and remarkable for the recurrence of the chrysanthemum, so common both on Chinese and Japanese porcelain.—*British Mail.*

ENDLESS RAILS.—A trial was lately made in Paris, of the so-called endless rail of M. Clement Adar, with very satisfactory results. As reported in the *Journal of the Society of Arts*, the operation of the system is thus described: Three small carriages made up into a train circulate on a line of way formed by articulated rails, which are raised after the passage of the carriages, and are laid down again in front of them. The train, propelled by steam or horses, may at the will of the guard take any direction, and may even run over treacherous or sandy ground. The authorities have interested themselves in the subject and further experiments will shortly be undertaken.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to Aug. 31.		1 W'k to Sept. 7.		1 W'k to Sept. 14.		1 W'k to Sept. 21.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	....	....
Advance	....	....	....	....	....	....	....	....
Alpha	6¾	5 1/16	5 3/16	45	4 9/16	46	4 7/16	4 5/16
Alta	3	....	....	....	2 3/16	....	2 1/16	2 1/16
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	30	....	....	....	....	....	....	....
Andes	2 5/16	....	2 5/16	2 1/4	2 1/16	2 1/4	2 1/16	2
Alps	50c	....	62 1/2c	50c	75c	....	....	95c
Amazon	....	....	....	....	....	....	80c	....
Balt'm'e Con	2 5/16	2 1/16	2 5/16	2 1/16	2 1/16	2 1/16	2 3/16	2 1/16
Belcher	25	....	23 1/16	23 1/16	22 1/16	23 3/16	21	23 3/16	2 3/16
Belmont	2 7/16	2 3/16	2 4/16	....	....	2 5/16	2 1/16	2 1/16
Best & Bel	50 1/16	47 3/16	51	....	48 3/16	48 5/16	46 1/16	48 3/16	45 5/16
Buckeye	....	....	....	....	....	75c	....	....	....
Bullion	55	49	47	42	44 1/16	38	37	35 1/16
Osfeodnia	9	8 1/16	8 3/16	8	8	7 5/16	6 3/16	9
California	60 1/16	58 1/2	61	58 1/16	61 3/16	59	63	59 3/16
Challenge	4 7/16	4 1/16	4 3/16	....	....	....	....	....
Chollar-P'tsi	100	95	96	....	94	94	93 1/16	94 1/16	88
Confidence	20	18 1/16	18	17	17 1/16	17	17	16 3/16
Con Imperial	6 3/16	5 1/2	5 3/16	4 9/16	5 1/16	4 1/16	5 1/16	4 1/16
Con Virginia	58 3/16	52 3/16	59 1/2	57 1/16	59 1/16	54 3/16	59	52 1/16
Crown Point	13	12	12 3/16	11 1/16	11 1/16	10	12 1/16	11 1/16
Osso Con	30c	25c	25c	20c	16c	15c	15c	12c
Jury	....	....	....	....	....	....	....	....
Dayton	6	....	5 1/16	....	....	5	4 1/16	5
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka (Nev)	....	....	....	....	....	....	....	....
Eureka Con	12 1/16	11	13 1/16	12 1/16	13	12	16 1/16	13
Exchequer	21	18 1/16	18	16	19 1/16	15 3/16	15	14 1/16
Enropa	....	....	....	....	....	....	....	....
Gila	....	....	90c	70c	75c	75c	75c	....
Globe Con	20c	....	17c	16c	25c	....	20c	15c
Golden Char	1.15	1	1 1/16	1.05	2 3/16	1 3/16	1 7/16	1 1/16
Gould & Cur	16	14 7/16	16 3/16	15 3/16	16	16	16	15
Hale & Nor	13 1/16	11 3/16	12 3/16	11 3/16	12 3/16	11 3/16	11 3/16	10 1/16
Ida Ellmore	....	....	....	....	....	....	....	....
Jefferson	....	....	90c	....	....	....	....	....
Julia	9	8 3/16	8 7/16	8 3/16	8	8 7/16	7 3/16	7 1/16
Justice	24 1/16	28	28 3/16	23 3/16	23 3/16	20 1/16	19 3/16	18
Jackeon	4	3 7/16	5	4	4	3 3/16	3 3/16	3 3/16
K K Con	3 3/16	3	3	2 7/16	3	....	....	....
Kentuck	14 3/16	13 3/16	14	13	13	12 3/16	13	11 1/16
Kniokerb'k'r	80c	62 1/2c	50c	....	....	....	50c	....
Kossuth	1	87 1/2c	1 1/16	1	1	87 1/2c	1 1/16	1 1/16
Lady Bryan	65c	50c	45c	40c	45c	37 1/2c	50c	35c
Lady Wash	3 5/16	2 1/16	4	3 1/16	2 1/16	....	3 1/16	3
Leo	....	....	....	....	....	....	....	....
Leopard	11 1/16	9 3/16	9 3/16	8 1/16	10	9 1/16	10 1/16	8 3/16
Leviathan	87 1/2c	70c	....	....	87 1/2c	37 1/2c	87 1/2c	75c
Mahogany	....	....	....	....	....	....	....	....
Mansfield	35c	....	37 1/2c	22 1/2c	25c	....	....	....
Meedow V'y	1	75c	1	87 1/2c	1	....	75c	75c	60c
Mexican	35 1/16	33 7/16	36	34	36	34 1/16	35 1/16	32 1/16
Midee	....	....	....	....	....	....	....	....
Mint	....	25c	....	....	....	20c	....	2 c
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	87 1/2c	75c	75c	72 1/2c	75c	62 1/2c	75c	65c
Niagara	....	....	....	....	25c	....	20c	....
Northn Belle	23	21 1/2	24 1/2	21	25 1/16	24 1/16	24	22
New Coso	2 5/16	2	2 1/16	1 1/2	2 3/16	1 3/16	2 1/16	2 1/16
Occidental	3 1/16	3 1/16	3 1/2	....	....	....	3 1/16	3
Ophir	56 1/16	53 3/16	61	57 1/16	60	58 1/16	60 1/16	56 1/16
Or Gold Hill	....	....	....	....	....	....	....	....
Overman	77 1/2	75	73	72 1/2	72 1/2	69 1/16	77	73
Pacific	....	....	....	....	....	....	....	....
Phil Sheridn	....	....	....	....	1	1 0c	....	....
Ploche	....	....	....	....	....	....	....	....
Poorman	50c	40c	50c	40c	90c	40c	1 1/16	1
Prospect	1	57 1/16	75	2 3/16	3	2	2 3/16	1 7/16
Prussian	....	....	....	....	....	....	....	....
Ray & Ely	8	7	6 3/16	5	5 1/16	5	6	5 1/16
Rock Island	2	1.70	2	1 3/16	1 3/16	....	1 3/16	....
Rye Patch	....	....	....	....	....	....	....	....
Savage	22 3/16	21	21 3/16	21	21 1/16	20	20 1/16	17 3/16
Seg Belcher	85	80	....	....	75	75	79	78
Sierra Nev'da	15	14 1/16	15 1/16	14 3/16	14 3/16	14	14 1/16	13 3/16
Silver Hill	11	10	10 1/16	9 1/16	10	9	9 1/16	9
Sth Chariot	15c	....	10c	60	60	5c	....	....
Socoor	75c	60c	87 1/2c	62 1/2c	75c	60c	91c	1.00
Union Con	14 3/16	14	15	14 1/16	14 3/16	14 3/16	14 1/16	13 1/16
Utah	22	20 1/2	....	....	21 1/2	20 1/16	21 1/2	20
Wells Fargo	30c	....	25c	....	....	....	20c	....
Woodville	1 1/16	1 3/16	1 1/16	1 1/16	1 1/16	1 1/16	1 1/16	1 1/16
Yel'w Jacket	35 1/16	30 3/16	30 1/16	26 1/16	28 1/16	27 3/16	30 1/16	24 3/16

Sales at S. F. Stock Exchange.

FRIDAY, A. M., SEPT. 15.

575 Alpha.....4 5/16@4 6/16
100 Alta.....2 1/16@2 3/16
100 Andes.....2 1/16@2 3/16
625 Belcher.....2 2/16@2 5/16
115 Bullion.....36@37
170 Best & Belcher.....47
490 Baltimore Con.....2 1/16@2 3/16
730 California.....60@60 3/16
400 C Point.....12@12 1/16
470 Con Virginia.....56 3/16@57
1270 Con Imperial.....4 7/16@4 8/16
120 Caledonia.....8 3/16@8 4/16
60 Chollar.....92@92 5/16
100 Cromer.....2 1/16
60 Confidence.....17 3/16
10 Challenge.....4 1/16
9 5 Exchequer.....14 1/16@14 3/16
170 Gould & Curry.....15 1/16
400 Globe.....8@8 1/16
315 Hale & Nor.....11 8/16@11 9/16
2165 Julia.....8 1/16@8 3/16
10 Julia.....7 3/16
65 Kentuck.....12 3/16
100 Knickerbrooker.....50c
165 Lady Wash.....3@3 1/16
460 Leviathan.....4 1/16
1050 Lady Bryan.....50@45c
635 Mexican.....34 1/16@34 3/16
100 Mansfield.....75c
375 Ophir.....56 1/16@56 3/16
150 N Con Vir.....12 1/16
360 Ophir.....59 1/16@59 3/16
210 Overman.....75 3/16@75 5/16
580 Prospect.....2 3/16@2 4/16
30 Rock Island.....1 3/16
585 Savage.....20@20 1/16
75 Silver Hill.....9 1/16
40 Sierra Nevada.....14 3/16
200 Union.....20 1/16
420 Trojan.....90@80c
320 Union.....14 3/16
35 Utah.....21 1/16@21 2/16
135 Woodville.....1 1/16
500 Wash'n Con.....1 1/16
600 Wells-Farco.....20c
1205 Yellow Jacket.....29@29 1/16

AFTERNOON SESSION.

225 Belmont.....2 1/16
200 Leo Con.....12c
435 California.....62
895 Con Virginia.....59@59 1/16
750 Eureka Con.....13 1/16
25 Gila.....75c
250 Gen Thomas.....2
360 Gold Chariot.....1 7/16@1.80
300 Hussey.....65@62 1/2c
125 Jackson.....3 1/16
1230 Justice.....19 1/16@19 1/16
790 Leopard.....9@8 1/16
100 Mansfield.....10c
240 Meadow Val.....75c
305 Manhattan.....16@16 1/16
250 Modoc.....4 1/16
160 Mexican.....35@35 1/16
225 Northern Belle.....23@24
440 New Coso.....2 1/16
495 Ophir.....59 1/16
2210 Pourman.....1@1 1/16
600 S Modoc.....1@1 1/16
555 Yellow Jacket.....30 1/16@29 15/16

SATURDAY, A. M., SEPT. 16.

690 Alpha.....4 7/16@4 6/16
170 Andes.....2 5/16
75 Baltimore Con.....24
155 Best & Belcher.....48 1/16@48
143 Belcher.....22 5/16@2 6/16
250 Caledonia.....8 5/16
681 California.....62 1/16@62 5/16
320 Crown Point.....12 1/16@12 3/16
120 Con Imperial.....4.85@4.8
50 Chollar.....93 1/16
1455 Con Virginia.....59 1/16@59
20 Dayton.....5
270 Exchequer.....15@15 1/16
510 Eureka Con.....13 1/16@13 3/16
245 Gould & Curry.....16

200 Cromer.....2 1/16
580 Con Virginia.....57 3/16@57 1/16
100 Cosmopolitan.....35c
165 Crown Point.....11 3/16@11 1/16
15 Chollar.....90 5/16@90
735 California.....61 5/16@61 1/16
295 Con Imperial.....4 3/16@4.80
19 Exchequer.....14 5/16@14 1/16
75 Gould & Curry.....15 3/16@15 1/16
200 Hale & Nor.....10 3/16
280 Justice.....19@19 1/16
165 Julia.....7 3/16@7 1/16
1045 Justice.....19 1/16@19 1/16
60 Kossuth.....1 3/16
100 Kentuck.....12@12 1/16
970 Lady Bryan.....40c
760 Mexican.....35 3/16@35 1/16
120 Mint.....20@0
225 New York.....75@70c
45 Nth Con Va.....1@1 1/16
470 Ophir.....59 3/16@60 1/16
1270 Overman.....77 3/16@77 1/16
200 Prospect.....2 1/16
325 Savage.....20@19 15/16
175 Sierra Nevada.....14 3/16@14 5/16
85 Un Con.....14 3/16@14 5/16
50 Utah.....21
205 Woodville.....1 1/16@1 1/16
1885 Yellow Jacket.....28 3/16@29

MONDAY, A. M., SEPT. 18.

200 Alpha.....4 7/16@4 6/16
100 Andes.....2 1/16
330 Best & Bel.....47 3/16@47 5/16
105 Belcher.....22 1/16@22 5/16
95 Baltimore Con.....2 1/16
10 Challenge.....4 1/16
60 Challenge.....4 3/16
220 Crown Point.....12@11 15/16
25 Confidence.....17 1/16
50 Con Imperial.....4.80
285 California.....62 3/16@63
755 Con Virginia.....59@59 1/16
720 Chollar.....93@90
610 Exchequer.....14 7/16@14 5/16
130 Gould & Curry.....16
630 Hale & Nor.....11 3/16@11 1/16
220 Justice.....19 1/16
160 Kossuth.....1 3/16
240 Lady Bryan.....40c
530 Leviathan.....75@74c
1235 Mexican.....35@34 3/16
500 New York.....70@
600 North Con Vir.....1@1 1/16
60 Occidental.....3 1/16
110 Ophir.....59 1/16@59 3/16
450 Ophir.....56@60
50 Rock Island.....1 3/16
530 Sierra Nevada.....14 1/16@14 3/16
1260 Yellow Jacket.....28@27 15/16

AFTERNOON SESSION.

525 California.....62 1/16@62 1/16
670 Con Virginia.....58@58 1/16
705 Eureka Con.....14 1/16@15
100 Gila.....75c
250 Gen Thomas.....1 15/16@1 15/16
310 Golden Chariot.....1.70@1.80
100 Hale & Nor.....11
20 Hussey.....70c
515 Justice.....19 1/16
50 Jackson.....2 1/16
700 Leopard.....8 5/16@8 3/16
40 Mexican.....34 1/16
80 Meedow Valley.....75c
240 Manhattan.....16 1/16
190 Northern Belle.....23 1/16@24
100 New Coso.....2 1/16
185 Ophir.....59 1/16@59 3/16
1770 Poorman.....1.30@1.34
25 Ray & Ely.....6@5 15/16
10 Savage.....19
TUESDAY, A. M., SEPT. 19
50 American Flat.....1
105 Alpha.....4 6/16@4 7/16
25 Andes.....2
60 Bullion.....36@35 15/16
250 Belcher.....22@22 1/16
100 Best & Belcher.....47 1/16@48
525 Baltimore Con.....2 1/16
245 Caledonia.....8 5/16@8 3/16

130 Am Flat.....1
100 Amazon.....80c
180 Baltimore Con.....2 1/16
270 Belcher.....22
170 Bullion.....36 3/16@ 6
295 Con Virginia.....57 3/16@57 1/16
645 Crown Point.....11 3/16@11 1/16
20 Confidence.....17
100 Chollar.....90@88
356 California.....62 1/16@61 15/16
2595 Con Imperial.....4 3/16@4 5/16
205 Caledonia.....8 1/16
100 Cromer.....2 1/16
205 Exchequer.....14 5/16@14 1/16
1135 Hale & Nor.....11@10 15/16
25 Julia.....7 1/16
830 Justice.....19 1/16@19 1/16
50 Kossuth.....1 1/16
110 Kentuck.....11 1/16
1070 Lady Bryen.....40@37 1/2c
20 Lady Wash.....3
625 Mexican.....34 1/16@33 15/16
60 Morning Star.....4
315 New York.....70@65c
185 Ophir.....59 3/16
170 Overmen.....73 1/16@74 1/16
100 Occidental.....3
1030 Prospect.....2
100 Rock Island.....1 3/16
820 Savage.....19 1/16@19
15 Seg Belcher.....79
35 Silver Hill.....9 1/16
1465 Sierra Nevada.....14 0 1/16
500 Trojan.....80@75c
310 Union Con.....14 3/16
100 West Belcher.....22 1/16
2490 Yellow Jacket.....28 1/16@28

AFTERNOON SESSION.

100 Alps.....1
200 Belmont.....2 1/16@2 1/16
40 Belcher.....21 3/16
80 Best & Bel.....47 1/16@47 3/16
30 Con Virginia.....57 3/16@57 1/16
415 Con Imperial.....4.70
810 Caledonia.....8 1/16
200 Coso Con.....15@14c
785 Gen Thomas.....1 15/16@1 15/16
920 C Chariot.....1 15/16@1 15/16
100 Hale & Nor.....10 15/16@10 15/16
355 Hussey.....70@75c
50 Kentuck.....11 3/16
8 5 Leopard.....10@10 15/16
80 Meadow Valley.....75c
1045 Manhattan.....16 1/16@16 1/16
330 Northern Belle.....24@24 1/16
125 New Coso.....2 1/16@2 1/16
10 Ophir.....59 3/16
320 Overman.....75
2475 Pourman.....1@1 1/16
300 Panther.....65@70c
52 Ray & Ely.....6
1000 South Modoc.....1 1/16
430 Yellow Jacket.....26 3/16@26 7/16

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., SEPT. 14.

480 Alpha.....4 7/16@4 3/16
35 Andes.....2 3/16
160 Bullion.....37@38
166 Best & Belcher.....47 1/16
85 Belcher.....21 3/16@22 5/16
55 Baltimore Con.....2 1/16
30 Cosmopolitan.....37 1/2c
10 Chollar.....96
825 Con Imperial.....4 5/16@4 7/16
435 Crown Point.....10 3/16@10 15/16
625 Con Virginia.....56 3/16@57
525 California.....61 3/16@62
100 Confidence.....17 1/16
720 Caledonia.....8@8 1/16
50 Challenge.....4 1/16
200 Cromer.....2 1/16
835 Exchequer.....14 1/16@15
275 Gould & Curry.....15 1/16@15 3/16
65 Hale & Nor.....11 3/16
465 Julia.....7 3/16@7 1/16
3715 Justice.....20@21
229 Kossuth.....87 1/2c
710 Lady B.....50 & 60c
505 Mexican.....35 1/16
10 New York.....70c
250 N Con Vir.....12 1/16
670 Overmen.....74@75
625 Ophir.....59 1/16@59 3/16
390 Prospect.....2 1/16@2 1/16
100 Rock Island.....1 3/16
395 S vage.....20 1/16@20 3/16
100 Succor.....50c
75 Silver Hill.....9 1/16@9 1/16
10 Seg Belcher.....80
80 Sierra Nevada.....14 3/16@14 1/16
80 Trojan.....95c
210 Utah.....21 1/16@22
1030 Union.....14 1/16@14 3/16
635 Yellow Jacket.....28 1/16@29 1/16

AFTERNOON SESSION.

125 Alpha.....4 7/16@4 15/16
150 Alps.....2 1/16
425 Belmont.....2 1/16
115 Belcher.....22 1/16
30 Bullion.....38
48 Best & Bel.....47 1/16
140 Osso Con.....15c
113 Con Virginia.....56@56 1/16
1160 California.....61 3/16@61 15/16
150 Chollar.....93@92 1/16
2140 Eureka Con.....13@13 1/16
250 Exchequer.....14 5/16@14 3/16
60 Gen Thomas.....2@2 1/16
675 Golden Chariot.....2 1/16
620 Gila.....80@75c
50 Hale & Nor.....4.87 1/2@4 3/16
400 Jackson.....2 1/16@2 3/16
1850 Justice.....18@18 1/16
510 Leopard.....9@9 1/16
395 Meadow Valley.....85@80c
600 Manhattan.....16@16 1/16
840 Mexican.....34 1/16@34 3/16
20 M doo.....48
900 New Coso.....2 1/16@2 3/16
465 Northern Belle.....24@24 1/16
40 Ophir.....59@59 1/16
1350 Poormen.....1
10 Raymond & Ely.....1
980 S barcelona.....2
50 Sierra Nevada.....14 3/16
215 Union.....14 3/16
290 Yellow Jacket.....28 1/16@28 3/16

Pacific Board—Latest Sales.

WED'SDAY, A. M., SEP. 20.

10 Alpha.....4 6/16
30 Andes.....2
600 Atlantic.....46
290 Best & Bel.....47 3/16@47 5/16
50 Baltimore.....2 1/16
40 Crown Point.....11 3/16@11 1/16
1350 Con Imperial.....4.70@4 75
1150 Con Virginia.....58@58 1/16
200 Choller.....89@88 1/16
40 California.....62@62 1/16
1500 City of Isot.....3 1/16
200 Cosmopolitan.....36@36 1/16
100 Exchequer.....14 5/16@14 3/16
300 E Justice.....2 5/16
10 Gould & Curry.....15 3/16
270 Hale & Nor.....10 15/16
220 Justice.....19 1/16@19 3/16
25 Julia.....7 1/16@7 3/16
2.0 Lady Bryan.....38c
200 Leviathan.....75@74c
235 Mexican.....34 1/16
30 Meedow Valley.....75c
29 Ophir.....59 1/16@59 3/16
200 Prospect.....2 1/16
50 Rock Island.....1 3/16
30 Sierra Nevada.....14 3/16
350 Savage.....19 15/16@19 1/16
200 Twin Peaks.....75c
500 Trenton.....1
150 Ward.....1 1/16
4250 Yellow Jacket.....26 15/16@29

California Board—Latest Sales.

WED'NSDAY, A. M., SEP. 13.

150 Andes.....2 1/16
20 Alpha.....4 7/16@4 3/16
100 Alps.....98c

AFTERNOON SESSION.

50 Alps.....95c
240 Andes.....2
80 Belcher.....46 3/16
80 Best & Bel.....47 1/16
160 Belcher.....21 15/16@22 1/16
40 Coso Con.....14c
10 Chollar.....92
175 Con Virginia.....61 5/16@62
175 Con Virginia.....57 3/16@58 1/16
110 Con Imperial.....4.70@4 75
310 Crown Point.....11 3/16@11 1/16
200 Caledonia.....8 5/16@8 3/16
210 Eureka Con.....16 1/16@16 3/16
100 Forrest.....12 1/16
125 Gt Eastern.....4
430 Gold Run.....1 7/16@1 15/16
250 Gen Thomas.....1 15/16@1 15/16
250 Gold Chariot.....1.70@1.75
115 Hale & Nor.....10 15/16@11
150 Hussey.....75c
350 Poormen.....1 1/16@1 1/16
400 Prospect.....2 1/16
50 Savage.....19
610 Yellow Jacket.....26 3/16@26 5/16
35 Belcher.....22 1/16
750 Baltic.....30c
10 Bullion.....37 1/16
500 Consolidated.....34c

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thureday from Advertieemente in the Mining and Scientific Press and other S. F. Journale.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt.	Levied.	Deling'nt.	Sale.	Secretary.	Place of Business.
Alpe S M Co	Ely Dist	9	50	Aug 8	Sept 12	Oct 4	O D Squiro	Stevenson Bldg
Aita S M Co	Washoe	4	50	Aug 17	Sept 21	Oct 13	W H Watson	302 Montgomery st
Amazon Con M Co	Washoe	4	15	Aug 8	Sept 9	Sept 30	J A Fleicher	330 Pine st
Andes S M Co	Washoe	7	25	Sep 15	Oct 21	Nov 8	M Landers	307 Montgomery st
Belmont M Co	Nev	9	50	Sep 18	Oct 24	Nov 21	W H McClintock	419 California st
Caledonia S M Co	Washoe	18	1 00	Aug 28	Sept 30	Oct 20	R Wegener	414 California st
Coso Con M Co	Cal	2	1 00	Aug 30	Oct 7	Oct 28	R H Brown	426 California st
Crown Point S M Co	Washoe	27	1 00	Aug 15	Sept 19	Oct 10	J Neylends	419 California st
Dardanelles M Co	Washoe	4	1 00	Sep 5	Oct 5	Oct 23	W S Duvel	402 Montgomery st
El Dorado South Con M Co	Nev	10	2 00	Aug 2	Sept 6	Sept 26	W Willis	309 Montgomery st
Equitable Tunnel & M Co	Utah	13	20	Sept 7	Oct 12	Nov 1	O S Healey	Merchants' Ex
Geddes & Bertrand M & M Co	Nev	1	50	July 24	Sept 22	Oct 23	J A Veince	Stevenson's Bldg
Glasgow C & S M Co	Washoe	3	15	Aug 8	Sept 9	Sept 30	J A Reichert	330 Pine st
Gold Mountain M Co	Cal	6	25	July 25	Aug 26	Sept 28	W Aug Knapp	309 Montgomery st
Gould & Curry M Co	Washoe	27	1 00	Aug 11	Sept 15	Oct 5	A K Durbrow	309 Montgomery st
Golden Crown M Co	Cal	3	5	Sept 12	Oct 20	Nov 10	D Buck	309 Montgomery st
Hale & Norcross S M Co	Washoe	51	1 00	Aug 8	Sept 12	Oct 3	J F Lightner	Nevada Block
Insurance M Co	Washoe	3	25	Aug 30	Oct 2	Oct 23	M Landers	309 Montgomery st
Julia Cons M Co	Washoe	1	1 00	Sept 11	Oct 16	Nov 6	A Noel	419 California st
Julia G & S M Co	Washoe	23	3 00	Sept 11	Oct 16	Nov 6	A Noel	419 California st
Justice M Co	Washoe	19	5 00	Sep 14	Oct 18	Nov 7	J S Kennedy	419 California st
Kossuth M Co	Nev	7	50	Aug 15	Sept 19	Oct 12	E P Stone	419 California st
Lady Bryan M Co	Nev	13	50	Sep 15	Oct 17	Nov 7	W H McClintock	419 California st
Low Rauge Ledge S M Co	Washoe	1	2	Sept 11	Oct 16	Nov 7	F E Luty	507 Montgomery st
Mariposa Land & M Co	Cal	7	1 00	Sept 1	Oct 9	Oct 30	L Leavitt	309 Montgomery st
Mariposa M Co	Barcelona, Nev	1	10	Sept 7	Oct 11	Nov 1	J P Moore	426 California st
Meadow Valley M Co	Ely Dist	12	75	July 21	Aug 23	Sept 25	T W Colburn	418 California st
Mexican G & S M Co	Washoe	2	50	Sep 5	Oct 11	Oct 31	C L McCoy	419 California st
Mides G M Co	Washoe	1	20	Aug 15	Sept 18	Oct 5	L Kaelam	Merchants' Ex
Mint G & S M Co	Nev	14	10	Aug 9	Sept 12	Oct 5	D A Jenninge	401 California st
Mitchell's G & S M Co	Nev	10	3	Sept 7	Oct 7	Oct 28	A C Hammond	401 California st
Newark S M Co	Ely Dist	13	25	July 26	Sept 1	Sept 23	J A Fairweather	326 Pine st
New York M Co	Washoe	10	25	Aug 29	Oct 2	Oct 21	B L Thomas	419 California st
National Prospecting & M Co	Cal	1	10	Sept 9	Oct 10	Nov 11	T L Wiswall	Merchants' Ex
Oceanic Quicksilver M Co	Cal	4	50	Aug 26	Oct 9	Oct 30	C G Funk	438 California st
Pacific M Co	Washoe	2	20	Sept 11	Oct 14	Nov 3	J W Clark	418 California st
Phil Sheridan G & S M Co	Nev	5	50	Aug 9	Sept 11	Oct 2	W R Townsend	Nevada Block
Senator S M Co	Washoe	14	50	Sep 19	Oct 24	Nov 13	J H Seyre	330 Pine st
Silver Hill M Co	Washoe	9	1 00	Sep 18	Oct 24	Nov 14	W E Dean	416 California st
Sierra Nevada S M Co	Nev	45	1 00	Aug 22	Sept 25	Oct 12	W W Stetson	309 Montgomery st
Stanford Harlor M Co	Idaho	18	25	Aug 29	Sep 29	Oct 20	W H McClintock	419 California st
St Patrick M Co	Cal	12	50	Sep 18	Oct 23	Nov 15	D F Verdenal	409 California st
Valenciana M Co	Nev	1	10	Sept 11	Oct 13	Nov 11	J P Moore	426 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Accidental Con M Co	Nev	1	10	Aug 21	Sept 24	Oct 12	O Metchke	426 Montgomery st
Alabama M Co	Nev	1	10	Aug 14	Sept 18	Oct 11	W H McClintock	419 California st
Almaden Con Quick M Co		1	1 00	Aug 15	Sept 25	Oct 16	C C Finkler	628 Montgomery st
Barcelona Con M Co		1	1 00	Aug 21	Sept 25	Oct 16	J P Moore	426 California st
Beach & Paxton G & S M Co	Nev	2	25	Aug 30	Oct 3	Oct 24	M l andere	309 Montgomery st
Cincinnati G & S M Co	Cal	6	10	Aug 29	Sept 29	Oct 16	W Small	535 California st
Dayton G & S M Co	Nev	5	1 00	Sept 8	Oct 13	Nov 3	W E Dean	419 California st
Enterprise Con M Co	Cal	9	25	Aug 12	Sept 18	Oct 10	F J Hermann	418 Kearny st
Excelsior Quicksilver M Co		5	10	Aug 8	Sept 19	Oct 10	A Halecy	312 Montgomery st
Gen Thomas M & M Co	Nev	2	50	July 29	Sept 1	Sept 21	W Willis	309 Montgomery st
Glencoe Con G M Co	Cal	2	5	Aug 29	Oct 2	Oct 23	L Leavitt	309 Montgomery st
Greene M Co	Cal	1	50	Aug 16	Sept 19	Oct 6	W R Townsend	309 Montgomery st
Guerrero Con Quick M Co	Cal		15	July 1	Aug 28	Sept 25	Jas McHaffee	Stevenson Brck
Lee G & S M Co	Washoe	1	5	Aug 10	Sept 14	Oct 5	C J Eaton	Express Bldg
Mariposa South M Co	Nev	1	10	Aug 8	Sept 19	Oct 17	J W Clark	418 California st
McClellan Con M Co	Nev	1	10	Aug 21	Sept 24	Oct 12	O Metchke	426 Montgomery st
Monumental M Co	Washoe	1	15	Sept 7	Oct 9	Nov 1	W E Townsend	Nevada Block
Pourman M Co	Cal	3	1 00	Sep 19	Oct 23	Nov 20	J H Wallace	108 California st
Moore's Flat Blue Gravel M Co	Cal		25	Sep 14	Oct 18	Nov 6	Wm Small	535 California st
New York Hill M Co	Grass Valley	1	70	July 29	Sept 4	Sept 23	F J Hermann	418 Kearny st
Nonpareil G M Co	Cel	6	5 00	Sep 15	Oct 23	Nov 9	A DuPlat	505 Jackson st
Northerly Five Cent Hill G M Co			75	Sept 11	Sept 28	Nov 13	Warren Bryant	Merchants' Ex
Ocean View Quicksilver M Co	Cal		50	Aug 2	Sept 8	Sept 29	D Buck	Nevada Block
Rattlesnake Quick M Co	Sonoma Co	4	5	Aug 4	Sept 5	Sept 25	A Baird	304 California st
San Jose M Co	Nev	1	10	Sep 12	Oct 21	Nov 13	A Carrigan	109 Front st
Sierra Iron Co	Cal		10	Aug 18	Sept 30	Oct 16	Caleb T Fay	318 Sansome st
South Barcelona M Co	Nev	1	1 00	Aug 21	Sept 27	Oct 18	J P Moore	426 California st
Taylor M & M Co	Garden Valley Dist		40	Aug 10	Sept 13	Oct 4	S S Murfey	607 Montgomery st
Vulcan Coal M Co	Santa Cruz Co	1	15	Aug 2	Sept 7	Sept 28	J Greif	636 Washington st
Welch Con Quick M Co	Cal	1	4	Aug 21	Sept 30	Oct 23	J P Forbes	408 California st
West Comstock G & S M Co	Nev	1	25	Sept 12	Oct 16	Nov 3	J D Thompson	401 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Argentina M Co	Nev	T S Fitch	240 Montgomery st	Annual	Sept 23
Arnreola G & S M Co	Nev	T S Fitch	240 Montgomery st	Annual	Sept 30
Baltimore Con M Co	Washoe	C A Senkey	331 Montgomery st	Annual	Oct 5
Cole S M Co	Nev	Called by Trustees	Nevada Block	Special	Sept 28
Cosmopolitan M Co	Nev	M Landers	Nevada Block	Annual	Oct 11
Eureka M & Smelting Co	Nev	A O Ryce	308 California st	Annual	Sept 29
Kelsey M Co	Nev	J H Sayre	330 Pine st	Annual	Sept 29
Niagara S M Co	Nev	W R Townsend	309 Montgomery st	Annual	Sept 26
Seg Belcher M Co	Washoe	Geo D Edwards	414 California st	Annual	Oct 3

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	O D Squiro	Stevenson's Bldg	50	Apr 15

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR.

The Monterichard Mine.—Amador *Dispatch*, Sept. 16: A whim has just been put up on this mine, and as soon as the necessary rope arrive from San Francisco, the work will be again resumed. The present indications are that this will prove one of our richest and most valuable mines, and we hope that it will be worked without interruption in the future. There are several other claims in the vicinity of the Montarichard which develop splendid indications of richness.

Rich Strikes.—We understand that several very rich strikes in quartz have recently been made in the neighborhood of Mace's and Whitmore's sawmills, about 10 miles above here. We did not learn the names of the fortunate parties, but are told that the prospects are immensely flattering.

Buckeye Coal Beds.—Amador *Ledger*, Sept. 16: Coal of a superior quality to any hitherto found in Iona valley has recently been struck in the Buckeye mine. There is no doubt that the railroad company will now draw their supplies of coal from Buckeye, being five miles nearer, and the mineral at least equal in quality. The local demand, however, will be sufficient to cause the Ione deposit to be vigorously worked.

Volcano Tunnel.—Work is progressing upon the Volcano tunnel at the rate of from two to four feet per day. The work is under the excellent supervision of Tom McCleavy. The tunnel is now in a distance of 40 feet, the total distance to be run being 2,000 feet. All the work is of the best character. The width of the tunnel is ten feet at the bottom and eight feet at the top.

BUTTE.

Big Blast.—Oroville *Mercury*, Sept. 15: Last Monday the Spring Valley company fired off a big charge of powder. Drifts had been run for weeks under the upper part of Sugar Loaf mountain. Six and a half tons of powder were put in the various "cuts" and drifts, and by means of electricity the whole was fired at once. The bank raised up a little and settled back again, thoroughly pulverized, and ready for the water. This was the largest charge ever fired in this claim, and many a one was on the lookout to see its effects.

Prattville.—From H. B. Abbot we learn that the Gold Stripe mining company have bought his sawmill and are going to remove it from Prattville to their ledge. Mr. Keddie, late superintendent of the Carlhoo mining company, has been succeeded by James Bremen. Alvinza Hayward has lately bought a large quantity of stock in this mine, from which it is supposed that work will be rapidly pushed forward.

CALAVERAS.

Gwin Mine.—Calaveras *Chronicle*, Sept. 16: Very rapid progress is being made in repairing the shaft in the Gwin mine, and it is expected to have the work completed by the last of the month. The mills are forced to lie idle while the repairing is in progress, it being impossible to hoist rock while fixing the shaft. The huge overshot wheel and connecting machinery which is to run the lower or "Alexander" mills, is also nearly completed. Operations will be vigorously pushed when the projected improvements are finished, and the yield of the mine will be greater than ever when milling is again resumed.

Mill to Start.—We understand that it is intended to start the mill at the Lamphear mine as soon as practicable, probably the first of next week. Quite a large quantity of rock from the Quaker City mine has been hauled to the mill for crushing, and quartz has also been struck in the shaft of the Lamphear. Between the two mines it is expected to keep the mill well employed.

Quaker City.—Labor progresses without interruption in the Quaker City mine at the Junction. At present they are cross-cutting the ledge in the 200-ft level and uncovering good ore. Water has been a little troublesome, but that difficulty is now obviated and the mine is being rapidly developed. The prospects of the Quaker City are very favorable.

Gravel Mining Notes.—The mill at the Duryea gravel claim in Chile Gulch is running merrily. Operations are being pushed forward with vigor and activity. Work is going on energetically in Veith's hydraulic in Tunnel ridge, with encouraging results. There isn't a more enthusiastic, indomitable, industrious miner in the State than John Veith. Work is progressing steadily in Emerson's hydraulic, Happy valley. A large force is employed in the mine and a great quantity of gravel is daily put through the flume. At Red Hill, Cook & Co. have struck the blue lead with a good prospect of a large deposit of pay gravel ahead. Cook, Haywood & Co., the Calaveras hydraulioists, are piping steadily. They have an abundance of water and probably will have during the entire season. Harrington & Fagrell Bros. have struck rich gravel in a shaft recently sunk near the old Montgomery claim, in the vicinity of the Calaveras river.

Upper Country Quartz Items.—From West Point we have the following: The new mill at the Josephine is running steadily, but a scarcity of water retards operations somewhat. There is still over 100 tons of ore on the dumps. Carlton's mill is still crushing Champion rock. The grinding will probably be finished the last of this or the first of next week, and a clean-up made. Favorable developments continue to be made at the Mina Rica. We hear that work is shortly to be resumed on the Anderson Flat mine. From Mosquito we have the following: Lewis & Fairchild lately had a lot of rock from their mine crushed in Garland's mill that paid $43 per ton; lucky fellows. Work is progressing at the Glencoe Consolidated, and good rock is being obtained. The locality for the main shaft has not yet been selected.

The Brady Mill in Active Operation.—Tuesday of this week the mill at the Brady mine was started up in real, downright good earnest, and has been in constant operation since. The crusher performs admirably, a large amount of ore being put through the screens daily. We understand that the appearance of the plates indicates that the rock being worked is of good quality, and that the prospects of the mine are flattering. A force of hands is employed in mining rock, and there is no question but that the conduct of operations will be permanent and profitable.

INYO.

Coso Con. Affairs.—Coso *Mining News*, Sept. 12: Mr. S. Linkton, late superintendent of the Coso Con. mining company, has resigned his position, and goes to Nevada to take charge of some mine there. Chas. W. Leach, foreman of the Coso Con., is now acting as superintendent, and W. E. Stronach is acting as clerk for the company.

New Coso Furnace.—L. F. Shepard, who was formerly in charge of the Defiance furnaces, has been placed in charge of the New Coso furnaces. It is hoped, and we believe, that a greater amount of bullion will now be turned out. Stockholders here wonder why the New Coso company are not paying dividends instead of levying assessments. There is no reason why the mine should not, but it don't.

Mill for the Minietta.—James Morton, of Merced City, one of the heavy owners in the Minietta Belle mining company, at Lookout, says that the company will immediately make arrangements for the construction of a 10-stamp mill to work their ores, as it is believed that they can be handled to much more profitable advantage than by the furnace process. The Modoc ores are of the same character to a very large extent.

Kearsarge Mountain Mines.—Coso *Mining News*, Sept. 16: Among the most valuable mines in Inyo county there are some which have received very little attention from the public press, although they are owned and managed by some of the leading capitalists on the coast, and men of integrity and enterprise, otherwise they would not have ventured investments in such out-of-the-way places. We refer to the mines known as the Kearsarge series, situated near Independence, in the Sierra Nevada mountains. It has been our pleasure, during the week, to meet with Mr. A. Wingard, who is connected with the Silver Sprout mine, which is located in the Sierra Nevada at an altitude of about 10,500 feet. The work done upon this mine consists of a tunnel run upon the most depressed portion of the accessible part of the mountain, and is run in a distance of 200 feet, striking the ledge at the depth of 117 feet, and at this point the ledge is 14½ feet in width, bearing quartz which assays from $130 to $1,496. Several shafts have been sunk, to connect with the tunnel, and directly upon ore for the whole distance, and as depth is attained the ore has steadily increased in value. The ore predominates in silver, and carries on an average about one-seventh in gold. At present the company is involved in some litigation.

The Kearsarge, located at an altitude of 9,000 feet, and about one mile east of the Silver Sprout, was located in 1865. A large amount of money was paid in for its development, but, like in a great many other instances, the greater part of the money was misspent, otherwise the Kearsarge would have made a good showing long ago. Some two years ago the mine passed into the hands of other parties, who are now bending their whole energies to a successful prosecution of the work of development. There were formerly two sets of workings, the first run into the mountain some 500 feet above, and called the Cliff mine. Ore taken from the upper workings was taken to Virginia City, where it mined some $1,800 per ton. It was supposed the ore had given out at this point and the lower tunnel was started, 500 feet below. This tunnel is run in nearly 300 feet and a shaft has been sunk in the tunnel about 100 feet, upon the ledge, the size of vein and quality of ore gradually increasing as depth was reached since the winze was started. The ore body at the bottom of this shaft is, by actual measurement, three feet, of solid, high grade milling ore, entirely free from the antimony and refractory ores encountered above, and which will mill at least $300 per ton. It is silver ore, but like the Silver Sprout, carries gold. Next come the series of the Rex Montes mines, consisting of five, and located on the north side of the same mountain, in an opposite direction from the Silver Sprout mines, and at a higher altitude, being about 11,000 feet. The company at present are working but two of the mines.

Emigrant, Lee District.—Coso *Mining News*, Sept. 16: From Mr. John Pattie, an old miner and prospector of 20 years' experience, who visited the Emigrant Co.'s mines some days ago, we have the following report to make: I visited the Cactus mine only, going through all its ramifications, and for the amount of work done a larger and better body of high grade ore is developed than I have ever seen at its present depth, with the exception, perhaps, of the famous Eberhardt, of White Pine, where an ore body is exposed for a length on the vein of some 80 feet, and at least 20 feet wide, of high grade milling ore. How much further this ore body extends cannot be determined without further exploration, but there are all the indications going to show that it extends to a very great distance. What seems most to be desired is a mill directly at the mine for reduction of the ore, instead of transporting the same a distance of eight or nine miles to the present location of the mill. I am satisfied, if the water was brought in and a mill erected at the mines, there is now enough ore in sight to make the Cactus a splendid paying mine.

Miners who came in from Lee yesterday report that a veritable bonanza has been disclosed, within the last day or two, in the Cactus mine, and that at all points the mine looks much better than it ever did. The ore has increased in richness to such an extent that it is an easy matter to melt out the metal on a common shovel, and nearly every one of the boys have made themselves a small silver, brick, to keep as a memento of Lee district. The men on the mine have been taken off for the present, as it is the intention to at once remove the mill from its present locality to the mine. When this is done we may look for such daily shipments of high grade bullion ore by the Emigrant company upon the stages as will rival Ploche in her palmy days.

MENDOCINO.

The Placers.—Mendocino *Dispatch*, Sept. 9: Quite an excitement was created in our streets this week by the arrival of $95 of bright, glittering gold dust, fresh from the Calpella mine, which had been washed out in a rocker by Messrs. Tollman and Phillips. The water was carried from a neighboring spring. The dust was at the drug store of Mr. Hoffman. All our vicinity wants is the completion of those reservoirs and our town will be filled with people.

MARIPOSA.

A Mine not for Sale.—Mariposa *Gazette*, Sept. 16: The famous Hite mine, situated on the South fork of the Merced river, shows no abatement in the stream of treasure which it has been pouring out for years. It is to-day, and perhaps will be for years to come, the most profitable gold bearing quartz mine on the face of the earth. It is worked through a tunnel running in a northerly direction, from near the level of the river, 1,400 feet, where it intersects the main vein. From this point of intersection, levels have been run 500 feet each way, east and west, opening up a vein from 20 to 30 feet thick. A realization of the miser's dream is had in a trip along that wonderful cavern, where free gold and bullion-rock sparkles and glitters and scintillates from every direction. The back or lift which this tunnel gives is so great that we may not for years look to the necessity of any hoisting works. On delivery at the mouth of the tunnel, the ore is sent by means of a double tramway and counter-balancing cars a distance of 1,750 feet, down to the mill, where it is handled by the most approved appliances for gold saving. First, through a patent crusher, or "jaw breaker," then to the batteries, which are eight in number, of five stamps each; then to nine patent concentrators, where the sulphurets are all carefully separated and saved for chlorination; then to the amalgamating pans, and finally stowed away for future generations to get what they may out of it. About 45 tons are thus treated daily, and since the new mill has been running, it has not been found necessary to run every Sunday, so that the boys can have an occasional holiday. The mill is operated by a 125 horse-power turbine wheel, which receives power from the waters of the river. The works are under the skillful management of Mr. W. G. Groves.

The Ferguson Mine.—The Ferguson mine, on the Merced river, above the forks, and nearly opposite Reynolds' Cove, which was some years ago sold to an English company, has come into the possession of a new company, composed partly of the original owners. Under the able superintendence of Mr. Thomas Magee, active operations have been resumed, with a view to reopening the mine on an improved plan. The old works, in which the timbers have gone to decay, are in such bad condition from frequent caving that it has been concluded to run a new tunnel, 400 feet to strike the old tunnel. Five men are already employed upon it, and in the hands of our practical miners we feel assured the work will be vigorously prosecuted to a successful termination.

NEVADA.

Goon Pay.—Grass Valley *Union*, Sept. 13: We understand that Bagley & Hunter's claims, situated on Deer creek, just above Newtown, Rough and Ready township, are paying well. Eight men are employed on the claims, and the report is that last week $800 were taken out—$100 to each hand employed.

Eureka.—*Foothill Tidings*, Sept. 6: The clean-up last week was 325 ounces. Cross-cut No. 3 is in 339 feet, with the ground getting harder.

New York Bill had a crushing of 12 loads of rock this week, which gave a big result—an average of $160 to the load.

Homeward Bound.—North and south drifts in good ground; ledge looking well and of good size. The large pump, which has recently been put in, handles the water with ease.

Empire.—Ledge in No. 11 south is larger, but the ore is of low grade. Ledge in No. 8 south and No. 5 north is a little better quality. Other parts of the mine remain unchanged. Everything running well at mine and mill.

A strike is reported as taking place in a cross-cut of one of our old mines late this week. As it comes to us in the way of a report we can give it only as such, but the source of the rumor leads us to suppose there is something in it.

Machinery from one of our old mines has been purchased by the Godfrey company—sinking for gravel over on Alta hill,—and will be put up as a hoisting and pumping rig at once. The Godfrey people are not down to where they need machinery yet, but expect to be soon, and would be ready in time.

Gold in nice little chunks was recently panned out of the scattered gravel found over near the Union tunnel, on Warner's ranch. The boys interested in that tunnel are justified in concluding that if such prospects can be found in the gravel which was spilled over the rim-rock there should be something good when they drive in through the rock and reach the channel in its lowest bed. The rock through which they are running has of late become softer, so that better progress is being made and all the stockholders feel well.

Rich Ledge.—Grass Valley *Union*, Sept. 19: The Allison Ranch Franklin mine is showing a remarkably rich ledge. A great many "pannings" have been made of quartz taken out, and from $10 to $20 worth of gold to the pan is nothing uncommon. Not a single panning has been made but shows plenty of gold. Drifts are now being run, and the ledge is large and very rich. So far the indications are that the Allison Ranch Franklin is going to beat the old Allison Ranch mine, which produced millions of gold.

PLACER.

Mining Items.—Dutch Flat *Forum*, Sept. 14: In our last issue we inadvertently made an error. We stated that the Polar Star had finished fitting up and that water had been turned on the day previous; we should have said the Southern Cross. The Polar Star has been washing for several months. The Polar Star continues washing during the daytime. A partial clean-up in this claim was made last week with very encouraging results. The Southern Cross had the misfortune of plugging its incline last week, which has not yet been removed. It will probably be cleared in a few days ready for washing. These accident are unavoidable, and are to be expected in opening a new claim through a shaft or incline.

South Yuba Canal.—Mr. A. Hayward, the owner of the two claims mentioned, has recently bought the South Yuba canal, which will afford ample water for washing therein throughout the year. It will be necessary, however, to turn off the water for a few weeks to repair the flumes along the line of the ditch.

The Franklin and Lakamp claims are off making their final clean-up for the season, as is also the claim of the English company at Gold Run.

The Summerset, which has been washing nights only, and the Miami claim at Gold Run are still running, but as the water of the Yuba ditch is soon to be turned off, their washings for this season are drawing to a close.

The Yankee tunnel was advanced 50 feet last week, and the Baker shaft was sunk 10 feet.

Baker Claim.—It is the intention of the superintendent of the Cedar Creek company to have the tunnel completed to this point, the shaft sunk and the claim ready for washing with the first water that comes. He already has a crew of men laying the pipe and doing other work on the surface with this aim in view. This is quite an important measure, as it will enable the company to wash in their rich gravel that has not been drifted out or covered with the barren rock and clay slide encountered in the claims below, and from which it will undoubtedly derive an immense profit.

SAN BENITO.

Rich Strike of Quicksilver.—Hollister *Enterprise*, Sept. 16: We are informed by a gentleman down from San Benito that a regular bonanza of quicksilver ore has been struck at the San Benito mines, 50 miles southeast of Hollister. Last week the workmen struck a large body of rich ore in a tunnel 400 feet deep. They have already run through 12 feet of solid ore, pitching into a high mountain, and it still continues getting wider and richer as they go in. Those mines have been worked for some time past by M. Cody, the principal owner, who showed a world of pluck and perseverance in sticking to it under difficulties, and proving that patience and industry will have their reward. The ledge extends two miles along the San Benito river, and considerable ore has been extracted from shafts and tunnels all along the surface, and over 100 flasks of quicksilver smelted. The present deep tunnel has been run as a test to ascertain if the ledge was going down, and with the above satisfactory result. Those mines will prove a large item in the taxable resources of our county, as well as a benefit to the community generally. We understand that Ed. Breen, of San Juan, has recently become interested in them, and intends commencing immediately to erect the necessary furnaces; and judging from his business energy and ample means, he will make the enterprise a grand success. The owners have our best wishes.

Stayton Mines Sold.—The Stayton quicksilver mines, in the Coast Range, 12 miles northeast of Hollister, have been sold to a company of California capitalists, comprising John H. Moore and S. A. Bishop, San Jose; Wm. M. Lent, John F. Boyd, Wm. Willis and Mr. Harper, of San Francisco. The new proprietors have already commenced operations on the ground. The machinery for two or three large furnaces, costing in the aggregate $10,000, is on the way and hands are employed excavating the foundation for the works, the site of which is at the foot of the principal grade this side of Saytonville. The building of the furnaces will be pushed forward as rapidly as possible, after which the mines, both quicksilver and antimony, will be worked up to their fullest capacity. We have always had faith in the wealth and permanency of these mines, and frequently predicted that they would yet afford employment to hundreds of people and be a source of profit to their owners.

SISKIYOU.

The Empire.—Yreka *Journal*, Sept. 13: John Saxild, Jos. Lang and John D Arcy, who constitute part of the force engaged in opening the Empire quartz mine, near Humbug, report that they have run the new tunnel about 67 feet, and will run about 30 feet further to strike the ledge below the shaft, and thus obtain drainage, as well as a better chance to get out quartz. They found stringers from the main ledge which prospect good, one of them being about three feet thick. The company intend pushing operations towards a thorough prospect, and probably by next spring will put up a quartz mill.

SIERRA.

Keystone.—*Mountain Messenger*, Sept. 16: Superintendent Hughes is just rushing things at the Keystone mine. Since the water decreased so that they could handle it without difficulty, work in all parts of the mine has advanced with great rapidity, and the mill is steadily crushing the golden ore.

Left.—Mr. Frank Harland, for the past four years superintendent of the Sierra Buttes mine, has resigned his position and departed for the lower country. Mr. William Johns, who for a long time has had supervision of Plumas, Eureka and Sierra Buttes mines, is now at the Buttes, but has not, so far as we have learned, made any appointment to fill Mr. Harland's place.

Improvements.—The Bald Mountain mining company, of Forest City, is making extensive improvements. Large timber sheds are being erected, and a large lot of "T" rail is on the way, to be used in relaying the track in the main tunnel. A locomotive is expected about the 1st of October, which it is intended to use for drawing cars from the mine. We also understand that a water-blast is being put in the shaft for the purpose of more thoroughly ventilating the mine.

Adverse.—Adverse claims have been filed in the matter of patents to the Sierra Buttes mines.

Paying.—Good gravel has been struck above Loganville, in the Romany ravine, about 50 cents to the pan. Will take out this season $20,000.

Assessment.—The Iowa company have levied an assessment of $150 per share, and the Bald Mountain extension one and one-half cents per share.

Prospecting.—Two Portuguese prospecting companies at Howard's ravine, near Frenchman's ranch, are doing well. Another company above them are also prospecting.

TRINITY.

Better Prospects.—Trinity *Journal*, Sept. 16: Mr. Burns, the new superintendent of the McGillivray ditch and hydraulic mining company, informs us that some new ground recently opened prospects much better than any heretofore worked, and that the mine is now paying more than running expenses. Inasmuch as the property has been running its owners in debt for some time, the new discovery is very opportune, and will doubtless be fully appreciated by the stockholders.

Nevada.

EUREKA DISTRICT.

The Matamoras.—Eureka *Sentinel*, Sept. 15: The new owners of this valuable mining property have at present 16 men employed in and about their mine on Prospect mountain, building a dump, erecting a boarding-house and at work in the mine. They are pushing things vigorously, and will soon have their property in first-class shape. The mine is looking splendid, new developments being daily made, showing the close proximity of an extensive ore body. The furnace of the company is also giving a good account of itself, and the future of the Matemoras is most encouraging.

WARD DISTRICT.

The Martin White Co.—Cor. White Pine *News*, Sept. 13: The furnaces of the Martin White company started up about the 1st of September, with a good prospect of making a long and successful run. They have three coal kilns already in working order and three more in the course of construction, with a working capacity, when all in working order, of 10,000 bushels. They have contracted with Campton & McGill for 800 bushels per day for the next six months, which will insure running of at least one of the furnaces during that time, barring accidents. It is the intention of the company to run the Paymaster ore with that of the Defiance, in such proportion as will make the bullion average not less than $700 per ton in silver.

The grading for the company's mill, recently purchased by the Troy company, has already been completed, and it will be erected and put running order as soon as possible. There is plenty of ore for it when ready to operate, and a great deal of interest is being felt in its success.

The scarcity of money in the camp is perceptible in every department of business, and it makes things look blue when it is remembered that a long and perhaps severe winter will soon set in. Building for the present has had somewhat of a set-back, owing to the scarcity of lumber.

REESE RIVER DISTRICT.

Reese River Reveille, Sept. 14: Nearly all the miners in Austin now find employment. The Manhattan company employs a large number of them. The mines of Lander hill are reported to look better than ever before, and indications lead to the belief that there is enough high grade ore in sight to justify active operations for many months to come. A stranger perambulating our streets in the daytime would naturally think that Austin is a very dull camp, as few persons can be seen on the sidewalks. The reason of this is that almost every one is busy in the daytime, but when evening comes Main street presents a very lively appearance.

Bartlett Creek.—*Silver State*, Sept. 14: A fine specimen of ore from the Tom Green mine, at Bartlett Creek, has been received by Messrs. Grass & Harding. Two and a quarter tons of ore from the mine worked last week at the Florence mill produced $80 in gold bullion. The ore also contained considerable silver, but the amalgamating department of the mill was not arranged for saving it. The residents of Bartlett Creek express great faith in the future of the camp, and have concluded to stick by it until times mend.

CORNUCOPIA DISTRICT.

Leopard Bullion.—*Silver State*, Sept. 14: Five bars of bullion from the Leopard mine, at Cornucopia, was shipped from Carlin to San Francisco yesterday. From this the inference is that the Leopard mill, which was shut down for repairs the first of the month, is again in full blast.

LEWIS DISTRICT.

Battle Mountain Ore.—*Silver State*, Sept. 14: Two car loads of ore from Battle Mountain arrived at the Humboldt reduction works yesterday to be reduced into bullion. The ore is from Lewis district, and was shipped by J. W. McWilliams.

ELY DISTRICT.

Meadow Valley Mine.—Ploche *Record*, Sept. 12: We are pleased to learn that the machinery for this mine is in a very forward state and that there is no doubt that it will be finished and shipped in time to get it this season. The Risdon iron works are running their full force upon it, and sparing neither time nor money to get it finished. The pumping engine is the largest of the kind ever built, which has necessitated a complete set of new patterns and plans, involving a much longer time than originally contemplated. A somewhat similar style of engine was made by the Risdon iron works company for the Alta mine in Nevada, and which has proved the most successful one on the Comstock lead, and has opened a new era in pumping water. Some idea of the economy in fuel of the Alta engine may be gathered from the fact that a single 48 inch by 16 feet boiler runs easily this engine—27 inch initial cylinder and 40 inch compound cylinder—working a 14 inch pump from a depth of 600 feet, and a hoisting engine, 12x24, sinking at the rate of about 100 feet per month. Engineer Ames, who is superintending the new machinery, promises to beat even this figure. The water will be a god-send to our mills, and in that way more than pay for its pumping. We but reflect the sentiment of the camp when we say that the prospect justifies the outlay and will in the future amply recompense all for the chances they take. Let the ore in the Meadow Valley be sunk on and developed and every claim on the line will spring into life.

WASHOE DISTRICT.

California.—Gold Hill *News*, Sept. 14: Daily yield, 700 tons, from the regular ore sections of the 1500 and 1600-ft levels, which are showing finely as usual in all the ore breasts and stopes. The south drift at the 1600-ft level is in the richest kind of ore, showing improvement over last week. It is now a few feet south of cross-cut No. 4 on the 1500-ft level, making very good progress. Over 800 tons per day are now being hoisted through the C. & C. shaft, and the balance

through tbe Con. Virginia, Ophir and Gonld & Curry shafts. The new mill of tbe company has started into operation, and is crushing ore from the mine. At the 1400-ft level the work of retimbering, cleaning out and repairing of drifts and winzes goes ahead. The regular monthly dividend of $2 per share, aggregating $1,080,000, was declared last Friday. With the assistance of the C. & C. shaft, the hoisting capacity of tbs Oslifornia and Con. Virginia mines is increased to about 2,000 tons per day, which is liable to increase the bullion production considerably.

Con. Virginia.—Ths ore product is being largely increased and the Bscon snd Trench mills sre being started up on ores from tbis mine to-day. The hardness of the rock has retarded work at the 1550-ft station, but its enlargement and retimbering is about completed. The main shaft is in excellent working condition. The ore breasts and stopes are showing splendidly as usual, with numerous dividends in sight. The retimbering of the south drift at the 1400-ft level is progressing well. Tbs new California mill being now in operation, tbs mill of the Con. Virginia is once more crushing Consolidated ore. The C. & C shaft is now down sbout 100 feet below the 1500-ft level, and sinking is rather slow at present, owing to ths continued strong flow of water encountered.

Solid Silver.—Ths old Washoe mins on Cedar bill having been bought by a company of San Francisco capitalists, is now known as tbs Solid Silver, and under tbe new management the mins is being practically developed. It is situated north of ths old Sacramento mins on Cedar bill. The old tunnel, 1,250 feet in length, whicb was run in ths early times, they sre now cleaning out and repairing, and propose cross-cutting from it at various points into ths lead which runs parallel with tbe tunnel. Tbe work is being done under tbe supervision of John Steele, well known as one of tbe most experienced of miners in tbe Cedar Hill section.

Julia.—The drift east at the 1800-ft level is in 175 feet, and advancing at the rate of 40 feet per month, through a soft porphyry and clay formation, with frequent seams of quartz; nothing definite as yet. The soutb drift on tbe same level is in soft ledge matter, abont one-half quartz, and advancing at a very good rate. The water is slacking off considerably.

Gould & Curry.—Cleaning out and repairing the main jlncline below the 1700-ft level preparatory to sinking deeper. The retimbering of the main shaft goes steadily abead; ground soft and troublesome. The excavation for the new surface machinery is completed and tbe masonry foundation being put in.

Aureola.—Sinking the new working shaft is making excellent progress. Have been building a road during tbe week from the Virginia and Truckee railroad to tbe mine, which will bo completed this evening.

Florida.—Excellent progress is being made sinking the main sbaft deeper, to open the 600-ft level. The flow of water from the drifts constantly decreases and is handled with perfect ease by the very ample pumping arrangements, which are inferior to none on the Comstock.

North Con. Virginia.—The new surface works are all complete and properly housed in, the pump connections made, bobs and tanks in the shaft all right, and in the course of a day or two the machinery will be started into practical and regular operation.

Ophir.—Daily yield, 300 tons of ore, principally from the 1600-ft level. All the ore stopes and breasts continue looking and promising well and the cross-cut west, near the Mexican line, is running in low grade ore. Tbe ore deposit east at the 1600 ft level is showing richer than ever, and promises to be an extensive and valuable development.

Bullion.—Owing to the breakage of the pumpengine shaft at the Imperial, allowing the lower levels to be flooded and the air communication sbut off, nothing is being done at present at the 2000-ft level.

Silver Hill.—Sinking the main incline deeper is progressing finely in favorable working ground. No increase of water. Pumping machinery working first-rate.

Cosmopolitan.—The winze below tbe main tunnel or adit is now down 43 feet, in good pay ore all the way, assaying about $25 to the ton, of which but a small proportion is silver, nearly all being gold. Tbe vein is over three feet wide.

West Belcher.—A large amount of excellent pay ore is developed by the upraise above the 300-ft level, as well as by the main working drift at that level. The Vivian mill is to be kept running on ore from tbis mine, and it will be started as it before long. Other mills will also be put to work as fast as required. Plenty of ore on the dump as well as in the mine.

Amazon & Glasgow.—Work in the combination sbaft is discontinued for the present until tbe new machinery is in place. The hoisting tanks control the water, the flow being quite heavy from the ore vein developed at the 400-ft level.

Baltimore ann American Flat.—The station and pump at the 1450-ft level being completed, drifting at that level for the ledge is commenced.

Savage.—Tbe new and powerful pump is working away with the most assiduous industry, and has already reduced the water nearly 100 feet. Tbe incline is found to be somewhat caved and needing repairs.

Imperial Con.—Tbe heavy crank of the pump engine broke short off last Monday, causing a sudden suspension of operations. The hotating tanks were inadequate to the task of getting the water out, consequently it slowly gained and arose until tue 2000-ft level, as well as the winzes and drifts below, were completely submerged. As soon as possible the damage will be repaired.

Dayton.—Good work is being done sinking the main incline and in the development of tbe 700-ft level. At the 500 ft level everything is in good working order and cross-cutting is commenced. The cross-cut at the 300-ft level shows fine looking vein matter in its face and the connections for the new air compressor are being put in.

Wann.—Total deptb of shaft, 600 feet this morning. Material at bottom bard, but blasting and working favorably. Making one set of timbers per day. Water has increased some little.

Hale & Norcross.—Tbe heavy new pumping machinery is working finely and bas reduced the water nearly 100 feet. The main incline is found to be all right, with no caving or any extensive repairs found necessary to be made. The lower levels will be arrived at before long.

Sutro Tunnel.—Total length of tunnel last evening 14,815 feet. Having passed the heavy water fissure mentioned at last report, the face is now in bard, dry material again, composed of hard porphyry, with seams of clay and quartz. It blasts and works well, and tbe Ingersoll drills are doing good work in it.

Chollar-Potosi.—Daily yield, 90 tons, from the old ore producing section. Average assays from car samples, $30 to the ton.

Crown Point.—Daily yield, about 60 tons, keeping the Rhode Island mill running steadily. Main incline down below the 1800-ft station.

Caledonia.—An additional boiler and new gearing have lately been procured, work bas again been started up, and will be prosecuted henceforth with all energy, night and day.

Herald.—Incline still in the same very promising ore strata reported last week. Some of this ore gives very rich assays, and the prospect for developing a fine paying ore body is very good. Present depth of incline, 147 feet.

Mint.—Sinking tbe shaft below the 1200-ft station is resumed under the most favorable auspices, and the 1200-ft station is well opened.

Overman.—Shaft sinking at the usual good rate of progress. North and south drifts at the 1200-ft level both sbowing well in the face; more quartz coming in, streaks of which give low assays.

Baltic Consolidated.—Better and larger streaks of low grade ore are coming in at the face of tbe main west drift, and the nature of the material is soft and easy to work, allowing of a good rate of advancement.

New York.—Ths work of excavating for the pump tanks, and putting the sbaft in order for active business goes ahead livsly with three shifts of hands.

Justice.—Daily yield, 125 tons. The upper ore producing levels are showing more and bettsr ore in the stopes snd breasts, and another mill is to be put on forthwith. The cross-cuts at tbe 800-ft level ars developing and opening out the ore body in good style, and at tbe 1000-ft level ths main drift southward is advancing steadily in good veiu formatiou, ehowing more quartz stringers.

Yellow Jacket.—South drift at the 2040-ft level advancing in porphyry and quartz. Cross-cut east from this drift shows considerable improvement; good streaks of ore coming in which assay well.

Beach & Paxton.—Good prospecting and development work being done at the second and third levels. Some good streaks and bunches of ors are met with in the west drift at the third level.

Mexican.—Northwest drift at the 1465-ft level showing well. It is in fine looking vein matter with bunches and seams of low grade ors, which improve with advancement.

Kossuth.—Cross-cut at the 500-ft level sbowing well, in fine veiu matter, with streaks of good ore.

Alpha.—Owing to the flooding of the Imperial lower levels, nothing is being done at the 2000-ft level.

Best & Belcher.—Main drift south steadily advancing, with its face in fine looking vein matter, principally quartz.

Rock Island.—The tank and pump arrangements have been a success in reducing tbs water which flooded tbe mine, and work at the 850-ft level is being resumed.

Melbourne.—A good seam of promising quartz appears in the bottom of the shaft.

North Carson.—The ore vein developed at tbe 800-ft level is showing finely, and its bullion producing capacities will soon be practically demonstrated.

Globe Con.—Work in the mine is started up, and everything now being in good shade, practical development is the order of the day.

Utah.—Bottom of shaft in favorable sinking ground and no increase of water.

Potosi.—Tbe repairs to tbe main drift being about completed, sinking the winze below the north drift will be resumed forthwith.

Twin Peaks.—The road to the mine will be completed this week, and before next report sinking the new shaft will be resumed.

Superior.—Shaft freed from water and drifting west going ahead from bottom of shaft for the ledge.

Tahoe.—Fine looking stringers of quartz are met with in tho bottom of the shaft.

Belcher.—Daily yield, 350 tons, as usual, the old ore producing sections holding out pretty well.

Niagara.—Rock at tbe bottom of incline a little softer than it was last week. No increase of water.

Prospect.—Drifting west at the 400-ft level at a lively rate toward the ledge. Water decreasing.

Mitchell.—Bottom of winze continues its excellent sbowing of vein matter with streaks of low grade ore.

Continued on Page 212.

Pacific Coast Productions.

At the late Mechanics' fair the *Journal of Commerce* made a display of Pacific coast productions of various kinds. In addition to this there was errenged in the center of the display a revolving octegon, in the sides of which were printed statistical matter relative to commerce and manufactures of San Francisco, products of the coast, etc. Tbese figures will be found of interest end value and we give them below. The list of newspapers that heve had birth in our city is of special interestto meny of our readers, and we accordingly publish it with other statistical tables given.

COMMERCE OF SAN FRANCISCO.

Length of Railroads	1,500 miles.
Imports Merchandise, Foreign and Domestic. 1875	$81,000,000
Exports Merchandise, Foreign and Domestic, 1875	45,000,000
Coin and Bullion Exports	42,358,096
Imports, 27 years	1,208,000,000
Exports of Treasure by Sea, 27 years	1,112,000,000
Exports of Merchandise by Sea, 27 years	400,000,000
Vessels arrived fm Foreign Ports, 1875, 519; Tounage	609,188
Vessels departed to Foreign Ports, 1875, 589; Tounage	702,736
Dry Goods imported 1875	$25,000,000
Lumber received	306,000,000 feet.
Pig Iron imported, 1875	38,534 tons.
All Iron	50,000 tons.
Sugar	51,056,545 lbs.
Coffee	11,651,341 lbs.
Tea	19,872,229 lbs.
Rice	47,995,564 lbs.
Bags	12,550,000
Tinplate	76,695 boxes.
Whisky	13,739 barrels.
Kerosene	1,993,020 gallons.
Hog Products	12,000,000 lbs.
Nails	259,749 kegs.

SAN FRANCISCO: PAST AND PRESENT.

	POPULATION.
San Francisco (Yerba Buena), 1837	100
San Francisco, Spring of 1849	1,000
San Francisco of to day	275,000

CALIFORNIA PRODUCTIONS, ETC., 1876.
(Population, 900,000.)

Precious Metals	$25,000,000
Wheat—27,000,000 ctls, worth	40,000,000
Other Cereals	13,000,000
Wool—50,000,000 lbs, worth	6,250,000
Quicksilver—66,000 flasks, worth	3,000,000
Wine 10,000,000 galls, worth	3,000,000
Base Metals	2,000,000
Fruit	3,000,000
Dairy Products	3,500,000
Coal—125,000 tons, worth	1,000,000
Miscellaneous Products	1,000,000
Salt	12,000 tons.
Raisins	25,000 bxs.
Beet Sugar	3,000,000 lbs.
Tobacco	1,500,000 lbs.
Lumber	440,000,000 feet.
Manufactures	$76,000,000
Stock Sales, 1875	310,000,000
Real Estate Sales, 1875	12,383,752
Banking Capital	120,000,000

MANUFACTURES OF SAN FRANCISCO, 1875.
(Population, 275,000.)

Grand Total	$63,000,000
Value of Raw Material	27,000,000
Wages Paid	11,250,000
Hands Employed, 25,000 (Chinese, 10,800).	
Iron and Metals	9,800,000
Iron Alone	6,500,000
Lumber, all ite branches	8,000,000
Furniture	2,000,000
Leather, all its branches	6,000,000
do do State	7,500,000
Boots and Shoes	4,000,000
Woolen Goods	2,000,000
do do State	4,000,000
Liquors	2,500,000
Cigars—113,233,330	5,000,000
Refined Sugar and Syrup	6,000,000
Flouring Mills	3,000,000
Canned Goods	1,250,000
Glassware	230,000

PRINCIPAL PRODUCTS OF THE COAST SINCE 1848.

Gold and Silver	$1,763,000,000
Gold	1,450,000,000
Silver	313,000,000
Wheat—220,000,000 ctls, worth	360,000,000
Wool—321,000,000 lbs, worth	63,000,000
Quicksilver—500,000 flasks, worth	20,000,000
Wine—30,000,000 gallons, worth	20,000,000
Coal—2,700,000 tons, worth	23,000,000
Coal, Imported—3,000,000 tons, worth	30,000,000
Lumber—7,000,000,000 feet, worth	70,000,000

PACIFIC COAST PRODUCTS, 1876.
(Population, 1,500,000.)

Precious Metals	$100,000,000
Gold	57,000,000
Silver	43,000,000
Wheat—32,050,000 ctls, worth	47,500,000
Other Cereals	15,000,000
Wool—55,000,000 lbs, worth	8,000,000
Quicksilver—66,000 flasks, worth	3,000,000
Canned Salmon—401,000 cs, worth	2,100,000
Wine—10,000,000 galls, worth	3,000,000
Lead, Copper, etc, worth	3,000,000
Fruit	3,500,000
Dairy Products	4,500,000
Coal—250,000 tons, worth	2,000,000
Miscellaneous Products	1,500,000
Salt	16,000 tons.
Raisins	25,000 bxs.
Iron	1,300 tons.
Manufactures	$107,000,000
Pacific Cod Fishery, 1875	508,859 Cod.
Whaling Catch, 1875—Oil	17,805 barrels.
Boue	144,355 lbs.
Ivory	87,154 lbs.
Lumber	700,000,000 feet.
Beet Sugar	3,000,000 lbs.
Tobacco	1,500,000 lbs.

THE NEWSPAPERS OF SAN FRANCISCO.
When and hy Whom Founded.

Alta California, started as the Oalifornta Star, Samuel Brannan, January 9th, 1847.
The Pacific, Rev. J. W. Douglass & J. A. Benton, 1851.
California Christian Advocate, M. E. Church, 1851.
California Demokrat, Dr. Ferdinand Von Leehr, 1852.
Golden Era, J. McDonough Foard & R. M. Daggett, '52.
Courrier De San Francisco, formorly Echo du Pacifique, E. Derbec, 1852.
California Spirit of the Times, C. M. Cbase & Co., 1854.
California Farmer, John F. Morse and J. L. L. F. Warren, 1854.
Evening Bulletin, James King of William, C. O. Gerberding & Co., 1855.
Morning Call, Association of Practtcal Printers, 1856.
Pacific Methodist, M. E. Church (South), 1856.
The Evangel, J. L. Schuck, 1856.
The Hebrew Observer, Rev. Dr. J. Eckmann, 1856.
S. F. News Letter, Frederick Marrtott, 1856.
The Monitor, P. J. Thomas, 1857.
La Voce Del Popolo, G. B. Cevasco, 1859,
Abend Post, A. J. Lafontsine & Co., 1859.
Mining and Scientific Press, Geo. H. Winslow, 1860.
Weekly Rescue, Grand Lodge of Good Templars, 1862.
Stock Report, Richard Wheeler, 1863.
The Hebrew, Philo Jacoby, 1863.
La Voz del Nuevo Mundo, Felipe Ficrro, 1864.
Pacific Appeal, Peter Anderson, 1864.
S. F. Chronicle, Chas. De Young, 1865.
New Age, W. W. Broughton, 1865.
Examiner, Capt. W. S. Moss, 1865.
The Guide, D. M. Bishop & Co., 1865.
S. F. Elevator, P. A. Bell, 1865.
Figaro, J. P. Bogardus, 1865.
Commercial Herald, John H. Carmany & Co., 1867.
Real Estate Circular, Chas. D. Carter, 1867.
The Occident, Synod of Pacific, 1868.
California Journal und Sountags Gast, Cohnbeim & Burckhardt, 1870.
Evening Post, H George, W. M. Hinton & Co., 1871.
Pacific Rural Press, Dewey & Co., 1871.
Coast Review, L. B. & J. G. Edwards, 1871.
Humorist, Max Cohnbeim, 1871.
Wine Dealers' Gazette, M. S. Whiting, 1871.
Le Petit Journal, G. Francfort, 1871.
S. F. Journal of Commerce, W. H. Murray, 1872.
Resources of Calfornia, J. P. H. Wentworth, 1872.
Pac Coast Wine and Liquor Herald, Carmany & Co., '75.
Statistician, L. P. McCarty, 1875.
Commercial News Shipping List, Bates & Wooda, '75.
Grocer Country Merchant, Penoyer & Holloway, 1875.
The Stock Exchange, Wm. P. Harrison and R. S. Lawrence, 1875.
The Pacific Life, Shaw & Van Aruam, 1876.

Factory Accments.—In England, in the half-year ending the 30th of April, 1876, factory accidents caused the death of 128 persons, namely, 91 men end one woman, 27 young persons (all males except two), and eight male children and one femele child. The eccidents not fatel were serions enough to require amputetion of a limb or part of a limb in 488 instances, but in 403 of these the loss was only of pert of the hend; there were also 260 fractures of limbe or bones, 197 instances of injuries to head or face, end 2,193 other injuries sufficient to prevent a return to work within the next 48 hours. The totel, including the 128 killed, is 3,266 persons injured—2,497 meles end 769 females. Cleaning machinery in motion is described by a subinspector es "continuing to lead to very numerous and peinful mutilations."

Life on the Earth.—Prof. P. G. Tait, of the University of Edinburgh, in his lectnres on recent advences in pbysical scieuce, lately published, considers the qnestion how long life hes been possible on the earth. He concludes that 10,000,000 years is "the utmost that cen be allowed from the physical point of view for all the chenges thet have taken plece on the earth's surface since vegeteble life of the lowest known form was cepable of existing there." Opposed to this is the view of the most eminent modern geologists, that et leest 300,000,000 yeers have passed eway since terrestriel life begen.

Important Improvement in Boiler Construction.—In some of the leading boiler works in Mencbester, England, the longitudinel riveted seems heve been abolished, es ceusing e weakness exactly in thet direction where the greatest strein ceuses an especial danger. The pletes are united by soldering, with the help of a gas furnace and special mechinery, so es to make their length equel to the circumferences of the boiler.

The Engineer.

A Great Work Proposed at Manchester.

Some extensive navigation improvements ar proposed for Manchester, England. Mr. Ham ilton Fulton has projected a scheme for a ship canal from the city to the sea. *Iron* says this is the revivel of an old project in a new and more practical form. Manchester is at present, for custom purposes, a port; but the canals connecting it with the sea vie the Mersey are navigable only by berges. Mr. Fulton would create a direct outlet for large vessels by utilizing the channel of the Irwell. This river flows through the heart of Manchester in a junction with the Mersey. It is proposed to widen the channel from Manchester to Warrington, and to excavate it to a sufficient depth for vessels of 4,000 tons. The Irwell has an extraordinary sinuous course throughout its length, running within a short space towards ell points of the compass. Those corners are to be cut off, so to speak; and, of course, the additional advantage will follow that the channel will be shortened as well as straightened. Nine miles will thus be saved in distance.

From Manchester to Warrington, then, it is proposed to make use of existing waterways, widening, deepening and streightening them, and dispensing altogether with locks. From Warrington, which is on the upper tidal portion of the Mersey, to the feirwey at Liverpool it is proposed to make a direct and permanently defined low water channel, by which the ebb and flow of the tide would be kept to one course. It is calculated that by this means the level of low water mark would be much depressed and the range of tide would be consequently augmented. A greatly increased navigable depth would thereby be obtained, both before and after high water. The low water channel would be formed by constructing, in carefully selected positions, jetties, parallel to its proposed course, so as to guide the current at and about the time of low water in the desired direction. Where the bottom of the channel consists of sand, mud or clay, the scour of the old and flood current is expected to be sufficient to prevent deposit, and also to excavate the bed to the proper depth. When completed, the channel would be buoyed and lighted, so that ships might pass, if necessary, at night.

The time taken in the passage over the canal can only be calculated at present on unoertain data. Mr. Fulton, however, says that ships arriving at Liverpool about three hours before high water might reach Manchester during the same tide, and *vice versa*. The calculation apparently rests on the supposition that steem tugs would be employed to tow sailing vessels up and down. Mr. Fulton's scheme includes the provision of ample wherves and werehouse accommodation at Manchester and Warrington. In Manchester there would be a long line of quay on each side of the river, enabling vessels to lie alongside to load or unload. It is estimated that the minimum depth of the canal at high water neap tides would be 24 feet. The maximum depth of cutting from the level of the proposed quay walls to the present surface of the ground would be 45 feet. The width of the channel between the quey walls at Manchester would be 450 feet, so that there would be room for ships to turn round. The ordinary width of the bottom of the channel would be 72 feet.

The estimated outlay for the construction of the canal is £3,500,000. It is thought that the amount of traffic on the Manchester tidal navigation could not be less than 4,000,000 tons outwards and inwards. An average toll of three-quarter pence per mile, or two shillings a ton for the whole distance, would give £400,000 a year on the 4,000,000 tons. Deducting 33 per cent. as the probable amount of working expenses, there would be £268,000, or nearly 7¾ per cent. on the total estimated outlay.

Boiler Making on the Clyde.

Boiler making on the Clyde, the great shipbuilding center of Great Britain, has arrived at much perfection. *Iron* says that engineering talent, which was formerly directed almost solely to the careful working out of all the details of the engine, having now been applied to corresponding details of boiler construction, the consequence is that boilers are now very generally made upon sound principles. The shell plates are all planed on the edges, and the rivet holes are as a rule punched from a self-acting table worked from the punching machine, thereby insuring the nicest equality of "pitch" of the holes. Drilling is only practised in those cases in which that operation is made a specific condition in the specifications, the Clyde engineers as a body having as yet no great faith in the superiority of drilled rivet holes over those that are punched.

The riveting of these large boiler shells is entirely done by machine, the superiority in every respect of machine riveting over that done by hand being very much more evident now than when boiler plates of three-eighths to seven-sixteenths of an inch were the rule. The machine generally employed is that known as "Cook's patent steam riveting machine," of which Mr. Robert Harvey, of Park Grove iron works, Glasgow, is joint inventor, and he, we believe, all along been the sole maker. It has for a number of years been at work in many parts of the world. There are as many as seven examples of this machine in the works

of one private firm, and they are to be found in the dockyards of the Chinese and various other foreign governments, as also in those of our own country. At present there are nearly 140 made and in use. The machine is usually constructed as a riveter only, but it is also made as a punching, shearing and riveting machine. Great economy in time is the result of using this very substantial, yet ingenious and simple piece of mechanism. In punching, for example, 30 holes, 11-16ths of an inch diameter, through a seven-sixteenth inch plate, can be made in one minute; and shearing can be done quite as easily and exactly as may be desired, the attendant having as complete control over the machine as the tailor has in cutting any textile fabric with his shears. From eight to 10 rivets may be put in and finished in one minute, whereas by hand work from two to three minutes are required to finish a single rivet. Of course the operations which can be performed by the combined machine can only be done one at a time. The closing-up effected by Cook's riveter is remarkably complete and perfect, the solidity of some of the planed sections through the rivets being similar in appearance to solid iron.

The Isthmus Canal.

It appears, from dispatches received during the week from Washington, that there is a prospect of our government joining with the government of Nicaragua to secure a highway between the oceans. We do not know how much of truth there may be in these dispatches, but we give the information for what it may be worth. The Associated Press telegraphs as follows: "The arrival of Don Emelio Genard, the accredited Minister from Nicaragua to this country, is anticipated with some interest by those who have devoted much time and attention to this work. On his return to Washington, negotiations will be entered into by our government and that of Nicaragua looking to the construction of the canal, and treaties will be proposed to the principal foreign powers upon the general basis of the Clayton-Bulwer treaty of 1850, guaranteeing neutrality of the canal, etc. Officers of the government, who have been closely connected with surveys for the ship canal, express the opinion that an undertaking of such magnitude could not be constructed by any private company of individuals, no matter how wealthy and well known, from the fact that many years must be occupied in the work, and it would require a capital of nearly $100,000,000 to complete it. The estimated cost is $65,722,137, but several practical engineers who have examined the route express the opinion that the numerous obstacles to be encountered will increase the cost to nearly the first named sum. At least five years of hard work will be required to complete the canal, and should it be constructed under the contract of the leading governments, it is believed that the work would not be delayed for want of funds to prosecute it. The total length of the canal by the Nicaragua route will be about 61¾ miles. To this is to be added 63 miles of slack-water navigation by way of San Juan river, and 56 miles across Lake Nicaragua. The proposed canal will have 10 locks in its western division, including five locks at Brito, on the Pacific coast, to admit ships at any stage of the tide, each lock having a lift of about ten feet. In the eastern division, between Greytown and the mouth of the San Juan river, seven locks will be required. From the month of the San Carlos river to Lake Nicaragua, the navigation of San Juan river is entirely practicable, with the aid of three short sections of canal, each having one lock."

This is the announcement. The estimate which is placed upon the cost of this Nicaragua route is only one-third as great as the amounts demanded for the building of a canal by the other proposed routes, notwithstanding the fact that it is nearly twice as long. The San Blas route calls for but thirty-five miles of canal, and the line by the river Atrato is similar in length; the cost of either of these lines is placed by Trautwine, the engineer of the Panama railroad in 1850, at three hundred million dollars. These short lines, although they do away with the necessity for locks except at tide water, involve a great deal of tunneling and rock work, which makes their cost almost fabulous. If the Nicaragua route can be proved as cheap as stated in the above dispatch it will of course be the line to follow. We await more information on the subject.

ANOTHER BRIDGE ACROSS THE MISSISSIPPI.—At a meeting of Chicago and Clinton capitalists, at Clinton, Iowa, August 4th, a company was formed to construct a pontoon railway and wagon bridge across the Mississippi, under the act of Congress passed two years ago. The bridge is to be similar to the one at McGregor. There will be $100,000 stock; nearly that amount is already taken. Engineer J. E. Blunt, of Chicago, is engaged to make surveys at once and locate the bridge. It is expected to build it within the next few months. The bridge, besides affording wagon way across the river here, will give the Prophettown branch of the Burlington railway and the Western Union railway entrance to the city, previously denied by the Northwestern railway company, controlling the present bridge.

AMERICAN CREMATION.—A citizen of Washington, Penn., has built a large stone house on a hill for the reception of dead bodies, and a furnace scientifically constructed, in which they are to be burned. He has given strict injunctions to his executors that his own body be burned in the furnace.

GOOD HEALTH.

Dr. W. W. Hall.

Last spring we made a brief mention of the death of Dr. W. W. Hall. He was the founder and editor of *Hall's Journal of Health*, and has, we believe, done more valuable work in instructing the people in the principles of health maintaining than any other writer on hygiene. Our columns have been so frequently enriched by his writings that we have been at considerable pains to secure a portrait for publication, knowing that many of our readers would regard him as an old friend and be gratified to look upon his features. In connection with the portrait we print a sketch of Dr. Hall, published by the *Journal of Health* on the occasion of his death:

During 30 years he had not been ill a day. He had nearly attained his three score and ten years. In spite of a naturally frail physical organization, he might have attained an additional score of years. But few of the readers of the *Journal of Health* had ever seen the man whose name for a quarter of a century was a household word in thousands of intelligent families. Any impressions in regard to the personal appearance of Dr. Hall, based upon his strong and vigorous style as a writer, are likely to be erroneous. In stature he did not exceed five feet and a half, and he was quite slender. In manners he was modest and unobtrusive, of pleasing address, and musical, earnest voice, which added force to his reasoning.

His death was instantaneous, as he had always foretold and desired. That it was occasioned by overwork cannot be doubted. His one and only diesipation was labor. It was no unusual thing for him to labor in his office for 18 hours of the 24. He took little exercise, be-

Truly Yours
W. W. Hall

cause he had, or thought he had, no time to indulge in it. He achieved results because he labored untiringly. His published volumes number about 30, exclusive of the 20 volumes of the *Journal*, which he edited without assistance. He was an able counsellor in matters pertaining to health, but failed to live according to the precepts which he uttered. Like other guide-boards, he pointed the way through pleasant paths in which he never walked.

The writings of Dr. Hall have attained great popularity. His books have sold to the extent of hundreds of thousands, but he regarded the *Journal of Health* as his great life work. It was the first and most successful effort ever made in any country to establish a journal devoted to instructing the people so to live as to attain the largest measure of health and happiness.

Dr. Hall's last book bore the title "How to Live Long," and was a series of maxims, the observance of which on his part would probably have tended to prolong his life for many years. The constant violation of the very laws which he so nobly expounded unquestionably accounts for his sudden taking off.

Dr. Hall had a very extensive acquaintance throughout the country, and his unexpected demise will be widely and sincerely mourned. Upon none will the loss fall more heavily than upon his coadjutors in the management of the *Journal*, upon whom the active labor of its publication long since devolved, and who will continue it in accordance with its founder's frequently expressed wish.

POISONOUS RED CARPETS.—German industry has supplied commerce with carpets of a fiery red color, which owe their beautiful shades to a coloring matter which is known under the name of Vienna lake, rose lake, etc. These carpets are very poisonous, since chemical analysis has demonstrated the presence of arsenious acid; once in the proportion of 1.96 per cent., another time of 2.49 per cent.—*Il Medico di Casa.*

Typhus Communicated by Vaccination.

In the commune of Campamarone there is an institution for young ladies under the charge of the Sisters of Charity, which contains 130 young girls. The girls are divided into three classes—large, medium and small, and these are separated from each other. One of the boarders was recently attacked by variola, and Dr. Parodi, the house physician, thought proper to vacciuate the others to prevent an epidemic. He commenced with the older ones and vaccinated 50. Ten of these were successful. Three weeks later 34 of those who were unsuccessfully vacciuated fell sick at nearly the same time. All were attacked by typhus and three died. The sanitary condition before the epidemic had been excellent, and the regimen was very good.

The virus used was humanized, and Dr. Domenica Bomba, who makes the report, does not doubt that it was the vehicle of the infection. He believes that the 10 successfully vaccinated cases escaped the epidemic because the typhus virus and the vaccine mutually neutralized each other. It was impossible for one of them to make its explosion without annihilating the other.—*La Nuova Liguria and Le Progres Med.*

USEFUL INFORMATION.

To Clean Oil Paintings.

Pettenkofer of Munich discovered the process for cleaning oil pictures, and was rewarded by the king of Bavaria with a gift of 100,000 francs. Wash the picture gently, if it is dirty on the surface, with water and a sponge, and wipe quite dry with a soft cloth. Then take a wad of cotton wool in each hand, one wet with spirits of turpentine and one dry, and gently rub the surface, a bit at a time, with the wet cotton, and dry it with the other, changing the cotton as often as it gets dirty. Then get a box or tray made of wood, or cardboard for very small pictures, a little larger than the stretching frame and about three inches and a half deep, with no cover. On the bottom, inside, place a layer of cotton wool or coarse blotting paper, half an inch thick or less, and fasten it down with tacks or cross-strings, so that it will remain in place when the box is inverted. Lay the picture on the floor or on a table, face upward; saturate the cotton or paper with strong alcohol, making it quite wet, but not so wet as to drip; and then turn the box upside down and place it over the picture. Being a little larger than the picture each way the box will not touch it, but will rest with its edges on the table or floor. The fumes of the alcohol will dissolve the varnish, penetrate through the old coats of it, and clarify the whole. After a quarter of an hour it is well to raise the box a little, and make sure that the paper or cotton does not touch the picture, and that the spirit is not dripping or running down. The box is to be replaced and left for about an hour. When it is lifted off again, if the surface be as soft and even and the varnish as clear as if just applied, the operation is finished. If parts are still rough or clouded, the spirits should be renewed and the box put on again for half an hour or an hour more, and then the picture may be left to dry like any newly varnished one; and may be stood up while drying, as less likely to collect dust.

TO PREVENT DAMP FROM NORTH WALLS.—North walls are frequently damp from the absence of the drying effect of the sun; this defect may however be remedied by allowing ivy to grow over them. It acts both by preventing the access of rain, and by the rootlets absorbing moisture from the wall. In very exposed situations the rain is frequently driven with such violence against the walls, as to penetrate through them, although the brick-work be of considerable thickness. This evil may be obviated by dissolving three-quarters of a pound of mottled soap in one gallon of boiling water, and spreading the hot solution steadily with a brush, over the outer surface of the brick-work, taking care that it does not lather. This is to be allowed to dry 24 hours, when a solution formed of a quarter of a pound of alum dissolved in two gallons of water, is to be applied in a similar manner over the coating of soap. The soap and alum mutually decompose each other, and form an insoluble varnish which the rain is unable to penetrate. The operation should be performed in dry, settled weather.

CHLORINE OF LEAD AS A DEODORIZER.—Dr. Goolden, in the London *Lancet*, directs attention to the great value of chloride of lead as a deodorizer. He prepares it by dissolving half a drachm of nitrate of lead in a pint or more of boiling water, and pouring the solution into a bucketful of water in which two drachms of chloride of sodium have been dissolved. When the sediment has subsided, the clear supernatant fluid is a saturated solution of chloride of lead. Dr. Goolden says that a cloth dipped in this solution, and hung up in a room, will instantly sweeten a fetid atmosphere; or, if the solution be thrown down a sink, water closet, or drain, or over a heap of dung or refuse, a like result will ensue. In this way he disinfected a house in which a drain had burst, some stables, and also a large ship. In the last case the bilge water was exceedingly offensive. He merely dissolved half an ounce of nitrate of lead in a bucket of boiling fresh water and had it thrown down the bilge when the ship was rolling slightly. The effect was the instantaneous disappearance of all smell.

Thoughts about Paint.

A writer in the *Hub* arrives at the following conclusion: Wood is a porous substance, subject to change by atmospheric effects, such as dampness, heat, cold, etc. Paint is designed to protect the wood from these effects, and to improve the appearance of the article painted, by giving it both color and smoothness. To be durable, the first coat should unite with the wood, by grasping, as it were, the fibers, or penetrating into the pores, filling them, thereby sustaining itself and the subsequent coats applied over it, while at the same time it should be composed of materials to make it somewhat pliable, to follow any movement of the wood caused by shrinkage or by jarring or by any other slight disturbance—a quality which might be called elasticity.

The drying of paint is not caused, as many suppose, by the evaporation of its liquids; a portion only of these evaporate, while the oils oxidize—that is, the oils absorb oxygen from the atmosphere, and are converted into gums or resins, binding the particles of pigment together. This transformation of the oils into resins or gums may be hastened by the addition of siccatives or dryers, or by a partial oxidation of the oil by boiling; but just in proportion as this drying quality is given, will the elasticity or toughness of the paint be destroyed.

Boiling oil to partially oxidize it destroys one of its valuable qualities—namely, penetrativeness, and the paint mixed with it consequently has a tendency to dry on the surface of the wood, without entering the pores to secure a permanent foothold.

WATERING PLANTS IN SUNSHINE.—Liebig was the first to discover and prove the presence of nitric acid and of ammonia in the air and the water. From the fact that the contact of atmospheric air, hydrogen and the electric spark produces nitric acid, he inferred that the same process repeated on a large scale by the effect of lightning upon the wet atmosphere—i. e., by every thunder storm—must produce the same result; and the analysis of rain water showed that it really contained a certain amount of nitric acid. The quantity of nitric acid was found to be greater when the experiment was made in the day-time than when made in the night, and a particularly large percentage of the acid was obtained from water which had dripped in full sunshine from the green leaves of a tree. As we all know, a rainfall happening during strong sunshine is considered to be injurious to vegetation, and especially to the development of the green leaves, which often have a stained and seemingly burned appearance afterward. We also know that experienced gardeners, although they can give no theoretical reason for it, discourage the watering of flower-beds during the sunshine. It must be inferred from these facts that the falling rain drops, when shone upon directly by the rays of the sun, exercise a pernicious influence upon vegetation; and we may suppose, although there is as yet no positive proof of it, that the cause of this is the formation of nitric acid in the water. It would be interesting to see in this case, as in many others, a mere empirical observation confirmed by the development of scientific knowledge.

SALT WOOD.—It is a curious fact that in the salt mines of Poland and Hungary the galleries are supported by wooden pillars, which are found to last unimpaired for ages, in consequence of being impregnated with the salt, while pillars of brick and stone, used for the same purpose, crumble away in a short time by the decay of their mortar. It is also found that wooden piles driven into the mud of salt flats and marshes last for an unlimited time, and are used for the foundation of brick and stone edifices; and the practice of docking timber by immersing it for some time in sea water after it has been seasoned, is generally admited to be promotive of its durability. There are some experiments which appear to show that, even after the dry rot has commenced, immersion in salt water effectually checks its progress and preserves the remainder of the timber.

COLORED GLASS FOR ENTOMOLOGICAL CASES.—At a meeting of the Entomological society of Belgium, some time ago, M. Capronnier was charged to make experiments as to the influence of different colors of glass on insect collections; the object being to preserve collections from the decoloration which green and carmine parts especially undergo in daylight. He operated with four tints of glass—yellow, violet, green and blue—also with uncolored glass. It was found that yellow is the best preservative; after 90 days it was the only color which left carmine nearly quite intact. It is not an absolute preservative, for at the end of this time the tint was slightly altered. It seems that the only way known at present of keeping collections absolutely intact is to keep them in darkness.

MIXING DIFFERENT COLORS.—The following recipes will enable the amateur painter to mix many shades or tints that he may require: Cream color—This is a mixture of chrome yellow, the best Venetian red and white lead. Pearl gray—White lead, with equal portions of Prussian blue and lampblack. The blue must be used very cautiously, as it is a powerful color. Fawn color—Burnt sienna, ground very fine, mixed with white lead. Buff—This is a mixture of pale chrome yellow and white lead, tinged with a little Venetian red. Straw—A mixture of pale chrome yellow and white lead. Drab—Raw or burnt umber and white lead, with a little Venetian red.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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Our latest forms go to press on Thursday evening.

San Francisco:
Saturday Morning, Sept. 23, 1876.

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CLOSE OF THE MECHANICS' FAIR.—The eleventh industrial exhibition of the Mechanics' Institute closed Saturday night, on which occasion between 12,000 and 15,000 were present. The fair was a success, as the following exhibit given by President Hallidie in his closing address proves. The expenditures of this exhibition are, as close as one can estimate them, as follows: Machinery, $1,200; advertising, $1,600; printing and stationery, $1,350; fitting and furnishing, $3,950; decorations, $2,150; gas and light, $3,700; water, $600; music, $5,150; salaries and wages, $9,300; discount on silver coin, $1,500; expenses, $750; fuel, $500. Total, $31,750. Receipts—tickets and admissions, $51,400; privileges, $6,135. Total, $57,535. This shows a surplus of $25,785, which will be appropriated to pay off the remainder of the debt on the building. The total receipts for the fair, $57,535, are considerably less than the $90,058 taken in 1875, yet from the fact that nothing has to be paid out for premiums this time, almost as much profit is left to the Institute as on the former occasion.

BULLION SHIPMENTS.—The following are the bullion shipments from prominent mines since our last report: California, Sept. 15th, $20,234; Leopard, Sept. 15th, $7,664; Arizona, Sept. 19th, $2,202.24; Northern Belle, Sept. 14th, $9 670.34; Tybo Conn., Sept. 14th, $13,015.37—on September account, $22,185; Leopard, Sept. 18th, $7,547; Northern Belle, Sept. 17th, $16,-054; Ophir, Sept 20th, 13 bars, valued at $46,-530.22.

THE yellow fever does not seem to be decreasing in Savannah.

Ice in Mines.

An item is going the rounds of the press to the effect that in a mine away up in the mountains on this coast ice is found at considerable depth, and that blocks of ice are found all through its underground works. It may not be generally known that this, though not a common circumstance, occurs in certain localities. In one of the pits at Dannemara, (Persberg,) one of the oldest and most celebrated Swedish iron mines, there is a large quantity of ice. The deeper they go the more the ice increases. At some places it is ninety feet thick, forming real glaciers, which are never diminished by any change of external temperature. When the visitor has reached the bottom he is conducted by his guide into vaulted chambers through immense regions of ice. Many of these vaults are so large that fifty men can work in them at one time. The ice has to be raised up in buckets. This fact seems contradictory to the one generally accepted, that the deeper the shafts go the hotter they get. This particular evidence of ice in a deep mine is vouched for by Prof. R. C. von Leonhard, of the University of Heidelberg, who described it a long time since in one of his lectures on geology.

This occurrence of ice in deep mines is not an isolated case. It is found in the pits of Ehrenfriedendorf, in Saxony. Leopold von Buch tells us that formerly, in Norway, mining was prosecuted above the region of eternal snow. Wood for the timbering could not be had there, and its want was supplied by filling up a shaft with water and allowing it to freeze; passages were then cut through the ice as they were needed, the balance of the ice being left in lieu of wood for timbers. It is not explained how the walls were supported while the drifts were being run.

The mines of Rauris, in Upper Austria, are entirely within the glacial region, and most of the shafts open in eternal ice, clear as crystal; the miners' huts are surrounded with ice. On what is known as Gold mountain, one of the shafts was sunk 100 feet through pure glacier ice. A gold mine in the deep valley of the Alps, near Saltzberg, is the highest in Europe being worked. There are two tunnels near this mine, entirely surrounded with glacier ice. It is stated by one authority that there is a locality, deep within one of the iron mines of Dannemara, already noted, where the wall of ice is 120 yards deep.

Calcining Ores.

James C. Duffy, of this city, has recently patented through the MINING AND SCIENTIFIC PRESS Patent Agency an improved process for roasting, smelting and calcining ores, a notice of which will be of interest to the mining community. The invention consists in saturating or intermixing with the ores to be treated, petroleum or other highly combustible oil, and then placing the ores in a suitable furnace and setting fire to the mass so that the heat generated by the combustion of the oil will roast, smelt or calcine the ore.

Usually the ore will require to be pulverized before being intermixed with the oil, but where it is porous and friable, it will absorb sufficient oil for the purpose and the pulverization can be dispensed with.

This process is intended to be specially applicable for treating cinnabar and sulphur ores from which it is desired to remove the valuable portion in the shape of fumes, but the inventor says he is able to treat all classes of ore in the same way and not only save the expense of the fuel used, but can also attain better results, as the oil will penetrate and reach every particle of the ore so that the roasting will be more thoroughly accomplished.

AMERICAN METRIC BUREAU.—There has been recently incorporated in Boston an association of teachers and others interested in the introduction of the metric weights and measures, under the name of the American Metric Bureau. Article II of its constitution reads as follows: "The object of this bureau shall be to disseminate information concerning the metric system; to urge its early adoption; and to bring about actual introductions wherever practicable. To this end it will secure the delivery of addresses; publish articles; circulate books, pamphlets and charts; distribute scales and measures; introduce the practical teaching of the system in schools; and in all proper ways, as far as the means at its disposal will allow, the bureau will urge the matter upon the attention of the American people till they shall join the rest of the world in the exclusive use of the international decimal weights and measures." This bureau already includes among its members many prominent educators, and its numbers are rapidly increasing. An office has been opened at 13 Tremont place, Boston, and as soon as suitable arrangements can be made, branch offices are to be opened in New York, Philadelphia, Chicago, and other central localities, where all persons interested are invited to call or to write freely in regard to any matter pertaining to the work of the bureau.

THE troops have had a brush with the Sioux, surprised 40 lodges and scattered the Indians.

A Word to the Wise.

The long winter nights will soon be coming on, when every person will have more or less spare time, and when those who are unemployed will seek either the bar-room, the saloon, or the fireside of home to find amusement. In the first two cases that time will be thrown away; in the latter, although a yellow covered novel or entertaining game may serve to while away the time, no traces of good will be left behind, but rather create an appetite for that which tends to enervate the entire mental system, and render it unfit for higher purposes. The great want of our miners and mechanics is a paper which will not only serve to interest but to instruct. Such a paper we offer in the MINING AND SCIENTIFIC PRESS. No other paper on the Pacific coast contains so great an amount of valuable information as the PRESS. From its pages the progress, not only of the Pacific coast, but in a measure the entire country, may be traced. It is an encyclopedia of every day instruction to the workingman and the student. If a reader only gets one new idea of value a week from its pages, this will soon amount to quite a stock of information, from which the mind may branch out and gather new and enlarged ideas, such as will form a solid foundation for an immense structure. This will apply to old as well as young, and time which might otherwise go to waste will be used to lay up knowledge that will often aid in the workshops, in the mines and in every day conversation.

Many a genius lies buried in little blacksmith and other shops, or on the hillsides and in the gulches of our wide land. No man has any business to be stumbling along, working at anything, without making efforts to improve his usefulness and sphere of action. All are behind the times unless they keep themselves posted with the important inventions of mechanics and science. There should be no kind of reading more attractive, especially to the young man of progressive ideas, than a scientific and mechanical journal. It may be the first stepping stone that will lift him to eminence in his trade or profession; it certainly can never do him any manner of harm and will never make him any poorer.

The Centennial.

We have been giving our readers, from week to week, quite full descriptions of the several features of the great exposition. Apart from matters of description, the news from Philadelphia is that since the cool weather has begun there has been a marked improvement in the attendance and the daily receipts have considerably increased. Great numbers of people have waited for this more braving weather to enable them to endure the journey and the tramping. Others, and of this class the farmers of the country form the larger part, have waited until the harvest was gathered. The prospect now is that the closing weeks of the exposition will be its best weeks. The announced time of closing is the 10th of November, so that there yet remain about seven weeks of open show. In this connection we are informed that the fare for the round trip, from San Francisco to Philadelphia and return, has been reduced to $246.80. This is a reduction of about $20 on the trip, for which the public are indebted to the roads east of Omaha. The concession will aid those who make the trip to bear the expense of tarrying at Philadelphia. We think it is not too late to enjoy and profit by the Centennial. Let those go who can; it is the occasion of a lifetime.

THE STATE FAIR.—The event of the week is the fair at Sacramento. As we go to press to day, Thursday, the exhibition is at its hight. We shall be obliged to defer a review of the occasion until next week, when we expect to note the interesting features fully. We learn, however, from the telegraph and the local papers, that the fair is progressing finely with all the accompaniments of a throng of people and a full field and pavilion of exhibits. The fair season of the agricultural regions is now fully inaugurated, and the weeks hence until the middle of October will shine on the fair goers. We wish the exhibitions all success, for we believe fairs rightly encouraged are a power for the spread of agricultural knowledge, for the excitement of laudable competition among producers and valuable as promoters of social enjoyment. We would like to meet our readers at all their fairs and note the features of their progress. But this will be impossible, and we shall trust our correspondents will be on the alert for us at the fairs, as they are in their homes and fields.

THE Helena *Independent* says that 8,222 ounces of silver bullion, valued at about $10,-000, was the product of the last run of the Hope company's mill at Phillipsburg.

THE return tide has set in from the Black hills. Quite a large party of old mountaineers arrived at the Crow agency last week, direct from Deadwood.

Gems and Precious Stones.

[Written for the PRESS by HENRY G. HANKS.]

P. Adularia, Amazon Stone, Labradorite, Lapis Lazuli, Hauyne, Moonstone and Obsidian.

Adulsria, amszon stone, labradorite, lapis lazuli, hsnyne, moonstone and obsidian are similar in their composition, and may be classed with feldspar. It msy be ssid that they are all silicates of alumina, lime, iron, and either soda or potasb, or both. Other substsnces in varying quantities sometimes are found in different specimens or species.

Adulsria is a variety of orthoclase feldspar, transparent, cleavsble, and showing a play of colors. It is sometimes crystallized. When cut and polished it throws out greenish and blueish white pearly reflections. Its specific gravity is 2.5. Hardness, 6.5. Moonstone, a vsriety of adulsria, is white with pearly reflections, thought to resemble the light of the moon.

Both of these varieties make beautiful jewelry when found in pieces sufficiently large. They sre generally aet in blsck, which shows their color to the best sdvantsge. Adularia takes its name from "Adula" the ancient uame of St. Gothard, where the finest specimens occnr. Adularia and moonstone occur in many locslities, both in Europe and the United States, but fine specimens sre of rare occurence.

The best moonstone comes from Ceylon. The following is an analysis of a specimen from that locality: Silica, 64.00; slumina, 19.43; lime, .42; potash, 14.81; magnesia, .29; water, 1.14 =100.

Amazon stone, or green feldspar, came originslly from Siberis. Lately very fine crystals have been found in abundsnce near Pike's Peak, Colorado. This mineral is used for the common sorts of jewelry, and for snuff-boxes. vases, buttons, and similar uses. Its specific gravity is 2.581. Hardness, 6 to 6 5. Like ordinary feldspsr it fnses with difficulty, only on the edges. With borsx it forms a transparent glaas. In a bead of microcosmic sslt a skeleton of silica swims undissolved. Green dioptaze resembles amszon stone, but is scratched by it, by which difference it may be distinguished.

Labradorite, or Labrador feldspar, is nnt strictly a feldspsr, but is sometimes classed with it. This mineral is found as a constituent of some rocks. Dolerite is a compound of labradorite and pyroxene, generslly with some magnetite. Basslt has the ssme composition with the addition of cbrysolite. Lsbradorite is found abundantly in the lavas of Etna and Vesuvius. Many localities might be named, both in Europe and America, and other parts of the world. The following anslysis is one of forty published in Dana's Minerology, no two of which are exactly alike: Silica, 55.75; slumina, 26.50; sesquioxide of iron, 1.25; lime, 11.00; soda, 4.00; water, .50 = 99.00.

Labrsdorite crystallizes in the triolinio system. Hsrdness, 6; specific gravity, 2 6 to 2.76; luster, pearly; color, gray, brown, greenish, sometimes colorless, variable, showing change of colors; streak uncolored, translucent, subtransparent. B. B. fusible to a colorless glass.

When cut and polished labradorite is very beautiful, showing red snd yellow changeable colors when held in different positions in the light. This play of colors is supposed to be caused by fissures. It is not a high-priced mineral. Good specimens can be purchased for three or four dollars each.

Lapis lazuli is a blue mineral much used for ornamental purposes. It is seldom found in crystals, but when crystallizsd it is in the isometric system. It is a silicate of lime, soda and alumina, with a sulphide of iron and sodium mechanically mixed. The following is an analysis by Klaproth: Silica, 46; sulphuric acid, 4; alumina, 14.5; peroxide iron, 3; lime, 17.5; csrbonic acid, 10; water, 2 =97 0. Hardness 5.55; specific gravity, 2.38 to 2 45; luster, vitreous; color, azure blue or violet blue, sometimes red or green, also colorless, translucent, opaque. B. B. in closed tube gives water; fuses easily to a white glass. Decomposed by muriatic acid with separation of gelatinous silics, sulphureted hydrogen at the same time being given off.

Lapis lazuli is found in granite and in calcareous rocks. The best specimens come from Persia; good specimens are found also in China, and an inferior variety in Chile. Deep colored pieces are most esteemed. The mineral is more used for ornsmental purposes than for jewelry. Formerly it was much used as a pigment, under the name of ultramarine, and being the only permanent blue color known, it commanded a very high price. The same color is now produced chemically of better quality snd very cheaply. In China and India lapis lazuli is carved into cups, vases, etc. In a Russian palace there is a room entirely covered with veneers of lapis lazuli and amber.

The name of this mineral is probably derived from the arabic word, "azul," signifying blue. The value of the finest deep colored specimens varies from $2 50 to $15.00 per ounce, according to size.

THE *Hassler*, which got away from the navy yard on Thursday, will resume the survey of Santa Monica bay; afterward the surveys of Santa Rosa and San Miguel islands will be undertaken.

The Monnier Process.

The Mounier process has lately been introduced iu Nevada county, in this State, and considarahle interest is manifested in it. This process has heen heratofore introduced at a number of establishments with considerahle success, so that it is no experiment. We gave a detailed description of tha process shout a year since from tha pen of Mr. Samuel Purnall, of this city, and as saveral enquiries have haan made concerning it racently, give space to consideration of it agsin. It was originally intended principally for working oopper ores, hut is adaptad tu the treatment of a wide range of ores.

The Monnier process consists, suhstantially, as follows: 1. Calcination of the metallic sulphides with a portion of sulphate of soda, or other similar salt. 2. Lixiviation of the calcined ore. 3. Evaporation and crystallization of the sulphates. 4. Reduction of tha sulphata of coppar. 5. Smalting into inget copper. 6. Amalgamation of suy gold residuum. Tha working details ara snhstantially as follows:

Tha ore is mixad with sulphate of soda and crnshed fine enough to paes through a No. 24 screan. It is next roast•d in a muffle furnace or a revolving oylinder furnace; the sulphur will hegin to hurn withiu au hour after the introduction of tha ore, aud aftar that tima hut little fuel is naedad until toward the end of the roasting. Snlphuric ecid is formed hy the oxidation of part of tha sulphur, while the largar proportion of tha sulphur escapes as sulphnrous acid. The iron, coppar and silver are converted hy the sulphuric acid into sulphates, and tha aulphate of soda into a hi-sulphate. Soon all the sulphur not comhinad with the aoda or metallic oxidea is expelled. A low red heat ia now reached, end tha snlphatas of iron and copper suffar decomposition. The sulphuric acid at firet combined in this form has haen stored up, and is now evolved hy the graater heat. Beiug nascant, its combining power is of intense activity aud force, and it attacks any and all metallic oxides or sulphidas remaiuing uncomhined, couverting them with great rapidity into sulphates. Tha coppar and silver preseut are soon converted into soluhla sulphates, iron oxida aud gold ramaiuing uuconverted and insolnhla. In this latter stage of the roasting the value of the sulphate of soda hecomas apparant; it holds fast to the excess of sulphuric acid formad during the early stage, and carries it on to this critical point. While hy other methods of roasting to sulphates, only a portion of the matals are ratained as sulphates aud tha halauce is reduced to an insoluble form, hy this method the acid is retaiuad until required hy tha copper and silver, when it is givan up at the right time, and those metals are recovered with graat ease. If the saving of tha sulphuric acid evolvad should ha of consequence, tha gasas from the furnace may he led into tha usual lead chambers.

Tha roasted ora is next placed in tanks and lixiviated with cold water. The use of hot watar is to ha avoided, as it would dissolve a greater quantity of hase metal sulphatas, notably thoee of lead and autimony. The leaching watar, highly charged with copper, silvar and soda sulphates, is conducted into tanks coutainiug cement coppar, on which the silver is pracipitated in a metallic form as cament silver, whauce it may ha racovered hy tha usual methods.

The large amount of sulphate of soda prasent in the liquor must uow he recovered and regeneratad for futnre oparations. To effact this, the solution is run into crystallizing tanks, and lelt for several days, whan most of tha soda will cryetalliza out. Sae Figure 1. Tha crystallization is interrupted before the sulphate of oopper hegins to deposit; and the solution is run into an evaporating furnace. Saa Figure 2. In this, the haarth is a wooden box lined with laad; *a* is the flue. This is only moderately heated. It receives a staady supply of liquor to maintain a constant laval. In this furnaca tha sulphates of soda and copper as they crystallize are raked out, whila the final charge is avaporated to dryuaes. Soma 60 per cent. of the sulphata of soda originally present is obtained from the first crystallization, which, as soon as it is drained and dried, is ready to go the round again. The 40 per cant. halance is not loet, but is recovered in a following operation.

Tha dry sulphates of coppar and soda ara naxt mixad with charcoal and haated in a reverharatory furnace. As soon as fluidity is attained, sulphurous acid is evolved. The mixture is gradually haatad to reduass, at which temparature it is kept until all the sulphurous acid is expelled. The sulphate of soda remsins undecompesad, and the sulphate of oopper is converted into mixture of red oxide and metallic copper.

The calcined mixture, when cold, is washed in a tank of water, whera the nnhurned coal end soda are easily separated. Tha soda heing again in solution may be run into a crystallizar and completely recovered. Tha copper is now ready for the refining furnace, which refining does not differ from the ordinary proces, Figura 0. In this engraving, *A* repreeants tha ore; *B*, Blake crusher; *C*, cyliuder ore drier; *D*, stamps; *EE*, Bruckner cylinders; *F*, lixiviator; *G*, crystellizer; *H*, evaporating reverharatory furnace, end view; *I*, washing tank; *K*, reducing furnaca.

The plant of tha Mouuiar process costs hut little. For complex oopper oras probahly no establishmant could ha huilt on auy othar plan with a less amount of capital. About a week is required for the passaga of tha ore and prodnots through the various operations. It is estimated that inget copper can he prodnced in a works of this natnra from a tan par cent. ora for five cents per pouud; which is considerahly cheapar thau hy the English or Germau plans of fusion. Very little skilled lahor is requirad. Tha use of matallic iron for tha pracipitation of tha oopper is avoidad hy the usa of sulphate of soda aud tha mathod of raducing the sulphate of oopper. The soda is usad continually with hut little loss. Waar aud tear ara very small, as only low heats are required. Tha procass enables all the valuable matals in tha ore to ha extractad, while tha sulphur can he ocuvartad into sulphuric acid. Tha concautration of poor ores is not so obligatory as in tha fusiou processes and poorar oras can ha worked. During tha roasting it is prohahle that a douhla salt of soda aud coppar is formed, which helps to kaep tha copper in a soluble form. The washed copper has almost tha exact appearanca and richness of cemant copper precipitated hy metallic iron, and undergoes the same spacies of refiniug. Tha actual consumption of soda doas not excead one par cant. for each oparation. Tha loss of coppar is not more than five per cant., and may he aven lees with good managamant.

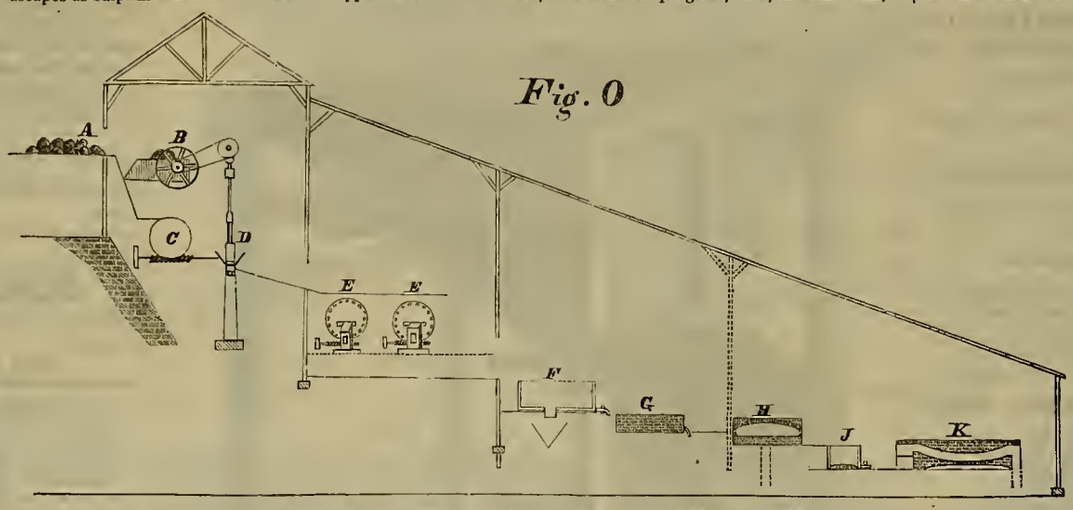
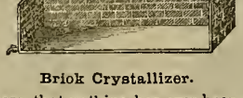


Fig. 0

DETAILS OF OPERATION OF THE MONNIER PROCESS.

A weak point in the Mounier process, as well as in some othars, is that it requiras considerable fual to evaporate its solutions, and in a country where fuel is high priced and inferior thst may he a serious disadvsntage. But, how evar that may he, it is prohahla that whare tha ores are rich enough to hear heneficiation hy any process, that nothiug has ever heen discovered which will do its work cheapar and cleaner thau the procass of Monnier, just described. It savas the silver and copper as well as the gold that may be in the snlphurets. At the Providence mine, in Navada county, it is applied specially for working the sulphurets. We hava had no opportunity of laaruing what changes thay may have introduced there for their special object, hut the full process is as described above.

Fig. 1.



Brick Crystallizer.

Sovereigns of Industry.—There has hean organizad in this city a council of the order of Sovereigns of Industry. Tha *Alta* says of it: Ganeral A. M. Winn and 14 othars made tha application for charter last May, aud the organizatiou was consummated under tha direction of Jamas C. Lawis, National Deputy. The following officers ware alactod: J. Earl, Mauager of tha Immigration Bureau, Prasidant; Hou. Charlas C. Terrill, Vice Prasident; Ganeral A. M. Winn, Secratary; Colonal C. H. Denison, Traasurer; John A. Steinbach, Staward; P. S. MacGowu, Lacturer; R. G. Lewis, Inner Guard; John Thompson, Outer Guard. The Executiva Committae are: Prasident J. Earl, Joseph Carrol, Amos Adams, Monroa Miller and James W. Duncan. The Council will meat at the sanata ohamber of United Machanics, 603 Washington streat, evary Thursday aveniug at half past sevan o'clock.

The Wonders of Wire.

It is hardly hyperholical to affirm that the simple metallic thread or filamant familiarly knowu to us as wira, epitomizes the antire culture and prograss of the aga, and that there is no othar single form of the useful metals so intimately inwrought with civilized man's needs.

Nay, if wa wera raquired to indicate soma particular artiole of man's handiwork which should, ahova all othars, in itself reprasant the matarial and morsl power of our present civilization, we should at ouca name that littla piece of pointed perforatad wira—tha sawing needle.

Aud hardly inferior to this in the category of most important trifles made of wire, which ara quite indispensahle to mankind—or, shall wa say, womankind—may he classed the hairpiu. If, as is indisputably and poetically affirmed, "Beauty draws us with a siugle hair," what ongineer so reckless as to estimate tha power of tha hairpiu?

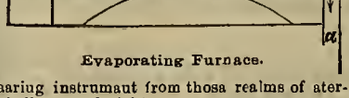
A keeu appreciation of tha magnitude of littla things would douhtlass dawn upon us if we could only foresae what family perturhatiou, what parsonal diecomfort, what a taxing of man's ingenuity for a suhstitute, what an overturning of presant fashions, paradventure, —what dira possihilities of change aven in our whole social structura might the sudden daprivation of that uhiquitous piace of hent wire antail!

If we seem to axaggarate the importsnca of wira iu the world's economy, let us ask in what department of the mechanic arts, of scientific and industrial progress, wire, in soma form, is *not* a valuahle adjunct or an indispansahle requisite?

Tha usas and importsnce of wire are, however, made ohvious in the greater achievements of man.

The intelligence flashad from continent to continent tha wide world around, must hava tha wire track to follow; if we span the Niagaran chasm, the wire cahla is the potential means; or, if scienca, intant on hydrographic research, desires to invastigate tha physical conditions of ocan's profoundest depths, tha wira line alone insuras the return of the evidence-haaring instrumaut from thosa realms of eternal silence and night.

Fig. 2.



Evaporating Furnace.

All-important, too, is wire to the miuer in his explorations of the earth's crust for mineral wealth. The inestimahle treasures of coal and the useful metals, and our monthly millions of gold and silver are drawn from the deepest rocky crypts by the stroug, tenacious siuews of wire—which have now fairly supplanted the hempen strands of old.

Wire also ministers in no small degree to our physical comfort and enjoyment of lifa, as witness the wira broiler, whareon our steaks and chops ara made delicious and digastihla, and the fabrics snd davicas of wira to exclude or antrap the pasts of the household.

We may not evan dehar from the catalogua of human inventions and discoveries iudahtad to wire those two greatest agencies of modern material progress—the railway and steamship—for, without much stretch of faucy, may we not consider the iron rail, tha axle and tha ponderous steamship shaft marely Brobdignagian wires wrought to special and convenient size and shape?

To the credit of tha Pacific coast and tha anterprising proprietor, it may ha statad that all of the alegant workmanship in wire at tha late Mechanics' fair was exclusively of *home manufacture*, mada at the California wire works, of which Mr. A. S. Hallidia is proprietor, and successor to J. M. Eckfeldt & Co.; office aud salesrooms, 412 Clay street.

Academy of Sciences.

The regular maeting of the California Acsdamy of Sciances was hald on Monday eveniug last, Dr. Stout in the ohair. Among the donatious to the library wera a number of hooks from A. L. Pinart, member of many sciantific societias in Europe, who presented fiva volumas of great ethuological and philosophical interest. Mr. Piuart was a visitor to this coast, with sciantific objects, in 1870 72, and again in 1875, and he conductad very patient iuvestigations in natural history, etc., from Mexico to Alaska, and in Arizona and other Territorias of the Uuited States. The whole of the works forwarded hy M. Pinart to the Academy ralate to the Alaska ragion. Thay ara the first pendarous instalmants of a graat project. One of tha volumas, with a nnmber of very beautiful plates, is entitlad "Voyagas to the Northwast Coast of America, mada in 1870-72," and treats of natural history. Three of the other volumes ara contribntions to a "Library of American Linguistics and Ethnographs." They embrace monogrephs hy M. Pettitot on the ahoriginas; a Frauch end Indian laxicon of a numbar of tribes around the mouths of the Mackanzie and Anderson rivers; aud a laxicon of the Esquimsux language. In tha fifth volume M. Piuart deecribes the cavern of Aknanh, on tha island of Oungn, aud a collection of ramarkahle native maske, ornsments and implemente discovered therein, all of which have heen angrevad aud colorad with exquisita fiuish. Dr. Stout stated that the whole of the works hava heen puhlished hy M Piuart, who is tha son of a wealthy iron-mestar in France, at his own expeuse. On motiou of Dr. Kellogg, seconded hy Mr. Dameron, the Academy passed a special vote of thauks to the distiuguished travalar.

From a collection of plants made in Fresno county hy A. G. Eisen, a Swedieh naturalist, Dr. Kellogg gave hrief dascriptions of half a dozen or more new species.

Mr. W. G. W. Harford commuuicated information on some spacies of sessile-eyad orustacea, ohtainad hy Mr. Fisher on the western coast of Lower Califlornia.

A paper "On the Detarmiuation of the Constant *g*," hy E. Dyer, was read hy tha Secretary.

Mr. Guerin offered some ramarks on the suhject of safety in water pipes. The suhjact of the proper thickness of watar pipes will he discussed at the next meeting of the Acadamy.

Progress of the East River Bridge.—We report, says the *Manufacturer and Builder*, that we had tha pleasura of witnessing the sncoassful stretching of tha first steel rope connacting the towers of the East river hridge, which was done amid tha hoistiug of flags, the hoomiug of cannon and the chearing of the people who happened to ha prasant. Tha middla of tha rope at the Brooklyn anchorsge was passad over a system of wheels, the two euds passed over the top of the towar, and at its hase wound upon two drums, placed on a scow, which was towad to the New York side aarly in the morning, while the rope was payed out to the hottom of the rivar, the euds passed ovar the top of the New York tower and attachad to a drum situated helow and ravolvad hy a steam engine. At 11 A. M., when no veesels or staamboats were naar anough to interfere, the cahle was wound upon the drum and tha slack takan up, the cable rising out of the water more rapidly than we oen state tha fact, and in a few seconds swung at a hight of nasrly 200 faat above the water; the other end was treated in the sama way in tha afternoon. Thay rest on pullays on the top of the towar, and togethar will form a kind of eudless belt, moved by the machinery at tha Brooklyn anchorage raferred to ahova, aud serva to conyey the euds of all the othar wiras from one tower to tha other. This movahla cahla is mada of twistad strands of No. 7 chroma steal wire, thrae quartars of an inch thick aud 9,000 feet long, stretching from ona anchorage to tha other over the tops of the towars, across tha rivar and hack again.

A freight traiu on the C. P. R. R. fall off the trestle work near Bantas on Monday last, wrecking 13 oars and killiug two persons. The accident was causad by tha dropping down ou tha track of a braka beam, damaging the trestle and track to a considerahla extent.

The Agent of tha Press who recently visited San Mateo county is now off our list.

The State Educational Convention met in San Francisco this week.

The Jewish New Year was oelahrated on Tuesday last.

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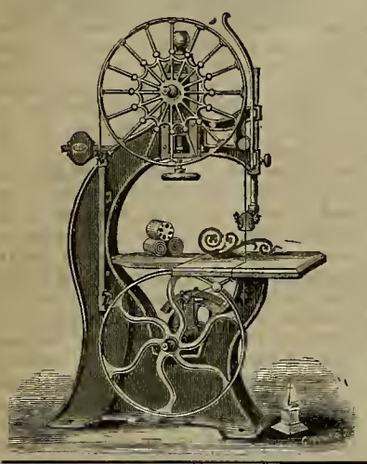

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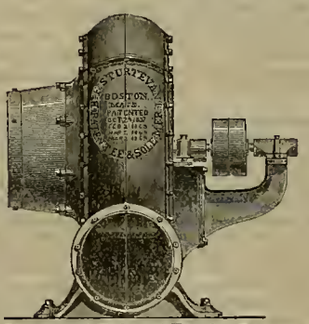

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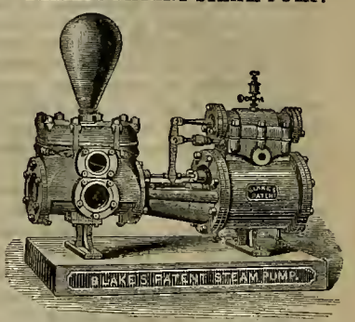

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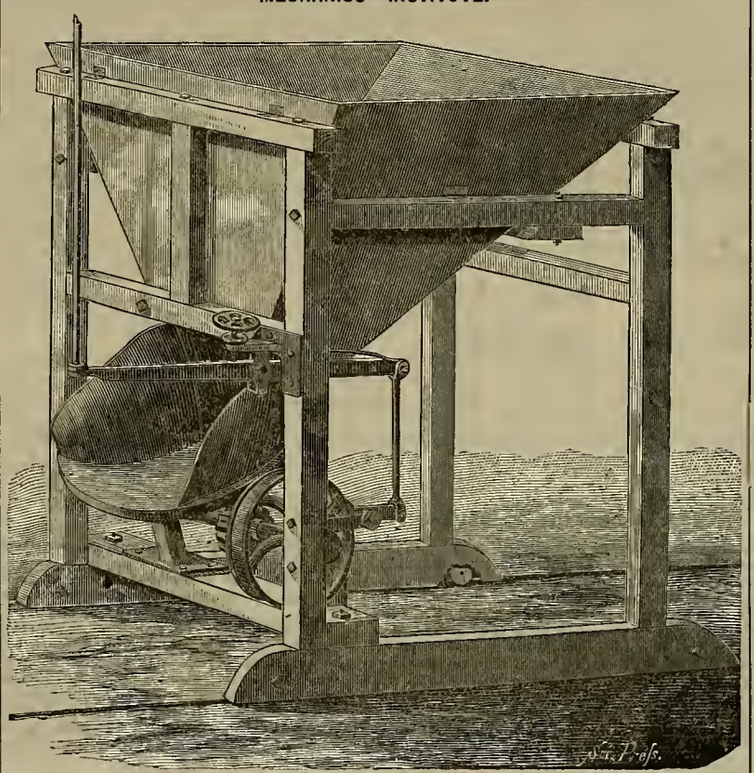

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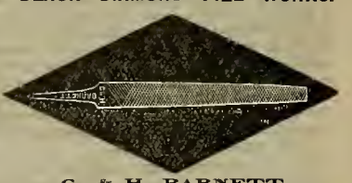

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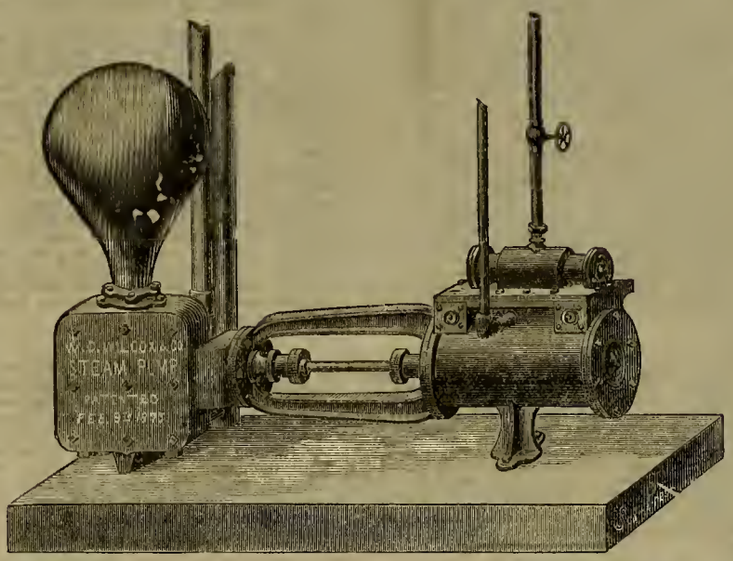

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The ALLEN ENGINE GOVERNOR.

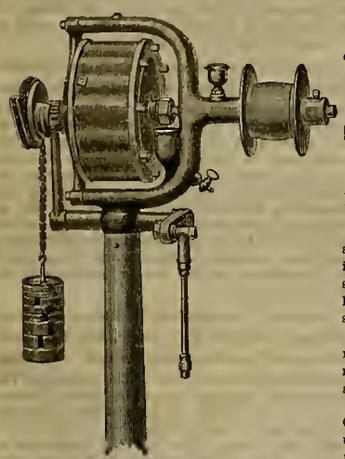

Fig. 1. For Variable Cut-Off Engine.

Uniform Speed in the Working of Steam Engines.

THE SIMPLEST AND MOST EFFICIENT GOVERNOR YET CONSTRUCTED.

ECONOMY and SAFETY.

Especially Valuable with Adjustable Cut-Offs. Capacity of Machinery Increased by Accurate Regulation of Speed.

Direct Saving of Fuel—Great Increase in Power of Engines.

The high rate of speed used acts advantageously in making the Allen Governor very sensitive; and all parts being lubricated, it works with the smallest amount of friction.

The speed of the Engine is maintained equally, without reference to the variations in amount of work being done.

The peculiar action of the Governor, which allows the use of a valve of large area, thereby admitting to the Engine cylinder the greatest possible boiler pressure at each stroke of the piston, has produced astonishing results by being attached to old engines, greatly increasing their power or effecting a direct saving of fuel, and in hundreds of instances doing both. In running an engine with the Allen Governor with high or low pressure of steam and with all variations of power, the throttle is opened wide in the morning and remains so until closed at night, thus relieving the engineer from all labor and care except keeping the engine oiled, and giving him a great deal of time for other duties.

Allen's Patent Governor Valve is constructed with a double disc in a tubular frame, and is perfectly balanced, there being no spindle as in the ordinary throttle valve to interfere with its equilibrium. The valve is moved by means of a lever, and is opened and closed by a rocking motion of a steel spindle, which is covered with brass, insuring the greatest possible durability.

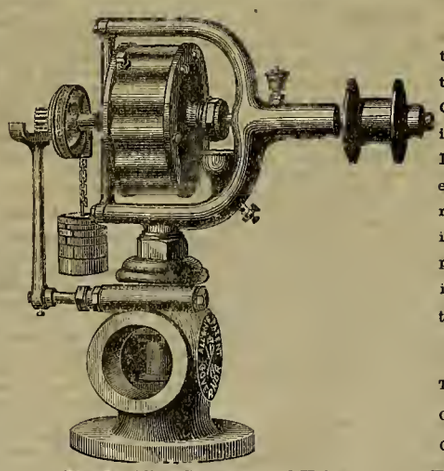

Fig. 2. Allen Governor and Valve.

We have Numerous testimonials from parties who have used this Governor, and watched its workings critically. In all cases the Governor has made the various engines to which it has been applied produce the most profitable results ever obtained.

Fig. 3. Section of Allen Governor.

PARTIES INTERESTED IN STEAM MACHINERY SHOULD EXAMINE THE ALLEN GOVERNOR, WHICH IS NOW INTRODUCED ON THIS COAST FOR THE FIRST TIME. FULL INFORMATION CONCERNING IT CAN BE OBTAINED FROM ILLUSTRATED DESCRIPTIVE CIRCULARS WHICH WILL BE SENT ON APPLICATION. Address,

PACIFIC IRON WORKS, First and Fremont Streets, near Howard, San Francisco,

MANUFACTURERS OF ALL CLASSES OF MACHINERY.

F. MANSELL & CO.,

SIGN PAINTERS,

423 PINE STREET,

(Between Montgomery and Kearny.)

Persons engaged in the following business can have their Signs Painted at contract prices, for goods or articles in which they trade, viz:

Merchant Tailors,	Gents' Furnish'g G'ds
Bootmakers,	Furniture Dealers,
Hatters,	Jewelers,
Hotels,	Piano Fortes,

Wine Merchants, Etc., Etc.

Judson Standard Governor,

The BEST & MOST RELIABLE

IN USE.

Send for Circular and Price List to

H. P. GREGORY & CO.,

Sole Agents for Pacific Coast,

14 and 16 First street, - - San Francisco, Cal.

THOS. PRICE'S

Assay Office and Chemical Laboratory,

524 Sacramento Street, S. F.

Deposits of bullion received, melted into bars, and returns made in from 24 to 48 hours.

Bullion can be forwarded to this Office from any part of the interior by Express, and returns made in the same manner.

Careful Analyses made of Ores, Metals, Soils, Waters, Industrial Products, Etc. Mines examined and reported upon. Consultations on Chemical and Metallurgical questions.

(Continued from Page 206.)

WHITE PINE DISTRICT.

MAKING BULLION.—White Pine *News*, Sept. 16: The Stafford company, who are running the Smoky mill, are doing splendidly. The ore that has been worked during the week has averaged $70 per ton, just as it comes from the mine. The company have had some delays during the week on account of the water pipes and some other parts of the machinery of this mill being defective. The mill has stood idle for some three years, and the machinery could not be expected to be in first-class condition; however, in a very short time everything will be running nicely. An experienced miner informed us on Thursday last that he had visited the company's mine—the Stafford—and pronounced it a true fissure vein, and thought it made this best showing for a big mine of anything he had ever seen in Treasure hill. The ledge is 14 feet wide, and the ore becomes richer as development is made. We are decidedly of the opinion that the Stafford company will be one of the permanent institutions of this district.

Arizona.

GROOMS CREEK.—Cor. Arizona *Miner*, Sept. 8: The miners here are working with an energy that betokens success. All seem to be well satisfied from present prospects that this will be a fine mining camp. People are coming in daily. Willis & Co. are pushing on their work day and night, taking out fine ore, sinking shaft and running drifts. They are also building a shaft and ore house, 20x20, and will have it completed this week. They have built a large water tank and erected below it a "Cornish jigger" for washing and sorting the ore, which works very successfully and saves all the loose gold and leaves the ore clean and free from worthless rock. They now have a fine lot of ore and will soon commence hauling to the mill. Just above is the shaft of Hutchings & Behn, down 27 feet, and looking very well. Then comes Emil Gantz' claim, which looks well, and also that of Leighton & Co. who have some fine ore on the dump.

MINING MATTERS.—Arizona *Citizen*, Sept. 9: J. H. Bartlett came in from Ostrich mill this week, and Dr. Handy made a visit there and returned with 210 ounces of gold, worth $17.25 per ounce, which was purchased by E. N. Fish & Co. They report the mill running day and night and the results very satisfactory. They wanted 20 more good workmen for various duties in and about the mine and mill and handling of the ore, and offered good wages and board. The Ostrich company has passed its expensive trials and disappointments and is now enjoying handsome profits. There are 30 men at work at the Tecalo. Gen. J. B. Allen has bought the interest of John H. Archibald, and is going to move the works and increase the force and better systematize operations. The company has coal, wood and ore in abundance, and we shall soon hear of regular shipments of silver. A very rich silver vein has recently been discovered between the Guija mines and the Ostrich. Large samples brought into town show native silver. Developments will be made. Jas. Fresh is probably by this time in Globe district with a stamp quartz mill, having some time ago left Silver City, N. M., with one for this new and rich section. The reports from the Globe and Pinal districts continue favorable. There is some talk of a scheme to erect improved and large reduction works in Tucson. If perfected and executed, the very best results would follow to the people generally. We hear of $5,296 in gold bullion and dust being received this week by our merchants, and some small lots of silver.

Colorado.

BULLION SHIPMENTS.—*Colorado Miner*, Sept. 12: The Judd & Crosby works shipped, for the week ending Sept. 8th, five bars of bullion worth $6,547.04.

ELM CITY.—A run of over one and a half tons was made from this lode this week, the first and second-class ore running *twelve hundred ounces silver per ton*. How is that for high!

IMPORTANT SALE.—General James I. Gilbert, of Iowa, has purchased the Brooklyn mine, situated on Kelso mountain, of P. E. Morehouse and Robert Wood.

DIAMOND TUNNEL.—We learn from J. A. Fish, Supt. of this great enterprise, that the tunnel is now in over 1,100 feet, and within from 100 to 140 feet of the Dives lode.

HOMESTEAD.—This lode, on Griffith mountain, the property of Wentworth and Yandes, has been opened by a tunnel on the vein 208 feet, reaching a depth from the surface of 125 feet. The last 16 feet have been driven along a six-inch vein of very high grade ore, which still holds.

SAN JUAN.—The Silverton *Miner* is full of mining news, and judging from the tenor of its remarks we presume the miners are generally happy and hopeful.

Idaho.

THE MINES.—*Owyhee Avalanche*, Sept. 16: A new era has dawned upon this camp since recent movements have been consummated in connection with the Golden Chariot. Having been the leading mine of this camp for a long period, and having contributed very largely to the bullion product of the Territory, it is natural that people generally should feel an interest in its success. It therefore gives us great pleasure to be in a position to say that the cloud which has for a short time obscured the career of the Chariot has been removed, and henceforth this mine, with "Dirigo" for its motto, will lead the country forward to a new course of prosperity quite equal to that which we have experienced in our most palmy days. We feel confident in making this statement, as the circumstances fully warrant it. The recent change in the complexion of the management of the Golden Chariot company is destined to have a salutary effect. In the rich resources of Idaho there is a grand field for investment of capital. Our mines, if carefully and judiciously worked, will yield returns equal to those of any country under the sun, but unfortunately past mismanagement and blundering have had a disastrous effect, and the interests of both capital and labor have suffered in the ordeal. Now that we are on the eve of a change for the better, there is a disposition to profit by the errors and misfortunes of the past and retrieve blunders which had almost resulted in consigning the camp to obscurity for a time. Mr. Baldwin, the well known and energetic Superintendent of the Chariot, is back with us again. He has been in San Francisco for a few weeks, and the zeal and energy he displayed while there on behalf of the interests of this camp and in inducing capitalists to lend a hand in the development of our mines entitle him to our earnest praise. We understand that he will immediately pay off all claims against the mine. Operations will also be resumed in the mine without delay, and Mr. B. will employ as many men as he can work to advantage. The Poorman is running along splendidly. At the present point of operations the ledge is about two and a half feet wide, and much of the rock is unusually rich. There are nearly one hundred tons of ore ready for crushing. At the Empire the developments are most promising. The workmen in the stopes on the 6th level are taking out the finest rock that ever came from the mine. The ledge is three feet wide and shows up quite profusely in gold. At the Belle Peck and Potosi mines work is progressing finely and everything wears a bright appearance. Eight men are at work in the Belle. The Elkmore mill having been put in shape, will commence crushing Potosi rock next week. Our Wagontown correspondent, under date of 14th, writes: Work preparatory to the erection of the quartz mill of T. W. Jones & Co. is progressing satisfactorily. A number of the miners, anxious to see the mill going, have ceased work on their mines for the time being to lend a hand at the mill.

Montana.

ORE TO BE MILLED.—Butte *Miner*, Sept. 9: The La Plata company have contracted with Mr. W. A. Clark to supply him with 500 tons of ore, Mr. Clark agreeing to take it all within a specified time. He will not make a continuous run on this ore, but work a certain amount each month and purchase smaller lots from other mines, in this way aiding in the general development of the camp.

MR. W. A. CLARK has telegraphed to FRASER, CHAMBERS & Co., Chicago, ordering a Blake crusher. This will be shipped at once, and probably will arrive here soon after October 1st. This is a very necessary article; will pay for itself in a short time by the saving of labor, crush the ore much more evenly than it can be done by hand, and thus enable the batteries to run more smoothly and increase their capacity.

A. M. ESLER, Esq., has shipped during the past week to Messrs. Pope, Cole & Co., Baltimore, Maryland, for account of First National bank, Helena, 47,000 pounds of copper ore from the Mountain and Parrott lodes. As transportation is scarce, it is probable that the shipments will be light from this time, but Mr. Esler hopes to forward 150 tons before the close of the season.

MR. OLIN has ordered the lumber for a new automatic jig, which is to be constructed in accordance with plans furnished by Professor Knabe, and will be similar to those now in use at Dahler, Armstrong & Co.'s smelter in Glendale, which has proved a perfect success. By the use of this jig the cost of labor will be reduced and the capacity of the concentrator increased. It is Mr. Olin's intention to add others, from time to time, as rapidly as his means will permit.

PHILLIPSBURG.—Mining seems to be but little retarded by the overplus of rain; hauling from the mines is interrupted to some extent, but otherwise the work "goes bravely on." The Hope company, two days since, shipped 14 silver bricks to Deer Lodge valued at $10,000. This mine, from what information we can obtain that is reliable, looks well, and it is to be hoped that it will continue so for many months to come. Of the Trout we know but little; their mill is at work, and Captain Plaisted, we are informed, has been employed to build the hoisting works on the shaft.

Utah.

BRIGHAM.—Cor. *Salt Lake Tribune*, Sept. 15: About three weeks ago seventy-eight miners and laborers were discharged from the Nez Perces Co.'s mines, viz.: Nez Perces, Montreal, Telegraph, Roman Empire, and Grecian Bend. This reduction, although heavy and panicky-looking, was announced to be temporary only, and was said to be on account of the enormous quantity of ore belonging to this company lying at the Sandy sampling works, for which a satisfactory price could not be obtained. The places made vacant three weeks ago are being reoccupied, and rumor says 100 men will be employed ere Saturday dawns upon us. Call it fifty, which number, in addition to those already employed, will make eighty to ninety.

More of the Reese River Mines.

[From Our Own Correspondent.]

In my last, written from Austin, one or two claims within the city limits, well worthy of mention, and doubtless there are others in the same category, were unintentionally overlooked.

The Little Bonanza,

H. Leigh and B. Troxell, owners, promises, as its name indicates, to be a jewel of its kind, not to be picked up every day. It is located in the ravine, 400 feet above the Oregon shaft, and is now furnishing the mill with some very rich ore, said to be fully as good as some twenty tons previously worked, which ran for third and lowest class from $300 to $400; second class, $650, and for highest grade as much as $1,800 per ton, with more ore of the same character in sight.

The Defiance,

The property of Mr. Curtis, of the Manhattan mill and mining company, near the Dollarhide, is now leased to Turner & Humphries, who had some beautiful specimens on the dump. They seemed flattered with the prospect, and well they may be, if it yields its $75,000 this year as it is said to have done last season. A portion of the first fruits of this mine has been promised to be offered on the altar of the MINING AND SCIENTIFIC PRESS, to propitiate old Mammon, I presume, or some other mining divinity, or rather, as I have reason to believe, from a thorough appreciation of a journal such as yours, so devoted to the mining interests, so replete with mining news from every section, so ably describing and illustrating the different kinds of mining machinery and discussing from time to time the best methods for amalgamating, concentrating, and reducing ores, or a thousand and one of the many interesting and intricate questions that might be sprung in a mining community. On the

East Side of Lander Hill,

One thousand feet from the King Alfred, is the San Francisco, a late discovery of Warren and Vicas, of much promise, some of the first-class ore milling $1,030 per ton; second, $434, and third, $103. Within sight, in Emigrant canyon, the South Sonoma, belonging to J. Sutchell of San Francisco, was turning out ore that would pay well for working; assorted valued at $1,000.

The Patriot,

In the vicinity of the Yankee Blade, five miles from Austin, was located by James McCann as early as 1866, since which it has been worked almost uninterruptedly, not only paying all expenses for development but yielding handsome returns beside. The claim consists of 1,200 linear feet, properly secured by U. S. patent, and is located on a good large ledge with vein matter from two to eight feet wide. It can be traced by the croppings for about four miles, and is on the borders of two separate and distinct geological formations; in fact, wherever the walls have been exposed, the lode is found incased between the slate on the east and the granite on the west, a feature often regarded as a favorable indication. The yield from the mine for the four months prior to August last was in the neighborhood of $30,000. The whole number of tons of ore extracted from the mine since its opening has been something upwards of three hundred, with an average working value of about $350 per ton, giving a total yield of over $105,000. The developments consist of tunnels or levels to the extent, in the aggregate, of 1,200 feet, together with chutes and winzes connecting the two lower and principal levels, from which most of the ore was derived which thus far has so well paid for extracting. If good steam hoisting works were erected, and a double compartment shaft lowered between the Patriot and the Green Erin, a location on a parallel lode 400 feet northeasterly, also the property of Mr. McCann, through which both ledges could be advantageously worked, it would add much to the value of the property.

If, in addition to this, a good ten-stamp mill were put up near the mine in which the ore could be dumped, thus saving handling and hauling to Austin, the mine might be made more remunerative than ever. Along the same ledge as the Patriot are several promising mines, viz: the Cochran, Morris & Caple, the Chase, and others, some of which have paid exceedingly at times, and a few of which are at present in operation. The Chase, in New York canyon, is now being worked under lease by J. E. Farrell and others. All the indications are favorable for finding rich ore as soon as they reach the chimney for which they are now running. At one point a tunnel had been run about 700 feet. As far as could be ascertained this mine has yielded altogether in the neighborhood of $200,000.

The Morris and Caple,

Located between the Chase and the Patriot, is opened by a tunnel following the ledge about 1,000 feet. It also has yielded large sums, much of it paying $150 and upwards per ton; some of it $1,500, and one lot of ore from a spur running as high as $2,900. It has been pretty thoroughly breasted out above the tunnel, the greatest distance to surface at any point being about 400 feet. Little prospecting has been done below that level.

The Northern Belle,

Situated on the east side of New York canyon, opposite the Chase, is one of the recent discoveries here that is opening up with excellent indications, showing some rich stephanite, ruby and black sulphuret ores that had given one assay at least as high as $1,772. It is owned by Messrs. Byrne, Lacey and McKinney, no better fortune could be wished for than to have it turn out as well as its namesake at Belleville.

In what was once the Amador district, some seven or eight miles northerly from Austin, there is quite a number of locations and a series of ledges, running generally through the slate, from six to eight feet in thickness.

The Amador Con. S. M. company has a claim here that was well spoken of about Austin, the prevailing opinion being that it only required proper development to make it a good property. This much has been stated for the encouragement of stockholders, as barely sufficient work was done on it for some years past to hold it. In fact,

The Occidental

Is the only claim now worked to any extent in this immediate locality giving assays of $1,000, with an average per ton of $350, although at present extracting but little ore. It is owned by Finnegan & Rosling, and is worked through a tunnel 180 feet in length, which is now being rapidly pushed in a different direction with the view of tapping the ledge at a much greater depth, where it is hoped their labors will be richly rewarded.

In closing this account of the

Mines of Reese River District,

It may be safely stated, that with all the drawbacks from small veins, breaks and faults, and from former failures from sheer ignorance or mismanagement, there has as yet been no district visited in this State outside of Gold Hill and Virginia, so full of promise or so rich in results. At the former places over a hundred claims have been located that have never paid a dollar on the investment and probably never will, for the simple reason that the so-called ledges in which the locations are made do not carry sufficient gold or silver to pay for the extracting. But here it is different. While the ledges are usually small and the ores found in pockets or chimneys, yet they seldom fail to pay expenses if judiciously and perseveringly worked, often yielding handsome returns for the labor and capital expended. The ledges run through the granite at Austin, through the slate at Amador, and at Yankee Blade and New York canyon are found on the dividing line between the two formations, in some cases having slate on the hanging wall and granite on the other, possessing all the marks of true fissure veins, and a character for permanence and stability seldom found.

A. C. K.

DIPHTHERIA is prevalent in San Francisco. There were 170 deaths from it last month.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

THE sanitary policy which suggested the establishment of public baths for the poor should dictate an appropriation for supplying GLENN'S SULPHUR SOAP for the use of those bathers who are afflicted with cutaneous eruptions and skin diseases. Sold everywhere.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING SEPTEMBER 12TH, 1876.

AMALGAMATORS.—Wm. McCourt, Virginia City, Nev.

MACHINES FOR SAWING STAVES.—Benjamin H. Catching, Forest Grove, Ogn.

ANVILS.—James Jenkins, Cortez, Nev.

APPLE CORERS.—Isaac Rodgers, Sheridan, Ogn.

BOOK SHELVES.—John L. Boone, S. F.

CARRIER ATTACHMENT FOR SEWING MACHINES.—John L. Boone, S. F.

COFFINS.—Samuel Rodgers, Los Angeles, Cal.

STENCH TRAPS.—John Peter Schmitz, S. F.

BAG SEWING MACHINES.—William Webster, S. F.

——The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

ANTI-CONTAGIOUS COFFIN.—Samuel Rodgers, M. D., Los Angeles. The object of this invention is to provide an improvement in coffins for the burial of the dead, and it is called an anti-contagious coffin. It consists in constructing a perfectly tight wooden coffin somewhat larger than is necessary to receive the body. The inside of the coffin is lined with wire gauze cloth, which is retained at a short distance from the sides, ends, top and bottom, so that the space can be filled with an anti-contagious compound, after which the usual linings and trimmings may be put on and the cover fitted hermetically. The interior of this coffin is coated with a composition which is entirely impervious to water, air or gas. This composition is an invention of Dr. Rodgers. The space outside the wire is filled with a mixture of seven-eighths wood charcoal, well burned and finely pulverized, and one-eighth oxide of calcium, well burned and pulverized. A soft rubber band is glued upon the upper edge of the coffins, and when the lid has been screwed down all will be both water and gas-tight. By this construction, when this is done, there is no danger of contagion from the escape of noxious gases or from the fouling of wells in the neighborhood of cemeteries.

COMBINED FIRE PLACE AND FURNACE.—Reason Wiley, Arcata, Humboldt county. The patent covers a novel combination of a fireplace and a heating furnace, by which rooms adjacent to and above that on which the fireplace is situated may be warmed. It consists of a peculiarly constructed back for the fireplace, in which braces for strengthening the plate and preventing it from warping or twisting are so combined as to leave passages through which the air to be heated can circulate and eventually pass into a chamber in the masonry, from which it is distributed by the proper passages to the room to be warmed.

FORMING EMBANKMENTS OR LEVEES.—George Swift and William T. O'Neale, San Francisco. This patent covers a new method of making embankments and levees. The claim is: The method of forming levees or embankments; the same consisting in constructing low embankments or timber retaining walls successively above each other for the formation of canals, channels or troughs, and filling said channels by any suitable means with sand, gravel or other sedimentary deposit, mixed with water, which is drawn off after the sediment has been deposited, thus forming a concrete embankment.

SOLDER CUTTING MACHINE.—Ferdinand C. Smith and Charles E. Smith, Portland, Oregon. This invention relates to an improved machine for cutting bars or rods of solder into small pieces or pellets, such as are now much used by tinners for convenience in soldering joints. It also relates to certain improvements in casting the solder in order to adapt it to the machine and expedite tin work.

KNIGHT'S American Mechanical Dictionary is a book for all persons who make, buy, sell, use, or want to know anything about tools for machines, or are curious as to the history and development of mechanic art. It is a descriptive word-book of tools, instruments, machines, chemical and mechanical processes; civil, mechanical, railway, hydraulic and military engineering; a history of inventions; general technological vocabulary; and digest of mechanical appliances in science and the industrial and fine arts, etc. For circulars or price address or apply to A. Roman & Co., wholesale and retail booksellers, 11 Montgomery street, San Francisco.

GENERAL MERCHANDISE.

WHOLESALE.

WEDNESDAY M., Sept. 20, 1876.

BAGS.

Eng. Stand Wht..	11½@12
Neville & Co's...	
Hand Sewed....	11½@12
24x36.....	— @—
24x40.....	— @—
Machine do 24x36..	— @13½
" " 22x40.	11½@—
" " 22x36.	11½@12
Flour Sacks ¼s..	9 @11
" " ½s.....	6 @ 7
" " ⅛s.....	4½@ 5
Hessian ⅜-in.....	12½@14½
do ½-in.....	10 @—
do 40-in.	8½@—
Wool Sacks, 3½ lbs.	45 @50
do 4 "	50 @52½
Stand. twnnias...	11½@12
single seam do...	9 @10
Bean Bags.....	7 @ 8

CANNED GOODS.

Ass't'd Fruits	
in 2⅞ ₰ cans.	2 75 @ 3 00
do Table do...	3 75 @ 4 25
Jams & Jellies	4 25 @—
Pickles ½ gl..	— @ 3 50
Sardines, qr box	1 65 @ 1 90
do hf boxes.	3 00 @—

COAL.—Jobbing.

Australian, ₰ ton	8 75 @ 9 00
Coos Bay.....	— @ 9 00
Bellingham Bay.	— @ 9 00
Seattle.....	— @ 9 00
Cumberl'd.....	14 00 @18 00
Mt. Diablo.....	5 75 @7 75
Lehigh.....	— @22 00
Liverpool.....	8 50 @10 00
West Hartley....	— @14 00
Scotch.....	9 00 @10 00
Scranton.....	13 00 @16 00
Vancouver's fel.	10 50 @ 2 00
Oberocal, ₰ sk...	75 @—
Coke, ₰ bbl.....	— @ 60

COFFEE.

Sandwich Island	— @ 21½
Costa Rica Per ₰	20½@ 21
Onstemala.....	— @ 20
Java.....	— @ 25
Manilla.....	— @ 19
Ground in os....	25 @—
Chicory.....	7 @—

FISH.

Sac. Dry Cod, new	5½@ 8½
cases..	6 @ 7½
do boneless..	8½@ 10
Eastern Cod..	8 @ 9½
Salmon in bbls..	6 50 @7 25
do ½ bbls	3 75 @4 00
do ₰b cans..	2 40 @—
do ½ cans..	1 40 @—
do Col. R. ½ b.	4 25 @4 50
Pick. Cod, bbls.	22 00 @—
do ½ bbls	11 00 @—
Mack'l, No. ½ bbls	11 00 @—
" Extra....	@12 00
" in kits....	1 90 @2 25
" Ex mess.	3 50 @4 00
" Ex mess. ½ bs	@12 00
Pic'd Herr'g, ½ bbl.	@ 50
Boe . Sm'k'd Her'g	40 @ 50

LIME, ETC.

Lime, St'a Cruz,	
₰ bbl.....	2 00@ 2 25
Cement, Rosendale, do.	2 75@ 3 50
do Portland do	4 75@ 5 50
Plaster, Golden Gate Mille....	3 00@ 3 25
Land Plaster, ₰ ton.....	10 00@12 50

MISCELLANEOUS.

Pulu.....	— @ 7½

NAILS.

Assorted size, keg	3 75 @4 00

OILS.

Pacific Oloc Co	
Neat F't No. 1	1 00 @ 90
Pore.....	— @—
Castor Oil, No. 1..	— @ 95
Baker's A.....	— @1 15
Cocoanot.....	— @ 60
Olive Plagniol..	5 50 @5 75
do Possel.....	4 75 @5 00
Palm ₰.....	9 @—
Linseed, raw....	— @62½
do boiled.....	— @65½
Chins nut in cs..	65 @—

METALS.

[WHOLESALE.

THURSDAY, M., Sept. 21, 1876.

American Pig Iron, ₰ ton	32 00 @— —
Scotch Pig Iron, ₰ ton	31 50 @ 32 00
White Pig, ₰ ton	40 00 @ 50 00
Oregon Pig, ₰ ton	31 50 @ 32 50
Refined Bar,	— @— 4½
Boiler, No. 1 to 4	— @— 6½
Plate, No. 5 to 8	— @— 5⅝
Sheet, No. 10 to 14	— @— 5¾
Sheet, No. 16 to 20	— @— —
Sheet, No. 22 to 24	— @— —
Sheet, No. 26 to 28	— @— —
Horse Shoes, per Keg	7 00 @ 8 50
Nail Rod	— @ 10 —
Norway Iron	— @— 9½
Rolled Iron	— @ 4 @ 8
Other Irons for Blacksmiths, Miners, etc.	— @— 4½

COPPER.—	
Copper Tin'd	— @ 37 @ 40
Sheathing, ₰ ₰	— @ 24 @ 40
Sheathing, Yellow	— @ 21 @— 22½
Sheathing, Old Yellow	— @ 10 @ 11
Composition Nails	— @ 21 @— —
Composition Bolts	— @ 24 @— —
STEEL.—English Cast, ₰ ₰	— @ 20 @— 25
Anderson & Wooda' ordinary sizes	— @— 15
Drill	— @— 16½
Flat Bar	— @ 16 @— 20
Plow Steel	— @ 8½ @— 9
TIN PLATES.—	
10x14 I C Charcoal	11 00 @— —
10x14 I. X. Charcoal	13 00 @— —
Roofing Plate I C Charcoal	10 00 @ 10 50
Banca Tin	— @ 24 @— —
Australian	— @ 25 @— —
ZINC.—Sheet, Cask	— @— 11
Zinc, Sheet, 7x3 ft. No 7 to 10 ₰ ₰	— @— 11
do do 7x3 ft, No 11 to 14	— @— 11½
do do 8x4 ft, No 8 to 10	— @— 12½
do do 8x1 ft, No 11 to 10	— @— 12
NAILS Assorted sizes	3 60 @ 3 75
QUICKSILVER, per ₰	— @ 45 —

LUMBER.

CARGO PRICES OF REDWOOD.

Rough, ₰ M	@18 00
Rough refuse, ₰ M	14 00
Rough clear, ₰ M	30 00
Rough clear refuse, M	20 00
Resin, ₰ M	32 50
Rustic, refuse, ₰ M	22 50
Surfaced, ₰ M	30 00
Surfaced refuse, ₰ M	20 00
Flooring, ₰ M	28 00
Flooring, refuse, ₰ M	18 00
Beaded flooring, ₰ M	30 00
Beaded floor, refuse, M	20 00
Half-inch Sidiog, M	20 00
Half-inch siding, ref, M	16 00
Half-inch, Surfaced, M	25 00
Half-inch Surf. ref., M	20 00
Half inch Battens, M	20 50
Pickets, rough, ₰ M	1 00
Pickets, rough, p'ntd	13 00
Pickets, fancy, p'ntd	26 00
Shingles, ₰ M	35 00

PUGET SOUND PINE —Retail Price.

Rough, ₰ M	22 50
Fencing, ₰ M	22 50
Flooring and Step, ₰ M	32 50
Flooring, refuse, ₰ M	25 00
Flooring, 2d quality, M	25 —
Laths, ₰ M	3 50
Forring, ₰ lineal ft	—½

REDWOOD—Retail.

Rough, ₰ M	22 50
Rough refuse, ₰ M	18 00
Rough Pickets, ₰ M	18 00
Rough Pickets, p'd, M	20
Fancy Pickets, ₰ M	30
Siding, ₰ M	25 00
Surfaced and Long Beaded	37 50
Flooring, M	35 00
Do do refuse, ₰ M	25 00
Half-inch surfaced, M	32 50
Rustic, No. 1, ₰ M	40 00
Battens, ₰ lineal foot	—½
Shingles, ₰ M	3c

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, Sept. 20, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 91 to 91½. Silver 5¾@6.

Gold in N. Y., 110

GOLD BARS, 880 to 890. SILVER BARS, 11@21 per cent. discount.

EXCHANGE on N.Y., 50@35-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¾; Paris, five francs per dollar; Mexican dollars, 5 per cent. discount.

LONDON — Consols, 93⅛; Bonds, 102¾.

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We invite the acquaintance of all parties connected with inventions aod patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patente, or purchasere of patented articles, can often receive advice of importance to them from a short call at our office.

Remittances of money, made by individnal inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not ooly lost their money but their inventione also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to our agency

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United States and Foreign Patent Agente, publishers Mining and Scientific Press and the Pacific Rural Press, 224 Sansome St., S. F.

Mining and Other Companies.

Persons interested in incorporated schare will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Cincinnati Gold and Silver Mining Co.—

Principal place of business, San Francisco, Cal. Location of works, Kelsey Mining District, El Dorado Co., Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 29th day of August, 1876, an assessment, No. 6, of ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 535 California street, San Francisco, Cal

Any stock upon which this assessment shall remain unpaid on the 29th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 16th day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale

WM. SMALL, Secretary.

Office, Room 2½, No. 535 California street, San Francisco, Cal.

Kearsarge Con. Quicksilver Mining Co.—

Location of principal place of business, San Francisco, Cal. Location of works, Lake Mining District, Lake County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. —), levied on the first day of July, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
James McHaffie, Trustee..	6	100	$ 15 00
James McHaffie, Trustee..	7	25	3 75
James McHaffie, Trustee..	8	150	22 50
James McHaffie, Trustee..	9	60	9 90
James McHaffie, Trustee..	10	100	$15 00
James McHaffie, Trustee..	11	91	13 65
James McHaffie, Trustee..	24	1000	150 00
James McHaffie, Trustee..	25	1000	150 00
James McHaffie, Trustee..	20	1000	150 00
James McHaffie, Trustee..	27	1000	150 00
James McHaffie, Trustee..	28	100	15 00
J M Davis.....	32	100	15 00
James McHaffie, Trustee..	36	110	16 60
James McHaffie, Trustee..	38	100	15 00
James McHaffie, Trustee..	39	100	15 00
James McHaffie, Trustee..	39	100	15 00
James McHaffie, Trustee..	40	100	15 00
James McHaffie, Trustee..	45	50	7 50
John O Hanscom.....	47	400	60 00
Mrs Joseph C Perkins. ...	49	100	16 00
James McHaffie, Trustee..	51	49	7 35
Jno O Hanscom, Trustee...	52	500	75 00
Jno O Hanscom, Trustee..	53	400	60 00
Jno O Hanscom, Trustee..	54	100	15 00
Jno O Hanscom, Trustee..	55	250	37 50
Jno O Hanscom, Trustee..	66	100	16 00
Jno O Hanscom, Trustee..	57	50	7 50
Jno O Hanscom, Trustee..	58	50	7 60
James McHaffie, Trustee..	59	250	37 50
James McHaffie, Trustee..	60	100	15 00
James McHaffie, Trustee..	61	28	4 20
James McHaffie, Trustee..	64	10	1 50
J M Davis, Trustee.....	82	68	10 20
J M Davis, Trustee.....	83	300	45 00
J M Davis, Trustee.....	84	200	30 00
J M Davie, Trustee.....	85	100	15 00
J M Davis, Trustee.....	86	100	15 00
J M Davis, Trustee.....	87	100	15 00
J M Davis, Trustee.....	88	60	7 50
J M Davis, Trustee... ..	89	60	7 50
J M Davis, Trustee.....	90	50	7 60
J M Davis, Trustee.....	91	50	7 60
James McHaffie, Trustee..	93	100	15 00
James McHaffie, Trustee..	94	100	15 00
James McHaffie, Trustee..	95	300	45 00
Henry Philip, Trustee....	96	1000	150 00
James McHaffie, Trustee..	97	1000	150 00
James McHaffie, Trustee..	101	100	16 00
James McHaffie, Trustee..	102	100	15 00
James McHaffie, Trustee..	103	100	15 00
James McHaffie, Trustee..	104	50	7 50
James McHaffie, Trustee..	105	50	7 60
James McHaffie, Trustee..	106	50	7 60
James McHaffie, Trustee..	107	50	7 60
James McHaffie, Trustee..	108	150	22 60
James McHaffie, Trustee..	109	250	37 50
James McHaffie, Trustee..	110	2500	375 00
James McHaffie, Trustee..	111	5000	750 00
James McHaffie, Trustee..	112	5000	760 00
James McHaffie, Trustee..	113	200	30 00
James McHaffie, Trustee..	114	100	15 00
C D Fitzhugh.....	115	3333	499 95
Henry Philip, Trnetee....	116	500	76 00
Henry Philip, Trustee....	117	500	75 00
James McHaffie, Trustee..	118	10000	1500 00
James McHaffie, Trustee..	119	1010	286 55
W G Hughes, Trustee.....	124	3334	500 10
Jno Brownlie, Trustee....	125	750	112 50
Jno Brownlie, Trustee....	126	2500	375 00
Jno Brownlie, Trustee....	127	1000	150 00
James McHaffie, Trustee..	128	10	1 50
James McHaffie, Trustee..	129	10	1 50
James McHaffie, Trustee..	130	10	1 60
James McHaffie, Trustee..	131	10	1 50

And in accordance with law, and an order of the Board of Directors, made on the first day of July, 1876, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, room 10 Stevenson Block, on the 16th day of September, 1875, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

JAMES McHAFFIE, Secretary.

Office, Room 10 Steveneon Block, San Francisco, Cal.

POSTPONEMENT.—By order of the Board of Trustees of Kcarsage Consolidated Quicksilver Mining Company, the above sale is hereby postponed until Monday, the twenty-fifth day of September, at one o'clock P. M. JAMES McHAFFIE, Secretary.

Mariposa Land and Mining Company

of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa county, Cal. Notice is hereby given, that at a meeting of the Board of Directors, held on the seventh day of September, 1876, an assessment, No. 7, of one dollar ($1) per share was levied upon the capital stock of the Corporation, payable immediately in United States currency, to the Secretary at the office of the Company, room 33, Nevada Block, No 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary at the office, No. 9 Nassau street, New York, N. Y.

Anystock upon which this assessment shall remain unpaid on the ninth day of October, 1876 will be delinquent, and advertised for sale at public anctioo; and unless payment is made before will be sold on Monday the thirtieth (30th) day of October, 1876, to pay the delinquent assessment, together with coste of advertising and expenses of sale. By order of the Board of Directors.

LEANDER LEAVITT, Secretary.

Office, Room No. 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal.

Mariposa South Mining Company—Location

of principal place of business, San Francisco, Cal. Location of works, Spanish Belt Mining District, Nye county, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the eighth day of August, 1876, an assessment, No. 7, of ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, 418 California street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 19th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the seventeenth (17) day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Secretary.

Office, Room No. 2, 418 California street, San Francisco, California.

Northerly Five Cent Hill Gravel Mining

Company. Location of principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock in said company, on account of an assessment, levied on the ninth day of August, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
T G Belty.....	9	20	$ 16 00
T G Belty.....	60	200	150 00
T G Belty.....	62	200	150 00
T G Belty.....	89	3060	2260 00
T G Belty.....	122	20	16 00
T G Belty.....	123	10	7 50
T G Belty.....	186	300	225 00
J M Baffington, Trustee..	149	600	375 00
Warren Bryant.....	188	3000	2250 00
Warren Bryant, Trustee..	192	876	656 25
F O Carter.....	162	625	468 75
G M Condee, Trustee.....	177	100	75 00
G M Candee, Trustee.....	178	100	75 00
G M Condee, Trustee.....	179	100	75 00
G M Condee, Trustee.....	179½	100	75 00
G M Condee, Trustee.....	180	100	75 00
G M Condee, Trustee.....	181	100	76 00
G M Condee, Trustee.....	182	100	75 00
G M Condee, Trustee.....	183	100	76 00
G M Condee, Trustee.....	184	50	37 50
G M Condee, Trustee.....	185	20	15 00
W A Cornwall.....	13	100	75 00
W A Cornwall.....	14	100	75 00
W A Cornwall.....	16	50	37 60
W A Cornwall.....	16	50	37 50
W A Coruwall.....	17	20	15 00
W A Cornwall.....	18	20	15 00
W A Cornwall.....	21	10	7 50
W A Cornwall.....	22	10	7 50
W A Cornwall.....	76	100	75 00
W A Cornwall.....	84	20	15 00
D W Frary.....	171	100	75 00
D W Frary.....	172	100	75 00
D W Frary.....	173	50	37 60
D W Frary.....	174	30	22 50
C Marchant.....	25	100	76 00
Peter McConaghey.....	175	20	15 00
A H Stineon.....	176	500	375 00
N H Stinson.....	104	2000	1500 00
N H Stinson.....	105	1800	1350 00
N H Stinson.....	106	200	150 00
N H Stinson.....	107	875	656 25
N H Sleeon.....	111	25	18 75
N H Stinson.....	126	50	37 50
N H Stinson.....	128	20	15 00
N H Stinson.....	129	10	7 50
N H Stinson.....	141	10	7 50
N H Stinson.....	187	3000	2250 00
J A Upton.....	170	500	375 00
J Warner.....	189	3000	2250 00
V P Yelmine.....	49	50	37 50
V P Yelmine.....	50	50	37 60
V P Yelmine.....	63	20	15 00
V P Yelmine.....	135	10	7 60
V P Yelmine.....	136	10	7 50
V P Yelmine.....	138	10	7 60

And in accordance with law, and an order of the Board of Directors of said company, made on the 11th day of September, 1876, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, room No. 33, Merchants' Exchange Building, San Francisco, Cal., on Monday, the second day of October, 1876, at the hour of one o'clock, P. M., of that day, to pay the delinquent assessment thereon, together with costs of advertising and expenses of the sale.

WARREN BRYANT, Secretary,

Office, Room No. 33, Merchants' Exchange, San Francisco, Cal.

Sierra Iron Company—Location of principal place of business, San Francisco, Cal.

Location of works, Sierra and Plumas counties, Cal.

Notice is hereby given, that at a meeting of the Trustees of said company, held on the 18th day of August, 1876, an assessment of $1 per share was levied upon the capital stock of the corporation, payable immediately, in gold coin of the United States, to the Secretary, at the office of the company.

Any stock upon which this assessment shall remain unpaid on the 30th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday the 26th day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

CALES T. FAY, Secretary.

Office, No. 9 Halleck Block, 318 Sansomo street, San Francisco, Cal.

Union Stone Company of California—

(Sorel Patent).—Location of principal place of business and works, city and county of San Francisco, Cal.

Notice is hereby given, that at a meeting of the Board of Directors of this company, held on Tuesday, the 22d day of August, 1876, an assessment (No. 4) of 20 cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 19 First street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Tuesday, the 26th day of September, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 17th day of October, 1876, to pay delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors.

K. F. KNOX, Secretary.

Office, No. 19 First street, San Francisco, Cal.

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WADE'S OPERA HOUSE, Mission Street, near Third. Open every evening with first-class Dramatic Company. Box Office open from 9 A. M. to 10 P. M. Doors open at half past seven. Commence at eight o'clock. TONY DENIER.

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CAPITAL.....$1,000,000.

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James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary

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THOS. PENDERGAST. HENRY S. SMITH.

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IRON CASTINGS

and MACHINERY,

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Risdon Iron and Locomotive Works

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24v22-3m JOSEPH MOORE, Superintendent.

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Every Variety of Shafting,

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Steamboat Shafts, Oranks, Piston and Connecting Rods Car and Locomotive Axles and Frames,

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Of every descript on and size.

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ALL STYLES OF FANCY HEAD BOLTS.

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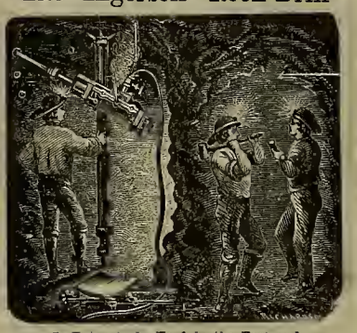

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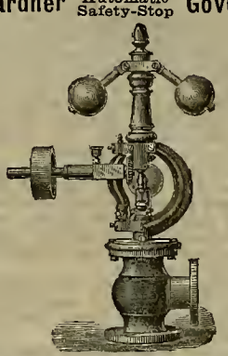

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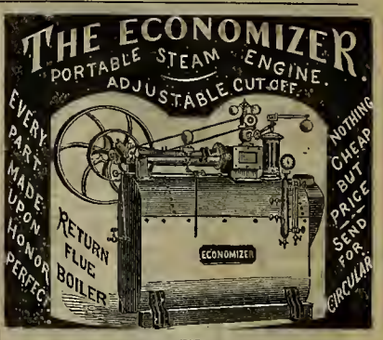

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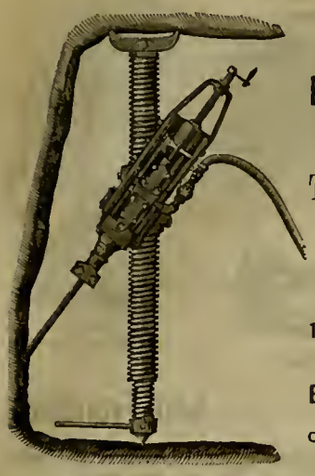

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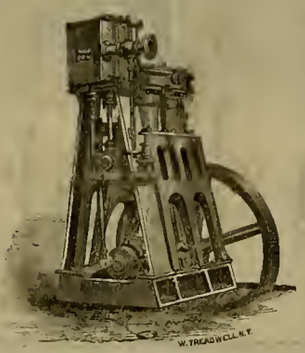

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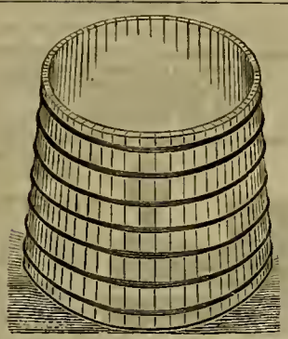

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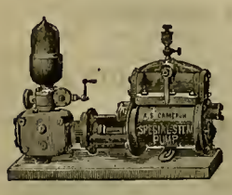

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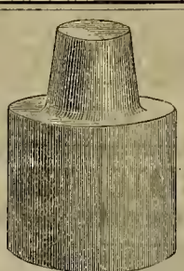

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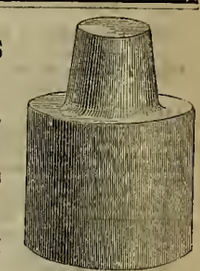

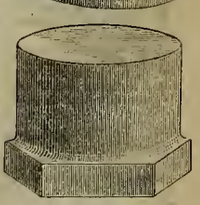

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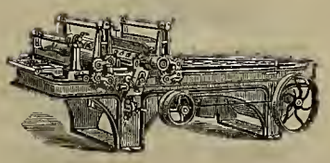

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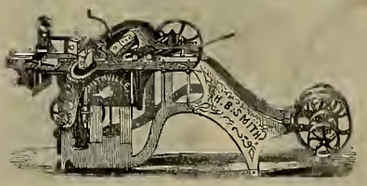

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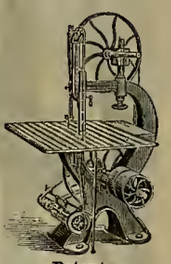

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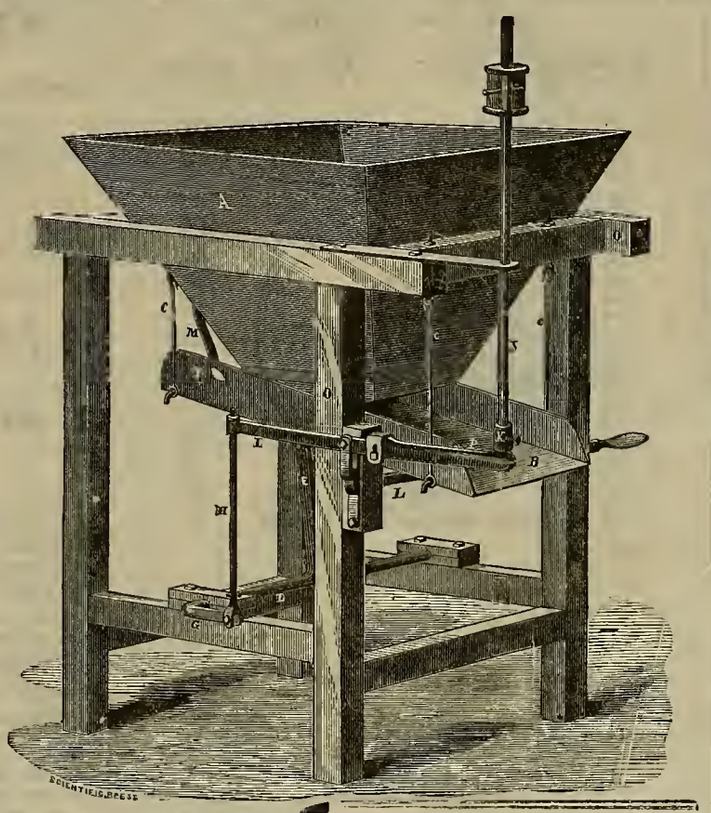

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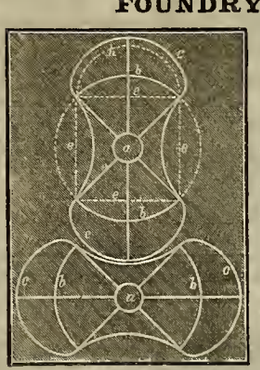

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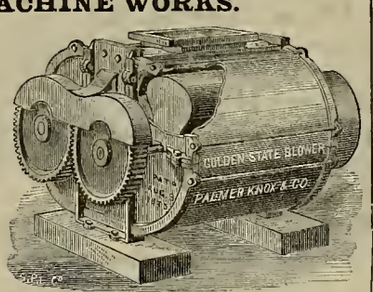

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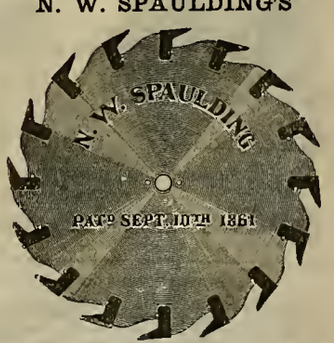

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

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SAN FRANCISCO, SATURDAY, SEPTEMBER 30, 1876.

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[Editorial Correspondence.]

The Centennial at Philadelphia.—No. 15.

With the advent of cooler skies the people are coming up to this great world's exhibition of a century's progress in immense numbers, and the Centennial grounds are daily thronged with large and lively delegations from every part of the country. It is now a pleasure to visit the exposition, instead of the penance it was a few weeks since, when Philadelphia was like a fiery furnace, and when the usually refreshing showers that sometimes passed over the city seemed to intensify rather than lessen the sufferings of the poor unfortunates who selected that time to visit the exhibition.

Woman at the Centennial.

We have already pointed out some of the peculiar characteristics which mark this great anniversary exhibition; but there is still another most noticeable one in the part which woman has taken in regard to it. The patriotism and philanthropy of the women of America has ever been of a high order, and far more active than in any other country; and it may be regarded as morally certain that if the world is ever completely civilized and enlightened, so that the apocalyptic millennium may be fully realized here on earth, that event will be mainly brought about by the efforts of womankind—by woman's love and woman's work. The mission of woman is rapidly enlarging, and already extends to fields that a few years ago were considered quite beyond her province or her power. Her efforts may even now be considered as embracing everything which tends to the improvement and happiness of the world. Her future is glorious, beautiful, illimitable!

When this great exhibition was fully decided upon, and the work of preparation had actually commenced, but was beginning to lag for want of confidence and enthusiasm, the women of the country came promptly to the rescue, and said that it must and should go on, but that it should not be left to the men alone. They claimed an interest in the patriotic enterprise as well as their husbands and fathers and brothers; for they, too, had gained freedom and independence, and in the universal progress of the country had secured the privilege of standing before the world an equal of man, entitled thereto by a code as ancient and as sacred as that which decreed equality to the sterner sex. Acting upon that assumption they formed a national aid society to the Centennial commission, with auxiliary branches in most of the cities and States throughout the Union, and went earnestly into the work of raising money. The efforts of the ladies of California in this direction will never be forgotten. The results of those efforts are said to have astonished the ladies of Philadelphia, and the gentlemen managers of the enterprise as well. By the sale of Centennial stock, by fairs, tea parties, etc., they soon realized a large amount of money, and by their example and energy encouraged and enlisted thousands of men in the enterprise who might otherwise have stood permanently aloof. The stories of Bunker Hill monument and of the Christian Commission during the late war began to come uppermost in the minds of many, and an impetus was given to the work which, if it did not form the turning point, at least did much to make the effort the grand success which we see to-day.

The Women's Pavilion.

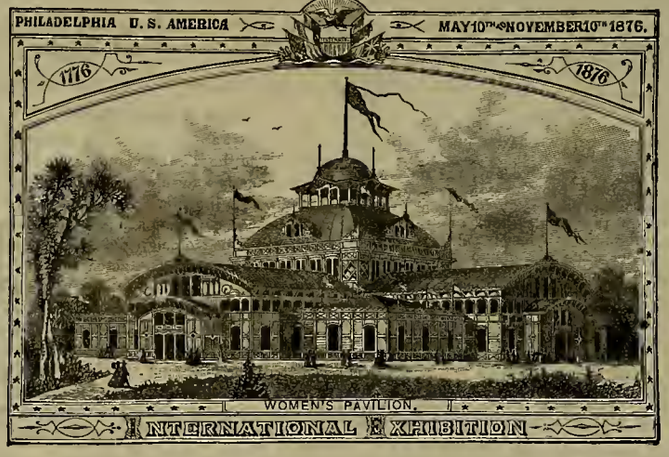
This building covers an area of 30,000 square feet, and is formed by two naves intersecting each other at the center.

In its design and construction the originators were careful to exclude as far as possible everything emanating from the head or brain of the opposite sex. Though they did not actually build the pavilion, they paid for its erection, and all the exhibits therein, except the machinery by the aid of which their work is done, is the work of their own hands. This rule is carried even to the engine house, where the six-horse power steam engine has been run and kept in order from the day of opening until now by a lady engineer—Miss Emma Allison, of Grimsby, Ontario county, N. Y.

The structure was designed and is occupied solely for the exhibition of women's work in all its branches, and for the illustration of those educational systems and moral and benevolent enterprises in which women have borne the chief or most prominent part. The entire enterprise has been planned and is conducted by them; and as the great Corliss engine which drives the machinery in the machinery building was first set in motion by a man—the President of the United States—so the engine which drives the machinery in the women's pavilion was first started by a woman, the wife of the Emperor of Brazil.

A Bird's Eye View of Woman's Work.

One of the objects of this special display is to help forward this good work of reform by making the public better acquainted with its plans and purposes, and to infuse new strength and energy into the lives of those who are already engaged in the work. The great design of the exhibition as a whole, that of object teaching, is fully sustained in this particular department. A visit to the women's pavilion cannot fail to interest and instruct, and we



recommend to all who are in doubt as to what women are good for outside of the kitchen, nursery or parlor, to go to the pavilion and see and learn.

As the visitor reaches the main entrance he reads, emblazoned upon the portals, this appropriate inscription, "Let her works praise her within the gates," and if he goes up the steps with an unprejudiced mind he feels, on entering, that her works, as there displayed, do praise her and make known at a glance the great variety and number of industrial pursuits which are open to females; the demands of which, on the hand or brain, are quite within the scope and sphere of the sex. The exhibits are neatly arranged and properly classified, and the entire space is filled up.

We have neither time nor space to call attention to even a moiety of the exhibitions in this direction; but it is a noticeable fact that in point of taste and elegance, as well as originality of design, the display of American handiwork is in marked ascendence. There is nothing about it stereotyped or conventional. It seems to have come from a democratic school where every one is free to develop according to her peculiar taste or genius. The only motto seems to have been "Excelsior."

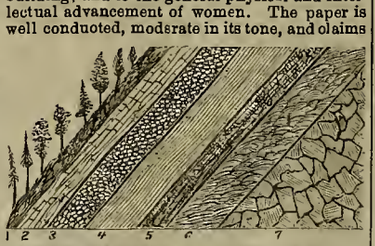
There is also a good display of wood carving, large and small, which furnishes abundant evidence that such work might safely be left entirely to female skill and genius. This display embraces the ornamental work of furniture, pianos, organs, fancy ornaments, etc. Perhaps the most uniformly creditable exhibitions are those from the Lowell, Cooper and Cincinnati art schools.

The inventive genius of the ladies is made manifest in numerous ways and samples. A Boston lady inventor exhibits what she calls a "surprise bed," which is quite a curiosity in its way. A life preserving mattress is also shown as the invention of Mrs. H. B. Mountain, of New York, which has the indorsement for usefulness and safety of that aquatic expert, Paul Boyton. There are also numerous other inventions for household and kitchen use, etc., but we can mention only one, a "P. G. G." (patent griddle greaser), the invention of Mrs. Sherwood, of Boston. This invention is designed to avoid the troublesome, vexatious and objectionable deposit of grease on dress and person which is so unavoidable in the ordinary use of rags, pork rinds, etc., in the very necessary act of preparing those toothsome "hot cakes," which form such a desirable portion of the morning meal. Blessed be the inventor of the "P. G. G."

The Japanese department forms quite an attractive feature in the kind of work peculiar to that singular people. This exhibition affords abundant evidence that there is more taste, skill and ingenuity among the ladies of Japan than they have generally been credited for.

Among the more practical exhibits may be seen quite a number of silk, worsted and other looms, which are in daily operation. Also a printing press and types, cases, etc., forming a complete printing office—the editorial and compositor department of which is run by females, but we noticed that the foreman was of the opposite sex. The office is chiefly employed in printing a weekly paper called *The New Century*, devoted to the interests of the exhibit in this building, and to the general physical and intellectual advancement of women. The paper is well conducted, moderate in its tone, and claims for the sex only sound and reasonable privileges in the world of industry and art, such as must be accorded her by any reasonable being.

W. B. E.



Structure of the Santa Cruz Mountains.

McKenzie's San Jose foundry have just turned out some tubes for the Almaden mining company and now they are hard at work finishing an engine and hoisting apparatus for the Union Consolidated mining company, up near the Deadwood. The engine is a stationary of 20-horse power. The fly wheel is six feet in circumference, and boiler and other appurtenances to match.

Dr. Thos. Laycock, the eminent English medical writer and physician to the Queen, is dead.

Geological Outline of Santa Cruz Range.

(Written for the Press by C. L. Anderson, M. D.)

Santa Cruz range of mountains extends from the Golden Gate to the Bay of Monterey. It is about 75 miles long by 25 miles wide, commencing under the Golden Gate and rising gradually in a south-easterly direction, reaches its highest point in Mount Bache (Loma Prieta of the Spaniards), 3,780 feet, which is nearly on a direct line between the cities of San Jose and Santa Cruz. Thence, by a series of gently undulating foothills, it slopes down to the Pajaro valley and the Bay of Monterey, to the sea level.

This range is noted for its abundance of timber, running streams, rich soil and salubrious climate. It abounds in grand and beautiful scenery—the bay of San Francisco, Santa Clara and Pajaro valleys, and Monte Diablo range, including Mount Hamilton, on one one side, and the Pacific ocean on the other.

The amount of timber, and the great variety for fuel and building purposes, is immense, and, as yet, scarcely touched.

Grapes, apples, peaches, apricots, oranges, figs, almonds, and fruits of like character can be grown of fine quality and abundant in many places in this range.

The flora is exceedingly varied and interesting, embracing perhaps a larger number of species than can be found on an equal area anywhere in the United States.

There is a great variety of mineral springs of as valuable qualities as any country can boast of. Some day invalids in large numbers will resort to them. The intrinsic value of the waters will be aided by the genial climate in which they are located.

I herewith present a geological section of this range as it would appear if unbroken or undisturbed.

1. *Soil.*—This is of the richest quality, made up, as it is, of the *debris* of the different rocks underlying and intermixed with an abundance of vegetable mold.

2. *Alluvium.*—Earth deposited from streams or lakes. Present in the little basins and valleys of streams.

3. *Conglomerate.*—More or less cemented in large, uneven masses.

4. *Shale and Sandstone.*—In this formation is often found coal and petroleum. There are places where large masses of sandstone are saturated with petroleum. The coal is found in thin strata, of good quality, but nowhere, as yet, discovered in quantities sufficient to pay for mining.

5. *Crystalline Limestone.*—This is of purest quality, and the lime manufactured from it cannot be excelled.

6. *Metamorphic.*—The limestone gradually runs into the metamorphic. This formation is most abundant, having, at some period of the earth's history, been stratified and subjected to heat. In places gold has been deposited.

7. *Granite.*—Once in a while this is found at the surface, but not often. There are places where granite of good quality for building purposes can be obtained.

These formations are very much broken and disturbed; and at no one place do they assume much regularity. Hence, I have called this section *ideal*, in order to show that this range, if perfect, as it may have been before the upheaval, would present the formations in regular strata, and by inclining them to the center of a ridge, they would appear like my illustration. In this grouping the line between each formation is not always very distinct. The two contiguous groups combine so as to produce a great variety of rocks.

I present this geological outline that at some future time I may particularize some of the things found in this exceedingly interesting range of mountains.

Santa Cruz, September 21st.

Two quartz mills in operation at Unionville, and one at Park City, will add materially to the billion product of Lewis and Clark county, and will also assist in improving business in Helena, Montana.

CORRESPONDENCE.

Alta Mine and its Magnificent Machinery.

Enrrors Prese:—It may eeem eingular, nevertheless it is an actnal fact, that notwithetanding the immense wealth ae developed iu a comparatively emall epace on the celebrated Comstock lode, hut little if sny systematic developmente have been condncted at any distance, north or sonth, from the immediate vicinity of the great deposite first discovered, and snhsequently hy deeper explorations made to yield their preeent eatisfactory dividends.

Mining experts and those familiar with the lode and the country since ite firet occupancy ae a miniug district, can give no good reason why mines of vset wealth ehonld not he opened either

North or South Upon the Mineral Belt,

And among the present imperfectly worked locations ahonnding on theee extremee. To the contrary, many have and do assert that, judging from the oroppings, the formation of the country, ite geological structure and the general trend of the ledgee, they are firmly convinced that when capital can be moved from ite present center of attraction and expended in these eections, mines will he opened that in richnsse msy equal thoee at present yielding eo handsomely, adding new reservoirs of wealth to the State and nation, and wonders to the mining world.

It may he there ie a

Magnetic Attraction About Money

That oaneee it to persistently adhere to eome favored locality from whence large enms bave been taken. Be tbis as it is, it ie certainly true that, with few commendahle exceptions, it seems impossible to induce those of wealth and experience in miuing specnlatione to extend their operatione beyond the magic oircle embracing the mines of Virginia and Gold Hill. To add to the eingularity of this fact, we know that numeroue locations, irreverently called "wild-cate," have shown npon little work such prospects tbat were they near any of the leading mines would command nnlimited enms for their full and complete development, while those referred to, failing to pay dividende from the "grass-roots," are allowed to remain untonched, waiting to reward with their wealtb the enterpriee of more libsrsl cspitalists.

As before mentioned there are, however,

Some Meritorious Exceptions

Whose energy should not only meet with a reccompense eqnalliug their expectatione, but receive the hearty support of all who desire a thorough exploration of the great Comstock mineral helt heretofore superficially worked. Notably among them we may mention the Silver Hill, Dayton, Jnstice, Kossuth, Rock Ieland, Amazon, South End, Florida, and the enhject of thie sketch, the alresdy well-known Alta.

This Mine

Came into the posseesion of the company who are managing its development ahout the 1st of October, 1875. They immsdiately commenced active operations, and up to the present time have permitted nothing to retard their rapid progress in taking a prominent plsce among the leading prospective mines of the State. The location ia at the lower part of Gold Hill, and consists of 1,800 feet lying directly north of the Woodville, eaet of the Jnstice and southeast of the Overman and Caledonia, joiuing the first two mines on the reepective points mentioned. From this it will be seen that the location in itself is all that conld he deeired, and more particularly so when it is understood that the richest ore taken from the Justice, and that now heing worked and yielding satiefactory results, is from the 800-foot level, which is eeveral hundred feet east of their main shaft. Also, that the Alta ehaft is on a direct line (being due north) several hnndred feet from that of the Woodville, which strnck (at ahont 400 feet) tbeir ledge of rich ore. But the Alta shaft, being situated on the hill, ahont 250 feet higher than the Woodville, would not, in all probsbility, encounter the same vein until a depth of hetween 650 and 700 feet is attained.

By many this location is considered of greater importance for mineral wealth than either of its sisters, the Justice or the Woodville; for, as it is well knowu, the preeent bonanzas in Virginia are eitnated several huudred feet eset of the original croppings, as discovered by the first locatore of the Comstock, and all the large mining companiee, the Gould & Curry, Ophir, Chollar, Hale & Norcroes and Savage, found it necesary to sink new ehafts to the east of their first locations and workinge.

But the eituations of the

Dividend Paying Deposits

In the Crown Point and Belcher minee gives them still stronger hopeand greater encouragements, ae they were found 400 and 700 feet east of their main shafte, showing that there, as in Virginia, the trend of the great ore hodies is, without doubt, oonsiderable distance east of the croppiugs; bnt with this difference, that thoee north of the divide bear to the northeast, while from the Yellow Jacket, in Gold Hill, their bearing is southeast. Such being the case there can he no reason, logical or geological, why the Alta may not, at eufficient depth, reveal ore hodies of corresponding richnese.

Their Shaft

Is of three compartmente, and timhered in a msnner eecond to none in the State, the whole heing done under the foremanship of Mr. Boyle, sn old and experienced miner on the lode. The eugines nsed for einking, though not as powsrfnl as thoee need in the larger mines, are perfectly adequate to sink from 1,200 to 1,500 feet, while the bnildings are all of the most substantial character. In the progress of the work the superintendent, Mr. C. Derby, ehowed bis good jndgment in urging upon the company the practicability of erecting at the firet

Pumping Machinery

Of such conetruction and power ae to obviate all further inconvenience. The reasons for this are good, ae it is well known that hundrede of thoeande of dollare have been nselessly expended by the injudicions selection of machinery—hy plaoing pnmping and hoisting machinery npon minee wholly inadequate to the labor required. In many cases small pumps have been attached to heavy enginee, and vice versa, which invarisbly necessitates the equalizing of the same, at heavy coet and correeponding loss to the companiee. In thie osee, the Trustees of the Alta, being composed of men thoroughly posted in miving matters, met the snggestions with a cordial spirit of liberality, and now, after months of labor and grsat expense, have erected, and now in operation, one of the finest pumping engines in the State. It ie very difficult to describe machinery without sketches or models, bnt we will endeavor in this case to at leset make it ensceptihle of nnderstanding.

The Pumping Machinery

Is driven hy a compound condeusing engine, operated by a Davey patent differential valve motion. The initial or high-pressnre cylinder is twenty-seven and one-half inches in diameter, and the condensing or low-pressure cylinder is forty-four inchee in diameter hy eix foot etroke. The cylinder and slidee are set upon a hox hedplate of great strength. This plate is holted firmly to two heavy girders running directly across the shaft, forming the hearings for the two hobs, and altogether forming a continuous fonndation-plate of cast iron of seventy fset in length—the whole firmly holted to tbe rock, instead of etone foundation. The holding-down holts are let into the rock twenty feet and fastened with eulphur and lead. First ie the condeneing cylinder, bolted directly to the end of which is the high-preesure cylinder, the piston of which pssees tbrough the center of the head and attachee to the center of the cross-head. The two pieton-rods of the low-pressure pass through tnbes cast one on each side of the high-pressure cylinder, having proper bushings and etnffing-boxee on the head of the high-preseure cylinder. The connecting rods to the bohe attach with hack jaws on each eide of a high-pressnre piston-rod at one end and to ths first hoh at the other. From the first hob a conuecting-rod runs acroee the shaft to the second bob, operating each in opposite directions. There are two spear or pnmp-rode, operating on two ten-inch plunger pumps 300 feet from the surface. As these are connected to hobs working in opposite directions, they are always in perfect balauce and reqnire no hallast-bobs in the shaft. The euction lift-rod is connected to one of the spear-rods and works a fonrteen-inch Cornish sinking-lift pump 200 feet bslow the plunges. This epear-rod is halanced hy a weight of 4,000 pounds on the hack end of the boh farthest from the engine.

The air pump ie operated from a center piston-rod running bsck of the cylinder. Tbe condenser stands between and a little to the one side of the engine center, allowing room to get at the cylinder hesd. The engine valves sre halsnced slides—these being preferred for their simplicity and tightness, hesides having a positive motion with the cross-head of the engine. Thus, shonld the pump loose the water and the engine jnmp of on an increased velocity, the action would first shut off the steam from the pieton, and shonld this not he sufficient to stop the velocity, tbe valve wonld he still further thrown over, and the steam would be admitted on the oppoeite side of the piston snd hriug it to a stsndstill. The valve is connected to the center of a plain lever, one end of which is connected to tbe crose-head and psrtakeo of its motion, while the other end is attached to a rod having a small steam cylinder on one end and a water cylnnder on the other. The pieton of the water cylinder is solid, and no water can pass from one end of the cylinder to the otber except through a commnnicating port, in which is a regulating valve, which, when properly set, admits of a certain and nniform speed to the end of the lever to which the msin valve is connected. Thus the lever has a coostant and uniform motion and independent of the engine at one end and the variable motion of the cross-head at the other. Now, as the opposite ends of the lever move in opposite directions, it is evident that if the ende move at the same velocity the center-pin will not change its position, hut should the small water-cylinder end go faster, then more steam would he admitted to the main cylinder, and increase its velocity or equalize it with the other end. But should the end conuected with the cross-head increase its velocity over that of the cylinder end, then it would cnt off the eteam from the cylinder, and the engine wonld etand still. However, motion must be eeen to he properly understood. We don't wish to convey an idea of its heing complicated. On the contrary, it is very eimple snd few in parts, and this, in a great measnre, tends to its succese. The whole machine is something new on the Cometock lead. First, the compound condensings; sscond, the management of cylinders and bedplatee; third, the double hobs and double acting force pumps, and in the reat and convenient msnner in which they are eet.

The Engine

Is capable of operating a 14-inch pump (giving maximum economy in fuel) to a depth of 1,500 feet. From that point to 2,000 feet the preesnre will have to be increased and the expansion diminished and economy in fuel lost. Should a greater depth be determined upon, high pressure or live steam conld be need in the condensing-cylinder, and thus command a power to go to over 2,500 feet, hut the engine would be too wastefnl and expensive to rnn, used thns.

At preeent, the flow of water in the shaft heing light, the engine makes but one etroke in 63 eeconds, and can, if neceesary, be reduced to one stroke in 10 minntee. At present the engine ie run with one 48-inch hoiler, consuming from one and three-fourths to two cords of wood per day. It mnet be borne in mind that

The Steam Generated

With this small amount of fuel runs all the machinery connected with the mine, hoisting engine, etc., which is surprisingly emsll, and we doubt if an eqnal amount of heavy machinery ie run with as little expense on the Cometock, or even in the State. It is also expected that the amount will even be reduced lese than this hy placing the asbestoe felting on the steam pipee, hoilere and drums, which will soon be done. The engine wae deeigoed and hnilt at the Risdon iron works, San Francisco, and gnaranteed to sink to a depth of 2,500 fest, and throw from that point 24,000 gallons of water per hour. The whole was under the eupervision of Mr. W. J. Saulkild, aud set in place hy Mr. M. G. Foote; and the neatnees and accuracy of the whole machinery provee how well he merits his repntation as a firet-olase machiuist and engineer.

In conclusion I will give the names of the officere of this company, whoee energetic liberslity has done eo much for the section of connstry in which their miue is located: President, Seth Cook; vice-president, W. T. Meyers; trustees, Daniel Cook, Johnny Skae, Robert T. Graves; superintendent, C. Derby. R.

Alpine County—its Mines and Resources, Past Present and Future.

[Written for the Press by Victor Harland.—No. 8.]

Silver Mountain District.

To the eastward of and abont one-half mile distant from the Pennsylvania miue is the location formerly known as the Noble mine, now termed the Californis. This mine, hy reasou of its former condition and subsequent abandonment by the old company, deserves a more extended notice than the actual developmeuts—which are but superficial—wonld express. Ite eingle hietory is that of far too many of the mines of this county, and the circumstances attending that hietory, in common with other reasons, given heretofore iu theee articles, have eerved to a continnance of that deplorable state of things which has hung like clouds of deepest gloom around snd abont the county, and only dispersed hy the events of the past 18 months.

Its History

Is as follows: Located in 1861, its mammoth proportions and uniform strength, together with the pureness and general character of the qnartz on the surface, cansed considerable excitement at the time of its location. Nor did this abate till long afterward, when hy reason of the more than foolish decisions of owners of this and other mines in this portion of the district, it became alarmingly apparent that outside intereets had been directed elsewhere, in search of posseesions more easily gained and where reasonable encouragement would he given to those willing to embark in mining enterprieee where capital was neceesary. In many places the oroppings rise 25 and 30 feet above the snrface, and are plainly visihle for a distance of hslf a mile. The only development formerly given this mine consists of a tnnnel of 125 feet in length, discontinned before the lode was reached, and nntil the relocation of the mine, made during the past year, nothing frnther wss prosecuted that would tend to a development or improvement of the mine in any particular. This relocation, embracing two locatione of 1,500 feet each, covers the eame extent in length formerly held by tbe old organizstion. The new proprietors, Meesrs. Ford and Brown, are engaged in sinking

An Incline Shaft

On the lode, and which, at present writing, has reached a depth of about 15 feet. Samples of the ore extracted preeent a fine appearance, the qnartz being of a very determined character, and the present owners are endeavoring to develop their property in accordance with their means, by ignoring the preeence of the tunnel mentioned, and following the lode downward from the eurface.

Soon after the firet organizstion in 1861, and while this tnnnel wse in progreee, a propoeition wae received from a party of San Francieco capitalists who had examined the mine, and feeling satisfied that it was a location of conaiderable merit, desired to pnrchase ehould their offer be accepted hy the owners. The price determined upon hy theee partiee wss $30,000—a price not often realized for a totally nndeveloped mine—but euch wae the general tenor of excitement and over-eetimated valnes attached to locations at that time that thie splendid opportnnity was loet hy a refussl to sell the mine, even at those figuree. Had the owners been as wise as they afterward hecame by force of circumstances, they would have realized the amount etated and the mine paesed into the posseesion of an enterpriciug company of State orgsnization, with a paid in capital of $300,000 with which to develop the mine as it shonld have been developed—hy shaft, inetead of the ineignificant snrface tunnel, which wae thought at the time wonld he amply eufficient to place the mine in prominences before the mining world. At this period the company stock wse readily ssiling at $15 per foot, or at an aggregate value of $45,000. Later, these aspiring but too confident owners wonld have been content with a tenth portion of the amount first offered them, and the deependency of the majority, when from lack of funds the tunnel which was their "open sesame" to the vaet wealth beyond wae discontinned, is only eqnaled by that exhibited hy Mark Twain when first he realized the loes of hie "million" at Anrora, Nev.

During the Past Six Months

This mine hae again rsceived the attention of persons residing in your city, who are watching the present developments with a view of purchasing all or a portion of the mine shonld the quality of the ore prove that which is expected from the characteristics ae ehown on the surface. The ore—the black enlphuret or eilver glance—is proportionately of a comparatively low grade, but is eveuly distributed throughout the quartz, which of itself is of a firm, compact nature throughout. Unuenally free from the haser metals, it is more trsctable than the ore extracted from the msjority of the mines in thie county, and the width of the lode, which is not lese than 25 fest, rendere it more than a mere probability of the exietence of large bodiee of ore when a proportionate depth ehall have been reached. Taking into consideration the general appearance and chsracter of tbe qnartz extracted at the point penetrated on the snrface nnd the corresponding snrface dieturhancee on either side, no marked improvement in qnality can reasonably be expected until a depth sball bave been reached that will open the depoeite lying helow these immense coutortions of nature in ite immediate vicinity, hut from the

Appearance of the Ore

Now heing taken from the ehaft, and the fact of ite great quantity and even distrihution eo near the eurface, I would predict a successful extraction of bullion with economical working at a mill in connection with the mine. It has many natural advantagee, not the least of which is an advantageous mill sits in cloee proximity to the mine, thus ohviating any difficulty in transportation of ore. A good eupply of foreet timher is easily accessihle, and the water power all that is necessary to furnish a dozen steam mills of general capacity. The mine, unless its merits are totally ignored hy those seeking legitimate investments, will eventnally become a leading feature of the district. The present owners, thongh confident of having in their posseesion a valuable property, are seeking a disposition of it npon reasonahle terms, which will undonbtedly be effected when the preeent developments shall have reached a proper basis for a determination of its actual value.

Captain Eads' Success.—The latest information is this: It is gratifying to be assured that the Eads jetty syetem of improving the monih of the Mississippi river is at last nn assured succees. The last report ie that a channel 20 feet in depth has been secnred, over the bar, and the work of deepening and widening this channel to the required extent is progressing favorably. Contrary to general expectation a new bar is not forming at the mouth of the jetties, hut the channel deepens beyond as well as within the harriere. The sum to be paid to Captain Eads for the whole work of making a channel 30 feet deep, at aversge flood tide, and 350 feet wide, is $5,250,000, in instsllments of $500,000 esch at successive stsges of the work, except that $1,000,000 is to be reeerved to be dishursed to the contractor at the rate of $100,000 a year for ten years after the completion of the contract, if the jetties continne effective.

Work at Port Said.—The *Engineer* reports the progress of the work at Port Said as follows: Less dredging work was required last year than in 1874. The quantity of stuff dredged out of the great Ismail hasin at Port Ssid in 1875 amounted to 190,000 cnbic meters; the removal of this stuff secured the hasin its maximum depth throughout. The maintensnce of the sidings and bed of the caual last year involved the dredging of 721,000 cubic metere. The quantity of stnff removed in 1875 hetween the two seas only amounted to 52,700 onbic meters. The quantity of etone used during the during the year in fscing hanke amounted to 24,000 cubic metere. The canal was navigated with facility last year by eteamere drawing nearly 27 feet of water, and 430 feet in length.

SCIENTIFIC PROGRESS.

The Color and Fragrance of Plants.

Prof. Vogel has a long article on this subject in the *International Review*. Some of his conclusions are so interesting that we make the following extracts:

We cannot doubt that the different taste, smell and color which characterize leaves, blossoms and fruits, in million-fold variation, are due simply to chemical operations, the nature of which, we must confess, are as yet utterly unknown to us. One mineral substance, chromium, is known to us as the source of nearly inexhaustible number of tints and colors of every description; but its scale, rich as it is, seems to be infinitesimally restrained, when we compare it to the hundreds and thousands of brilliant colors with which even the poorest vegetation covers the surface of the earth!

We must not forget that color is unreal; it is not a corporeal, palpable substance, but merely a state or condition, which affects our eye in a certain way; it does not exist, but is represented to us by the variable decomposition of the light, as the surface of bodies throws back or reflects only a portion of its rays, and absorbs the rest of them. For instance, we call a body, the surface of which absorbs every other ray of the light, and allows only the blue one to meet our eye, blue. The surest proof of the assertion that no real or corporeal color exists—that the colors are, as Goethe calls them, "deeds or children of the light"—must be found in the fact that some persons cannot perceive colors which others see distinctly; and that the colors entirely depend upon the manner in which the light is thrown upon them. Dyed cloth and even natural flowers often show, under artificial light, another color than that shown by day. An intensely yellow flame, such as is produced by the burning of soda salts, makes red substances, such as crimson or cinnabar, appear colorless; and red solutions, looked at under this light, seem to be as clear and transparent as pure water. Moreover, it is quite certain that the form of a substance greatly influences its color. Almost every color gains by fine pulverization. Thus a solid piece of cinnabar is not red, as cinnabar powder appears to our eyes, but dark brown, and the color becomes proportionally brighter according to the degree of pulverization. Oxide of mercury, the crystals of which are of a shining red color, becomes orange-yellow during the process of pulverization. On the contrary, dark blue smalt can be changed into a colorless powder by long continued pulverization and trituration.

But chemical action produces no more remarkable influence upon the color of a given substance than by the physical changes which it causes. As far as minerals are concerned, we are able to follow the reactions which appear to be the cause of a transformation of the color; we know exactly what takes place when white chloride of silver is blackened by the influence of the sun; we can give a chemical explanation of the change of colorless indigo into colored indigo. But the chemical transformations in the bodies of living plants, by which the most manifold and brilliant colors are produced, are almost entirely unknown to us. We see a flower pass through the entire scale of red, from the softest pink to the darkest purple-brown, but can give no explanation whatever of the mysterious process. We know, for instance, that the light of the sun greatly influences the color of living plants, and experience has taught us that, in most cases, its total exclusion is equivalent to the absence of every color; in other words, that it produces white leaves and blossoms. However, this rule is by no means without exception, as many roots, the roots of alcanna, for instance, although buried in the soil and completely excluded from the rays of the sun, possess a strong and vivid color. We can explain neither the rule nor the exception; on the contrary, we know that, as far as lifeless matter is concerned, mineral or vegetable colors are weakened, and gradually destroyed, rather than enhanced by the action of the light. Our ignorance in this respect restricts our influence upon the coloration of flowers and blossoms to a very modest and nearly empirical one. A mere chance has led to the discovery that the infusion of sulphates of iron into the soil darkens the hue of certain plants which contain a considerable quantity of tannin; and the gardeners have profited by this discovery for the culture of the hortensia. But these examples are rare; and as yet we must renounce all claim to the control and influence of the natural course of things in this field. We may be able to change the color of a plant or flower by transferring it to another soil, but we are never sure of the result, and cannot give any scientific explanation of it.

The fragrance of a flower is likewise produced by chemical action which hitherto has escaped our closest investigation; we see the result; we see that a flower, like the bee which transforms pollen into honey and wax, fabricates volatile oils out of air, water and light; but the chemical process itself is a complete mystery to us. We only know that the slowness or rapidity of the evaporation of these oils is the cause of the stronger or weaker odor of the flower. The mode of their formation is a good example of the unlimited variability and manifold variety of vegetation's chemical powers. Many plants do not limit themselves to the formation of certain volatile oils in their blossoms or flowers, but produce, at the same time, various kinds of oils in their different parts. The orange tree, for instance, produces volatile oil in the leaves, flowers and the rind of its fruit. A close investigation convinces us that these differ, not only in their smell and taste, but also in their weight, density and other physical and chemical qualities; that, in short, they are different and independent substances, which cannot be mistaken for each other. The same plant must, therefore, possess three different organisms, by which it generates three entirely different substances out of the same ingredients. What chemical laboratory, be it ever so well furnished and skillfully managed, can boast of results in any respect so wonderful? And when will the time come when we may surprise even these mysteries of nature's slow and patient but mighty working, perceive their results, explain their causes, and—if possible, by our own appliances—repeat and renew the wonders of the creation?

New Meteoric Mineral, Daubreelite.

Professor J. L. Smith has discovered a new meteoric mineral, of which he says in the *Journal of Science*: I have thought proper to designate it after M. Daubree, who has done so much in the study and elucidation of meteoric minerals. It is found on the meteorites of the Mexican desert.

Daubreelite is a black lustrous mineral, highly crystalline in structure, occurring on the borders of the troilite nodules, and sometimes running across the center of them, as may be seen in one of the specimens, where, in a nodule of troilite, a vein of the mineral traverses the very center of the nodule, which is two millimeters in width and twelve millimeters long. It has a distinct cleavage, but I cannot make out its crystalline form. It is very fragile, and in the attempt to detach it from the iron, it breaks up into small fragments resembling small particles of molybdenite. It is feebly attracted in very fine particles when a strong magnet is brought in contact with it. This may arise from the presence of a minute quantity of troilite which it is very difficult get rid of. Pulverized, it furnishes a perfectly black powder, the smallest particle of which gives, before the blowpipe, a very strong reaction of chromium. Heated very intensely, it loses its brilliant color and becomes a dull black.

The powdered mineral is dissolved completely in nitric acid. The solution is intensely green, and furnishes a strong reaction of sulphuric acid and oxide of chrome. The other strong acids attack it but slightly. This solubility in nitric acid readily distinguishes it from chrome iron. The following would express its true composition: Sulphur, 37.62; chrome, 62.38. This mineral is an interesting one, and is found in a very strange place, yet from what is revealed to us by the spectroscope with regard to the vapors surrounding the sun, the element chrome must be widely diffused in the matter of the universe.

A NEW GAS.—The Sheffield and Rotherham (Eng.) *Independent* says: Mr. W. Wright has invented an apparatus by means of which atmospheric air becomes speedily converted into gas. This is done by air being forced into a cylinder, or cylinders, in which is a petroleum spirit known as gasoline. Out of the cylinder the air comes charged with the properties of the spirit, and burns more brightly than gas produced from coal. Its heating properties are then small, but as soon as a blast is applied to the flame it gives out an intense heat. It can readily be understood that such an invention as this can be made applicable to various purposes; and, amongst other things, Mr. Wright has recently applied it to the purpose of cooking. The stove can either be portable or fixed; the latter would probably be the case at hotels and other large establishments. The air is forced into the cylinders, and the blast applied to the flame by means of an electrical engine, which can be worked, it is said, at a cost of halfpenny an hour. The oven is heated in five minutes, the boiler in five minutes more, and then five joints and vegetables can be readily cooked. Mr. Wright has also applied his invention to the soldering of metals and to the burning of old paint from wood work, a portable cylinder and a pair of bellows enabling the workman to take his fire wherever he wants it. It can also be applied to the heating of lead in the streets while repairs are being made to water or gas pipes.

GEOGRAPHICAL.—The Spanish government has appointed a commission to inquire into the physical conditions and possibilities of the Philippines. A professor of botany is to accompany the expedition to report the nature of the flora of the interior, and the condition and the extent of the forests. A survey is to be taken of the entire group and a map, drawn on a large scale, is in consequence to be published. The mountain ranges are to be the objects of a special investigation; the hight of all the salient points is to be accurately ascertained, and all traces of metallic products to be noted. The officers in charge of the expedition are to take such notes of observation as shall enable them on their return to draw up an exhaustive monogram on the entire physical condition of the islands. It is to be expected that many branches of scientific inquiry will profit by this research in a so long neglected and most interesting region.

THE DEVELOPMENT THEORY.—At the recent meeting of the American Association for the Advancement of Science, Prof. E. L. Morse delivered an address in which he summed up all that America has done to promote the growth of the development theory. He said the theory originated in America. In 1813 an American, William Charles Wells, born at Charleston, South Carolina, in 1757, read a paper before the Royal Society, in which he attempted to account for the color of dark-skinned races of man by citing the changes of animals under domestication, showing that varieties of men and animals were thus occurring, not exceptionally, but constantly, and that different breeds of animals were thus obtained by man's selective supervision. Hence, he argued that a similar selection among men had been effected by the comparative immunity from certain diseases of those who had dark skins. This is, substantially, a part of Darwin's theory of natural selection, which is credited wholly to him. It seems the honor of the invention belongs to America. Classifying the work of various American investigators, Prof. Morse mentions, among those prominent in producing new evidences for the doctrine of natural selection, Prof. Charles V. Riley of St. Louis. He says: "Prof. Riley's proof of the inter-dependence of flower and insect in the case of the Yucca moth is a scientific triumph."

MECHANICAL PROGRESS.

Steam Hammers.

How many who guide the ponderous steam hammers know the history of the invention which does such effective work? A writer in the *Colliery Guardian* takes up some early points in the implement which are interesting:

Nearly a hundred years ago, James Watt, following up his great improvements on the steam engine, seriously contemplated the application of steam power to hammers required in forging or stamping, and he actually secured a patent in the month of April, 1774, in which he described a heavy hammer for forging or stamping, without the intervention of rotative motions or wheels, by fixing the hammer or stamper to be worked either to the piston or piston-rod of an engine. Watt's patent does not seem to have ever been worked out to a practical result, and the same may likewise be said of the patent secured by Deverell in the year 1806. Still, it was left to a Scotchman, James Nasmyth, although then at Patricroft, in Lancashire, to work out to a successful issue the idea of employing steam power to effect the motions of a hammer in forging operations. That was in the year 1842. Scarcely had the need for such an instrument been suggested to the fertile mind of Nasmyth than he brought forth one of the most perfect of artificial machines, and noblest triumphs of mind over matter that modern engineers have yet developed. It was a five-ton hammer, that is to say, the block or mass of iron forming the striking part was of that weight. In the Nasmyth patent the hammer is attached to the piston-rod of an inverted cylinder; it is lifted by the steam and is allowed to fall by its own gravity, or is forced down by the steam acting upon the upper side of the piston.

Very soon afterwards attempts were successfully made to construct steam hammers upon plans somewhat different from those of Nasmyth. The first successful result in this direction was that of Mr. John Condie. In the Condie invention the cylinder is movable and forms the hammer or striking portion of the mechanism, and the steam may be made to act on both sides of the piston. Since this invention was successfully worked out, the Glasgow district has acquired a world-wide fame for the extent to which various engineering firms have manufactured steam hammers, as also for the excellence and serviceableness of the tools themselves.

Various firms in the Glasgow district have given more or less attention to the making of steam hammers. Mr. Yule, nearly a quarter of a century ago, constructed the first steam hammer made under the patent of the late Mr. Rigby, of the firm of Rigby & Beardmore, Parkhead forge, Glasgow. It was a two-ton hammer. The type known as Rigby's patent has become exceeding y popular, and for some classes of forge-work it actually divides the honors with the Nasmyth hammer in its most improved form. The special feature of the Rigby patent is that the hammer bar, is made of a section other than circular. Of course the stuffing gland is made of the same section and very deep. It thus acts as a guide to the hammer bar, and obviates the necessity for guides at the top of the cylinder or on the side framing, as is the case with other types of steam hammers. By means of this arrangement various advantages are secured, for not only does it facilitate the handling of the metal to be forged, but it likewise simplifies the machine, and renders it less liable to injury.

LARGE STEAM HAMMER.—The French people, in order not to be behind in regard to large steam hammers, are now constructing, in the works at Creuzol, a steam hammer of 130,000 pounds, or over 64 tons. It will have a stroke of 16 feet, and surpass the famous steam hammer of Krupp two and a half times. It will cost, including the erection, over $400,000.

A Hill-Climbing Locomotive.

We have noted, from time to time, the progress which is making in the contrivance for locomotives for steep gradients. We find in the London *Mining Journal* some experiments with an ingenious method of hauling railway trains up inclines, invented by Mr. H. Handyside, and consisting in running a locomotive a short distance in advance of the train, then scotching it, and hauling the train by means of a wire rope, repeating the process until the top of the incline is reached. The test was made on the London & Northwestern railway at a point where the gradient was one foot in 14. The mode of ascending the incline was as follows: The engine was coupled at the siding to three trucks loaded with limestone, or iron chairs or rails, and weighing without the engine, which is 22 tons, about 35 tons. The train ran along a quarter of a mile of level line to the foot of the incline. Here, without any loss of time, the engine was uncoupled, the trucks remained stationary, and the engine ran up the incline at the rate of about 25 miles an hour, paying out the steel wire rope from the drum, that having been previously fastened to the front truck. Having ascended half way the engine stopped, the grippers were dropped on and clasped the rails, and the steam was turned into the cylinders which worked the drum. The three trucks were then rapidly drawn up by the rope, and as soon as they reached the engine a strut at the rear was dropped, which firmly supported them, the engine ran to the top of the incline, was again fixed to the rails, and drew the trucks up to the top, was coupled to them, and drew them away to a siding, and then ran down the incline without any necessity for the application of the brake grippers, fetched three more trucks, and repeated the operation.

The special timed work was to convey 18 trucks loaded with stone and iron, and weighed by the London & Northwestern company, from the Middleton siding to the top of the Hopton incline. The whole weight without the engine was 190 tons. The engine reached the loaded trucks at the siding at 34 minutes 40 seconds after one o'clock. The trucks were taken up three at a time, and the whole 18 were raised to the top of the incline, and all but the last shunted into a siding, at 13m. 15s. after three o'clock, so that the whole work occupied 1h. 38m. 35s. Of this time, however, 17m. 43s. were taken up by traversing the level part of the line to the foot of the incline, which formed no part of the work to be done as compared with that of a stationary engine. Again the men stopped to take in water, from not having first filled the boiler, and that occupied 6m. 57s. Deducting these two items, the actual time taken to raise 190 tons up an incline a quarter of a mile long, on a gradient of 1 in 14, and, therefore, rising 100 feet, was 1h. 13m. 55s.

THE SAVING IN STEAM STREET CARS.—Those who are working on the invention of steam street cars will be interested in the economical side of the question, as given by the Philadelphia *Times:* The average cost of the horse car now used in Philadelphia is $1,100. Eight horses a day are required for each car, which have a combined value of $1,080, four sets of harness cost $80, making the entire cost of car and equipment $2,260. The steam cars, ready for use, can be built for about $2,800. The horse cars last, on an average, about ten years; the propelling machinery of the steam cars will last as long and probably longer, and when it is known that the average life of the horses used in the street railway service is only three years, it is seen that, as regards first cost, the steam cars have a decided advantage. When a comparison of current running expenses is made, the practical superiority of the steam car is still more apparent. The car now running on Market street consumes about 560 pounds of anthracite coal a day, worth about $1.65; the daily expense of feeding and care for eight horses in the stables of the West Philadelphia railroad company is $4.40, or a yearly difference in favor of each steam car of $1,003.75. No account is here taken of the cost of stables, etc. The number of men required for running the steam car is the same as for the horse car, a conductor and driver.

FOUNTAIN NOZZLE.—A new fountain nozzle of very ingenious and novel construction has been devised by M. Turettini, of Lyons, France, which promises to be of great value to cities which have water supplies of considerable head. It has been tried in Lyons and also Geneva, Switzerland, and has met with complete success. It is on the principle of the Giffard injector, the narrow nozzle through which the water issues with great velocity being surrounded by a "petticoat," which bulges just above the interior nozzle and is then drawn out into a larger nozzle; the lower part of the "petticoat" dipping beneath the surface of the water in the basin. The water is drawn from the basin and carried up with the stream from the interior nozzle, thus augmenting the volume discharged, but, of course, to a less height. As small jets under great heads break up at no great hight, this diminution in hight of jet is less than would at first be supposed. An additional "petticoat" may be provided, connected with the air by a pipe, the air drawn in converting the jet into a mass of spray. The economy of this jet is said to be 40 to 50 per cent., but of course this will vary much with head, the result to be obtained, etc.—*English News.*

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to Sept. 7.		1 W'k to Sept. 14.		1 W'k to Sept. 21.		1 W'k to Sept. 28.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	....	....
Advence	53¾	45	48½	46	47½	45¼	46½	42½
Alpha	....	....	2¾	....	3	2½	3½	2½
Alta	....	....	....	....	....	....	....	....
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	1	....	1	....	1	....	....	....
Andes	2½	2¼	2½	2¼	2	....	....	....
Alps	62½c	50c	75c	....	1	80c	2½c	87½c 75c
Amazon	....	....	....	....	90c	75c	90c	75c
Balt'm'e Con	2¾	2½	2¾	2½	2¾	2½	....	....
Belcher	23½	22½	23¾	21	23¾	2 3¾	21½	21
Belmont	3¼	2¾	3¼	2½	2½	2½	2⅞	2
Best & Bel	51	45¾	48¾	46¾	48¾	45¾	47	44
Buckeye	....	....	15c	....	....	....	....	....
Bullion	47	42	44½	39	37	35½	35½	31½
Caledonia	8¾	8	8	7⅝	8¾	8	10	8⅝
California	61	58¾	61¾	53	63	59¾	61	59
Challenge	4½	....	....	....	....	....	4¾	....
Chollar-P'tsi	38	34	34	33½	34½	33	35	33
Confidence	18	17	17¼	....	17	16¾	16	15¼
Con Imperial	5¾	4½	5⅝	4½	5⅝	4½	4¾	4½
Con Virginia	59¾	57½	59¾	54⅞	59¾	52½	53½	52
Crown Point	12½	11½	11¾	10	12½	11¼	12	11¼
Coon Cnn	25c	20c	16c	15c	15c	12c	25c	15c
Daney	....	....	....	....	....	....	....	....
Dayton	....	....	5	4½	5	....	....	....
Eclipse	....	....	....	....	....	....	....	....
Empire (Ad)	....	....	....	....	....	....	....	....
Eureka(G V)	....	....	....	....	....	....	....	....
Enreka Con	13¼	12½	13	12	16½	13	13½	13
Exchequer	16	16	19¼	15½	15	14¼	15	12¾
Europa	....	....	....	....	....	....	....	....
Gila	3c	75c	87½c	75c	75c	....	60c	....
Globe Con	17c	15c	25c	18c	20c	15c	....	....
Golden Ohar	1⅛	1.05	2⅜	1⅜	1⅞	1¼	1¼	1⅛
Gould & Car	16¾	15¾	16	15	15	15	15¼	14¾
Hale & Nor	12¾	11¾	13¾	11¾	11¾	10¾	12	10¼
Ida Elmore	....	....	....	....	....	....	....	....
Jefferson	90c	....	1	....	....	....	....	....
Julia	8⅞	8¾	8	6⅞	7½	....	7½	7
Justice	23½	23½	23¾	20¾	19¾	18	18¾	17¾
Jackson	5	4	4	3¾	3⅞	3⅜	3¾	....
K K Con	3	2⅞	3	....	....	....	....	....
Kentuck	14	13	13	12¾	13	11⅜	12	10¾
Knickerb'k'r	50c	....	....	....	50c	....	....	....
Kossuth	1¼	....	....	87½c	1¼	1⅛	1¼	1⅜
Lady Bryan	45c	40c	45c	37½c	50c	33c	40c	27½c
Lady Wash	4	3½	4	....	3½	3	3	....
Len	....	....	....	....	....	....	....	....
Leopard	9¾	8½	10	8¼	10¼	8¾	11¾	9¾
Leviathan	....	....	....	87½c	87½c	75c	87½c	75c
Mahogany	....	....	....	....	....	....	....	....
Mansfield	37½c	22½c	25c	....	....	....	....	....
Meadow V'y	1	87½c	1	75c	75c	80c	75c	....
Mexican	36	24	36	34½	35½	32½	33⅞	28½
Midas	....	....	....	....	....	....	....	....
Mint	....	....	....	20c	....	2 c	....	....
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	75c	72½c	75c	62½c	75c	65c	70c	65c
Niagara	....	....	20c	....	20c	....	....	....
Northn Belle	24¾	21	25½	24½	24	23	24½	22½
New Coeo	3½	2½	2¾	1¾	2½	2	3	2
Occidental	3½	....	....	3¼	3¾	....	3½	3
Ophir	61	51½	60	53¾	60½	56½	59	55¾
Or Gold Hill	....	....	....	....	....	....	....	....
Overman	73	73½	72½	69¾	77	73	62	74½
Pacific	....	....	....	....	....	....	....	....
Phil Sheridn	....	....	1	10c	....	....	....	....
Plocho	....	....	....	....	....	....	....	....
Pooman	50c	40c	30c	40c	1¼	1	1	75c
Prospect	7¼	2¾	3	2	2¾	1⅞	2	1⅝
Pruesian	....	....	....	....	....	....	....	....
Ray & Ely	6¾	5	5¾	5	6	5½	6	5
Rock Island	2	1¾	1¾	....	1¾	....	1⅝	1⅛
Rye Patch	....	....	....	....	....	....	....	....
Savage	21¾	21	21¾	20	20¾	17¾	19	17½
Seg Belcher	....	....	15	75	75	75	75	75
Sierra Nev'da	15¾	14¾	14¾	14	14¼	13¾	14¼	12⅞
Silver Hill	10¼	9¾	10	9	9¾	8	9	8
Sth Chariot	10c	6c	8c	5c	....	....	....	....
Sncoor	87½c	62½c	75c	60c	5½c	....	....	....
Union Con	15	14¼	14⅞	14¼	14¾	14¼	14¾	12½
Utah	....	....	21½	20¾	21½	20	20	13
Welle-Fargo	25c	....	....	....	20c	....	20c	....
Woodville	1⅜	1¼	1⅜	1¼	1⅜	1¼	1¼	....
Yel'w Jacket	30¼	26½	28½	27½	30¼	24½	26	23½

Sales at S. F. Stock Exchange.

FRIDAY, A. M., SEPT. 22.

65 Alpha.....45½
180 Best & Bel.....46@45½
150 Belcher.....21@21¼
135 Bullion.....35
30 Baltimore Con.....2¼
805 Caledonia.....8½@8¾
90 Crown Point.....11¾@11½
125 Confidence.....16¾
555 Con Imperial.....4.60@4¾
595 California.....59⅜
2290 Con Virginia.....54@53½
640 Exchequer.....14@13¾
250 Gould & Curry.....14⅜@13
370 Hale & Nor.....10¾@11
230 Julia.....1¾
250 Justice.....18⅛@18⅞
100 Kentuck.....13⅛
240 Knickerbocker.....60c
900 Mexican.....33@32⅝
20 New York.....70c
225 Overman.....74@73
80 Ocoidental.....3⅛
50 Rock Island.....1⅝
420 Savage.....18½@18⅜
490 Sierra Nevada.....14¾@14
50 Sil Hill.....8
50 Trojan.....87½
50 Un Con.....14¼
1550 Yellow Jacket.....25½@25¼

AFTERNOON SESSION.

110 Alpha.....46@46¼
120 Andes.....2
50 Alps.....75c
250 Amazon.....80@75c
70 Bullion.....35½
10 Beet & Belcher.....46¾
210 Belmont.....2⅝
100 Cosmopolitan.....2⅝
190 Coso Con.....15c
570 Caledonia.....9¼@9⅜
100 Cromer.....2⅝
445 California.....60@60¾
150 Crown Point.....11¾
775 Con Virginia...55½@55⅝
110 Eureka Con.....13⅝@13⅜
150 Exchequer.....14¾
225 Gould & Curry.....15¼@15
1515 Gen Thomas.....15¾@
500 Golden Chariot.....1¼
405 Hale & Nor.....12
1190 Hussey.....80@85c
105 Justice.....18¾
130 Julia.....2½@2⅝
45 Koseuth.....1⅜
350 Leopard.....9¾
340 Mexican.....33½
690 Manhattan.....15¾@15½
320 Northern Belle...24¼@24
50 New Coso.....2¾
300 North Con Vir...1⅞@1¾
159 Overman.....74
445 Prospect.....2@1¾
1700 Poorman.....1@81⅝c
380 Savage.....19@18¾
240 Trojan.....75c
365 Union.....21¾
50 Virginia.....2¾
200 Wells-Fargo.....20c
125 Woodville.....1⅜
1000 Yellow Jacket.....28
405 Yellow Jacket.....28

SATURDAY, A. M., SEPT. 23.

50 Alpha.....45⅞
110 Andes.....2
100 Alta.....2¾
275 Best & Belcher...46¾@4
175 Belcher.....21¾
180 Bullion.....84⅝@35¾
665 Caledonia.....35@9⅜
40 Challenge.....4¼
690 California.....61@60¾
160 Coochdence.....18
150 Crown Point.....11¾
45 Chollar.....84@83

390 Con Virginia.....55@55¼
635 Con Imperial.....4.67½@4.7
370 Exchequer.....14¼
400 Eureka Con.....13½
80 Gould & Curry.....15⅛
385 Hale & Nor.....11⅝@11¾
525 Julia.....2⅝
365 Justice.....18½@18¾
50 Kentuck.....12
100 Lady Bryan.....35c
50 Leviathan.....75c
220 Mexican.....33¼@33½
40 New York.....65c
550 Nth Con Va.....1¼
175 Ophir.....53@58¾
520 Overman.....77@78
80 Occidental.....3¼
50 Rock Island.....1⅝
420 Savage.....18½@18¾
490 Sierra Nevada.....14¾@14
50 Sil Hill.....8
50 Trojan.....87½c
50 Un Con.....14¼
1550 Yellow Jacket.....25½@25¼

MONDAY, A. M., SEPT. 25.

820 Alpha.....44¼@43¾c
75 Belcher.....21@21¾
310 Bullion.....33@31⅞
430 Best & Belcher.....45¾
285 Exchequer.....13¼@12¾
275 Eureka Con.....13½
200 Hale & Nor.....11@11¼
265 Justice.....18½@18¾
450 Julia.....1¾@1⅞
505 Kentuck.....11@10¾
100 Mexican.....33¼@32¾
310 Ophir.....56½@56⅝
840 Overman.....77@78
520 Savage.....17¾@18
285 Sierra Nevada.....13¾@13⅞
25 Seg Belcher.....15
320 Union.....13¾@13
115 Utah.....20@19
1630 Yellow Jacket.....24½@23½

AFTERNOON SESSION.

180 Alpha.....44½@44¾
50 Andes.....2
300 Alps.....87½c
500 Alta.....2½
100 Baltimore Con.....2¼
100 Belmont.....2¾
200 Coso Con.....2½@1se
415 California.....60¾
635 Con Virginia...52⅞@52¾
100 Challenge.....4@3¾
780 Caledonia.....9¼@8¾
140 Chollar.....84
140 Eureka Con.....13
5 Exchequer.....13½
365 Gen Thomas.....1¾@1⅞
190 Gold Chariot.....1¼
10 Gould & Curry.....14½
300 Hussey.....75@80c
885 Hale & Nor.....11@11⅛
100 Indian Queen.....1
50 Jackson.....2¾
80 Julia.....1¾
1010 Kossuth.....1¼
195 Leviathan.....75c
100 Lady Wash.....3
1175 Leopard.....10@9¾
80 Meadow Val.....75c
380 Manhattan.....15¾
500 Modoc.....1¼
420 Mexican.....31¾@32¼
340 Northern Belle.....23¼@23½
50 New York.....70c
100 N Con Vir.....1¼
475 New Coso.....2⅞@2¾

285 Overman.....79¼@78¾
1700 Poorman.....87½@91
395 Prospect.....1⅝
600 Rock Island.....1¼@1¾
30 Raymond & Ely.....
420 Savage.....18½@18¾
190 Silver Hill.....@8¾
1825 Trojan.....75c
400 Tahoe.....62½@50c
235 Union Con.....13¾@13⅝
30 Woodville.....24
250 Yellow Jacket.....24

TUESDAY, A. M., SEPT. 26.

735 Alpha.....43@42½
525 Alta.....2¼
50 Andes.....2
50 Amazon.....75c
100 Bullion.....31¾
250 Belcher.....21¾
1790 Caledonia.....9¼@8⅞
200 Cromer.....2½
40 Confidence.....16@15¾
1855 Con Virginia.....53@52¾
190 Crown Point.....11⅞@11¾
20 Chollar.....84½
385 California.....60@59¾
2720 Con Imperial.....4.55@4.6
821 Exchequer.....13¾@13⅜
780 Gould & Curry.....14¼@14½
180 Hale & Nor.....10¾@10¾
280 Justice.....18@17¾
20 Julia.....2
505 Kentuck.....10½@11
850 Kossuth.....1⅛
500 Leviathan.....75c
615 Lady Bryan.....25@30c
100 Lady Wash.....2½
1790 Mexican.....31¾@31
100 Morning Star.....3½
285 New York.....75c
1035 Overman.....83@82½
385 Ophir.....57@56½
150 Rock Island.....1¼
10 Seg Belcher.....73
670 Savage.....18@17½
1000 Silver Hill.....8¾
800 Sierra Nevada.....13¾@13
400 Tahoe.....62½@50c
100 Trojan.....80c
675 Union.....13⅝@13
1670 Utah.....20c
550 Wells-Fargo.....20c
200 West Belcher.....2½
880 Yellow Jacket..23¾@23½

AFTERNOON SESSION.

140 Alpha.....43@43¼
300 Alps.....87½c
1120 Belmont.....2⅞
820 Baltimore.....2¾
570 Coso Con.....20c
600 Con Virginia.....53¾
150 Crown Point.....11¾
1000 Eureka Con.....13
355 Gen Thomas.....1¼@1⅜
90 Gould & Curry.....14½@14⅝
350 Hale & Norcross.....10¾
200 Julia.....2
335 Justice.....17½@17¾
2625 Leopard.....11¾@11¾
875 Mexican.....31¾@31
420 Manhattan.....15½@15⅝
270 Meadow.....1¼@1⅜

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., SEPT. 21.

310 Alpha.....45¾@46
150 Amazon.....80c
450 Alta.....2¾
125 Andes.....2½
15 Baltimore Con.....2¾
420 Best & Bel.Con.....47@46¾
116 Belcher.....21¾
165 Bullioo.....36@35½
235 Chollar.....88@86
715 California.....61¾@62½
475 Crown Point.....11¾@11½
1590 Con Virginia.....56¾@57
1745 Caledonia.....8¾@8⅞
1475 Con Imperial...4.70@5.05
200 Confidence.....16¾
80 Exchequer.....14½
560 Gould & Curry.....15@15¾
100 Globe.....1c
145 Hale & Nor.....10½@10¾
25 Julia.....7¼@7½
1515 Justice.....18½
45 Kentuck.....11¾
100 Kossuth.....1⅛
500 Lady Bryan.....37½c
975 Mexican.....34½@34⅝
130 Morning Star.....3¼
880 New York.....70@66c
200 North Con Va.....1¼
100 Niagara.....20c
310 Ophir.....59¼@58½
345 Overman.....77@78
100 Rock Island.....1¾
410 Savage.....19¾@18¾
100 Sierra Nevada.....14¾@14¾
100 Seg Belcher.....14½
60 Utah.....20@20¼
135 Union Con.....14¼
40 Woodville.....1⅝
2840 Y Jacket.....25¾@25

AFTERNOON SESSION.

150 Alps.....1@90c
165 Andes.....2⅝
665 Best & Belcher.45¾@45¾
65 Belcher.....21⅞@22
1375 California.....60@58¾
1725 Con Virginia...53½@53⅝
30 Caledonia.....8¾
65 Chollar.....84@84½
1705 Con Imperial...4⅝@4.85
400 Centennial.....75c
2320 Eureka Con.....13½@13¾
657 Gen Thomas.....1¾@1⅞
250 Golden Chariot.....1⅝
400 Hussey.....60c
400 Justice.....18@18¾
20 Kossuth.....1¼
4070 Leopard.....10@9¾
50 Meadow Valley.....80c
220 Manhattan.....15¾
200 Modoc.....1¼
2065 Mexican.....33¼@32⅝
435 Northern Belle...24@23¾
1350 New Coso.....2½@2⅝
498 Ophir.....57@56½
225 Overman.....74@73¾
2000 Poorman.....1@1⅛
200 Savage.....18½
1110 Yellow Jacket..24⅞@25⅛

50 Meadow Valley.....62½c
150 New Coso.....2@2⅛
285 Northn Belle...23¼@23
210 Ophir.....56@55¾
275 Overman.....81
100 Poorman.....90@82½c
70 Raymond & Ely.....@23¾
125 Sierra Nevada..13¾@13⅝
15 Savage.....17¾
120 Silver Hill.....8½@9
270 Yellow Jacket..23¾@23½

WED'NDAY, A. M., SEPT. 27.

175 Alpha.....43@43½
100 Am Flat.....1
350 Baltimore Con.....2½
450 Belcher.....21@2 3⁄8
1700 Bullion.....32@31½
1460 Caledonia.....8¾@8¾
280 Exchequer.....14
205 G & Curry.....14½@14¾
570 Hale & Nor.....10½@11
1200 Julia.....2
970 Justice.....17½@17⅝
645 Kossuth.....1¾
50 Kentuck.....12
100 Leviathan.....75c
1200 Mexican.....30½@29¾
625 New York.....75@60c
100 North Con Vir..1¾@1 30
475 Ophir.....55¾@55½
10 Occidental.....3½
250 Prospect.....62½c
310 Rock Island.....1¾
570 Savage.....17¾@18¾
1000 Sierra Nevada..13¾@13⅝
1100 Tahoe.....75c
830 Union Con.....12⅝@12¾
100 Woodville.....1@1¼
2100 Yellow Jacket..24@24¼

AFTERNOON SESSION.

10 Alpha.....43¾
100 Alps.....75c
200 Belmont.....2¼
50 Belcher.....21¾
50 Best & Bel.....45¾@46
570 Con Virginia.....54½@54
280 Con Imperial...4½@4.45
50 Chollar.....85@84½
135 California.....60¾@61
260 Exchequer.....14
100 Eureka Con.....13
100 Gen Thomas.....1⅜
130 Gould & Curry.....14¾
100 Great Eastern.....4¾
10 Hale & Nor.....10⅞
2200 Hussey.....80@85c
1155 Julia.....2
200 Modoc.....1¼@1⅜
245 Mexican.....29¾@29¾
595 Manhattan.....15¾@15⅝
170 Northern Belle..22⅞@22¾
70 New Coso.....2½
225 Ophir.....55¾@55½
2260 Poorman.....1@75c
115 Sierra Nevada.....13¾
68 Savage.....18½@18
455 Yellow Jacket...24@24⅜

THURSDAY A. M., SEPT. 28.

250 Alpha.....42¾@42⅜
20 Am Flat.....1
440 Andes.....2
50 Best & Belcher.....45¾
115 Con Virginia.....51½@51¾
50 Baltimore.....2¼
10 Chollar.....84
1776 Con Imperial...4.40@4.45
1200 Crown Point.....11½@11¾
1100 Con Virginia.....53½@54
70 California.....60¾@61
290 Caledonia.....10@8¾
90 Challenge.....3¾
150 Cromer.....2¼
50 Florida.....15c
175 Gould & Curry.....14¾@14¾
305 Hale & Nor.....10⅝@10¾
80 Julia.....2
555 Justice.....17¾@17⅝
270 Kentuck.....11½@11
889 Kossuth.....1¾
420 Lady B.....27½@40c
150 Lady Wash.....3
500 Leviathan.....75c
575 Mexican.....28¾@28¾
610 New York.....62½@80c
825 N Con Vir.....1¾@1¾
500 Niagara.....18c
445 Overman.....76@75¾
520 Ophir.....54½@54¾
100 Occidental.....3½
1210 Prospect.....50@75c
160 Rock Island.....1¾
180 Silver Hill.....8¾@8¾
445 Sierra Nevada...13¾@14
500 Tahoe.....75c
415 Union.....12¾@12¾
200 Woodville.....1¼
1600 Yellow Jacket..23¾@24

AFTERNOON SESSION.

85 Alps.....75c
180 Belmont.....2¼
145 Best & Bel.....46¾@47
100 Coso Con.....20c
925 Con Virginia...54@54½
50 Chollar.....84@84½
150 California.....61¾@62
100 Eureka Con.....13
50 Gen Thomas.....1¾
220 Golden Chariot..1¾@1¾
315 Hussey.....80@85c
250 Hale & Nor.....10¾@11
75 Jackson.....3¾
895 Leopard.....10¾@11¼
100 Meadow Valley.....80c
570 Manhattan.....15¾@16
100 Mansfield.....25c
480 Mexican.....24½@24¾
160 New Coso.....2¾@2⅝
215 Northern Belle...22¾@23
100 Ophir.....55¾@55½
3400 Poorman.....85c@90c
5 Raymond & Ely.....5
500 Yellow Jacket..24¼@24½

Pacific Board—Latest Sales.

WED'NSDAY, A. M., SEP. 27.

350 Atlantic.....3
135 Alpha.....44@43¾
75 Best & Bel.....45¾@45¾
30 Belcher.....21¾@21⅝
455 Crown Point...11¾@11⅝
480 Con Imperial.4.40@4.47½
460 Caledonia.....9¼@8
460 Centennial.....60c
780 Con Virginia...54¼@54½
10 Chollar.....84
145 California.....60¾@60¼
1010 City of bost.....2⅞
20 Exchequer.....13¾
500 G Junction.....11¾@1
210 Hale & Nor.....10¾@10⅞
255 Justice.....17¾@17⅞
70 Julia.....7@8⅜
15 Kentuck.....11¾@11
400 Leviathan.....87½@35
1020 Mexican.....30@29¾
60 Monumental.....4@5c
1100 New York.....80c
50 Ophir.....55⅞@55¾
10 Overman.....80¼
200 Prospect.....87½c
100 Rock Island.....1¼
325 Sierra Nevada..14¾@13⅞
10 Silver Hill.....8¾
270 Savage.....18@17⅞
500 Trojan.....70c
400 Twin Peaks.....1
1100 Trenton.....55c
20 Union.....13¾@13⅝

290 West Belcher.....2½
460 Yellow Jacket...24¼@24¾

AFTERNOON SESSION.

85 Andes.....2
1400 Coso Con.....20@17½c
50 Chollar.....84
30 Con Virginia...54@54½
335 Con Imperial...4.46@4⅝
130 Crown Point.....11¾
100 Eureka Con.....13
50 Gen Thomas.....1¾
50 Gila.....70c
550 Gold Chariot.....1¾
40 Gould & Curry.....14¾@14⅝
200 Hale & Nor.....10¾@11
1300 Hussey.....80@75c
15 Justice.....17¾@17⅝
100 Kossuth.....1¼
100 Leopard.....11¾@11⅞
240 Mansfield.....20c
25 M Valley.....75c
10 Modoc.....1¼
290 Mexican.....29¾@29¾
100 Meadow Val.....30c
200 New York.....80c
70 Northern Belle...22¾@23
220 Ophir.....55@55½
2400 Panther.....87½@ 90
500 Poorman.....80c
50 R & Ely.....6
210 S Nevada.....13¾@13¾
20 Savage.....18
20 Union.....13¾
300 Wells-Fargo.....20c

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertiaementa in the Mining and Scientific Preea and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Deling'nt.	Sale.	Secretary.	Place of Business.
Alps S M Co	Ely Dist	3 50	Aug 6	Sept 12	Oct 4	O D Squire	Stevenson Bldg
Alta S M Co	Weshoe	4 50	Aug 17	Sept 21	Oct 13	W H Watson	302 Montgomery st
Andes S M Co	Washoe	7 25	Sep 15	Oct 21	Nov 8	M Landers	307 Montgomery st
Belmont M Co	Nev	3 50	Sep 18	Oct 24	Nov 21	W H McClintock	413 California st
Bullion M Co	Washoe	2 50	Sep 22	Oct 23	Nov 13	J S Kennedy	413 California st
Caledonia S M Co	Washoe	1 00	Aug 28	Sept 30	Oct 20	R W Turner	414 California st
Coso Con M Co	Cal	2 15	Aug 30	Oct 7	Oct 28	R H Brown	426 California st
Crown Point S M Co	Washoe	27 1 00	Aug 15	Sept 19	Oct 10	J Newlands	419 California st
Dardanelles M Co	Washoe	4 1 00	Sep 5	Oct 6	Oct 23	W S Duval	402 Montgomery st
Empire G & S M Co	Nev	8 1 00	Sept 6	Oct 13	Nov 3	W E Dean	413 California st
Equitable Tunnel & M Co	Utah	13 20	Sept 7	Oct 12	Nov 1	C S Healey	Merchants' Ex
Exchequer M Co	Washoe	11 *1 00	Sep 23	Oct 25	Nov 15	J S Kenoedy	419 California st
Geddes & Bertrand M & M Co	Nev	1 50	July 24	Sept 22	Oct 23	J A Vance	Stevenson's Bldg
Glasgow G & S M Co	Washoe	3 15	Aug 8	Sept 9	Sept 30	J A Reichert	330 Pine st
Gould & Curry M Co	Washoe	27 1 00	Aug 11	Sept 15	Oct 5	A K Durbrow	302 Montgomery st
Golden Crown M Co	Cal	3 5	Sept 12	Oct 20	Nov 10	D Buck	303 Montgomery st
Hale & Norcross S M Co	Washoe	51 1 00	Aug 8	Sept 12	Oct 3	J F Lightner	Nevada Block
Insurance M Co	Washoe	3 25	Aug 30	Oct 2	Oct 23	M Landers	309 Montgomery st
Julia Cons M Co	Washoe	1 1 00	Sept 11	Oct 16	Nov 6	A Noel	413 California st
Julia G & S M Co	Washoe	23 3 00	Sept 11	Oct 16	Nov 6	A Noel	413 California st
Justice M Co	Washoe	13 5 00	Sep 14	Oct 18	Nov 7	J S Kennedy	419 California st
Kossuth M Co	Nev	7 50	Aug 15	Sept 19	Oct 12	E F Stone	419 California st
Lady Bryan M Co	Nev	13 50	Sep 15	Oct 17	Nov 7	W H McClintock	419 California st
Mariposa Land & M Co	Cal	7 1 00	Sept 7	Oct 9	Oct 30	L Leavitt	303 Montgomery st
Mariposa M Co	Barcelona, Nev	1 10	Sept 7	Oct 11	Nov 1	J P Moore	426 California st
Mexican G & S M Co	Washoe	2 50	Sep 5	Oct 11	Oct 31	C L McCoy	419 California st
Mides G M Co	Washoe	1 20	Aug 15	Sept 16	Oct 5	L Kaplan	Merchants' Ex
Mint G & S M Co	Nev	14 10	Aug 9	Sept 12	Oct 5	D A Jennings	401 California st
Mitchell G & S M Co	Nev	10	Sept 7	Oct 12	Oct 26	A C Hammond	401 California st
New York M Co	Washoe	10 25	Aug 29	Oct 2	Oct 21	D L Thomas	419 California st
North Con Virginia	Washoe	5 25	Sep 21	Oct 25	Nov 14	J Maguire	419 California st
Pacific M Co	Washoe	1 20	Sept 11	Oct 14	Nov 3	J W Clark	418 California st
Phil Sheridan G & S M Co	Nev	1 50	Aug 8	Sept 11	Oct 2	W R Townsend	Nevada Block
Senator S M Co	Washoe	14 50	Oct 24	Sept 19	Nov 13	J H Seyse	330 Pine st
Silver Hill M Co	Weshoe	3 1 00	Sep 18	Oct 24	Nov 14	W E Dean	416 California st
Sierra Nevada S M Co	Nev	45 1 00	Aug 22	Sept 25	Oct 12	W W Stetson	309 Montgomery st
South Chariot M Co	Idaho	16 25	Aug 29	Sept 29	Oct 20	W H McClintock	419 California st
Utah Brick M Co	Cal	50	Sep 18	Oct 24	Nov 15	D P Verdenal	403 California st
Succor M & M Co	Washoe	16 50	Sep 26	Oct 31	Nov 22	W H Watson	302 Montgomery st

* $12 50 old stock; $1.00 new.

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Accidental Con M Co	Nev	1 10	Aug 21	Oct 2	Oct 20	O Metchke	426 Montgomery st
Alabama M Co	Nev	1 10	Aug 14	Sept 13	Oct 11	W H McClintock	419 California st
Almaden Con Quick M Co		1 30	Aug 15	Sept 25	Oct 16	C C Finkler	678 Montgomery st
Aureola G & S M Co	Nev	2 10	Sep 23	Oct 30	Nov 21	T S Fitch	240 Montgomery st
Barcelona Con M Co		1 1 00	Aug 21	Sept 25	Oct 16	J P Moore	426 California st
Beach & Paxton G & S M Co	Nev	2 25	Aug 30	Oct 3	Oct 24	M Landers	309 Montgomery st
Cabinet M Co	Washoe	1 2	Sep 21	Oct 26	Nov 17	J F Sterling	330 Pine st
Cincinnati G & S M Co	Cal	6 10	Aug 29	Sept 29	Oct 16	W Small	535 California st
East Branch M Co	Plumas Co	Cal 5 10	Sep 28	Nov 6	Nov 25	E P Sanford	514 Washington st
Emigrant S M Co	Cal	1 1 00	Sep 22	Oct 23	Nov 15	W H Chickering	426 California st
Esterpries Con M Co	Cal	3 25	Aug 12	Sept 18	Oct 10	F J Hermann	418 Kearny st
Excelsior Quicksilver M Co		5 10	Aug 8	Sept 13	Oct 10	A Halsey	312 Montgomery st
Glencoe Con G M Co	Cal	2 5	Aug 23	Oct 2	Oct 23	L Leavitt	309 Montgomery st
Gold Canyon Con M Co		Nev 10	Sep 15	Nov 13	Dec 20	A A Pardow	636 Clay st
Greene M Co	Cel	2 1 50	Aug 16	Sept 13	Oct 6	W R Townsend	303 Montgomery st
Lee G & S M Co	Washoe	1 5	Aug 16	Sept 18	Oct 5	C J Easton	Express Bldg
Low Range Ledge S M Co	Washoe	1 2	Sept 11	Oct 16	Nov 7	F E Luty	507 Montgomery st
Mariposa South M Co	Nev	1 10	Aug 8	Sept 13	Oct 17	J W Clark	418 California st
McClellan Con M Co	Nev	1 10	Aug 21	Sept 24	Oct 12	O Metchke	426 Montgomery st
Monumental M Co	Washoe	2 15	Sept 7	Oct 9	Nov 1	W B Townsend	Nevada Block
Morgan M Co	Cal	3 1 00	Sep 19	Oct 24	Nov 20	J H Wallace	108 California st
Moore's Flat Blue Gravel M Co	Cal	25	Sep 14	Oct 18	Nov 6	Wm Small	535 California st
National Prospecting & M Co	Cal	1 10	Sept 3	Oct 10	Nov 11	T L Wiswell	Merchants' Ex
Nonpareil G M Co	Cal	6 5 00	Sep 15	Oct 23	Nov 9	A DuPrat	508 Jackson st
Oceanic Quicksilver M Co	Cal	4 50	Aug 26	Oct 9	Oct 30	C G Hunk	438 California st
Purdy S M Co	Colorado	1 2 00	Sep 23	Nov 14	Oct 5	A J Bell	331 Montgomery st
San Jose M Co	Nev	13 30	Sep 12	Oct 21	Nov 13	A Carrigan	102 Front st
Sierra Iron Co		Nev 1 00	Aug 18	Sept 20	Oct 26	Caleb T Fay	318 Sansom st
South Barcelona M Co		Nev 1 1 00	Aug 21	Sept 27	Oct 18	J P Moore	426 California st
Taylor M & M Co	Garden Valley	Plat	8	Aug 10	Sept 13	Oct 3	W Murphy	607 Montgomery st
Valenciana M Co		Nev 1 10	Sept 11	Oct 13	Nov 11	J P Moore	426 California st
Welch Con Quick M Co		Cal 1 4	Aug 21	Sep 30	Oct 23	J P Forhee	408 California st
West Cometock G & S M Co		Nev 1 25	Sept 12	Oct 16	Nov 3	J D Thompson	401 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Baltimore Con M Co	Weshoe	C A Sankey	331 Montgomery st	Annual	Oct 5
Cosmopolitan M Co	Nev	M Landers	Nevada Block	Annual	Oct 11
Pioche S M Co	Ely Dist	Frank W Smith	419 California st	Postponed	Oct 2
Seg Belcher M Co	Washoe	Geo D Edwards	414 California st	Annual	Oct 3
Sutro M Co	Nev	W H Reynolds	313 Mon'gomery st	Annual	Oct 6

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	O D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	413 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	Oct 11
California M Co

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE.

LADY FRANKLIN.—Alpine *Chronicle*, Sept. 16: On Friday last, Crowson Smith, Vice-President, and Richard Meager, Superintendent, arrived from San Francisco for the purpose of starting up work on this mine, which has been idle since 1866. Sinking will commence on Monday next, and work will be prosecuted with vigor.

CALIFORNIA CON.—Parties from San Francisco are negotiating for the purchase of this mine, and probably it has been consummated. The intention is to commence work at once by sinking. The mine is situated in Noble canyon, Silver Mountain mining district.

ADVANCE.—For the past 10 days, on account of striking a heavy body of water, work has been suspended, there being 90 feet of water in the shaft. A pump, 15,000 gallons per hour, arrived to-day, and will be in position for work on Tuesday next.

EXCHEQUER.—Good ore continues to be taken from this mine. A house is being erected for the reception of the new engine.

I X L.—Good ore is being taken from the upper tunnel. Stations are being prepared at the other levels. Grading for the mill is progressing.

AMADOR.

TALISMAN MINE. — Amador *Ledger*, Sept. 23: This mine, commonly known as the Hubbardsville, situated half a mile from Amador City, on the road to Sutter Creek, is being rapidly brought into condition for actual mining work. It is under the superintendency of J. Tregloan, an experienced miner and superintendent, who is deserving much credit for the judgment he has played in superintending the early operations of the Grover mine, which now ranks with the most prosperous mines of the county. Work on the Talisman is at present confined to taking out water. The hoisting works are run with water power, with 50 feet pressure. It is the intention to have 300 feet pressure for the mill. Both mine and mill will be run with water power at an average expense of $12 per day, while steam power for the same would cost from $70 to $80. Some rock has recently been taken from the old shaft, which prospected well. Altogether, the Talisman, under the able management of Mr. Tregloan, promises to become a good paying property in the near future.

BUTTE.

COMMENCING WORK.—Oroville *Mercury*, Sept. 23: Next week work will be commenced on the Main Feather River company's claim under the superintendence of one of the best and most practical miners in the State, H. D. Lathrop. From time to time we have referred to this company as one that we thought would succeed. Of course it has met with much opposition, but this has delayed it only for a short time. The idea of mining the bed of the river by sinking a shaft on the shore and running an incline so as to tap the bed of the river was indeed a new one, and it is no wonder that many claimed that it could not be done. But now the company have $23,000 in its treasury, and next week the work begins. We shall watch its progress with a great deal of interest, and from time to time note the progress of the work for the benefit of our readers. All who know anything of this part of the river admit that the gold is there in abundance, but they do not all think that it can be got out by this method. We believe it can. Eminent engineers claim that it can, and we have an abiding faith in their opinions. It will take some time to sink the shaft and run the incline, for the rock is hard, but it is the intention to get improved machinery and push the work as fast as possible.

HUPP'S MILL.—From Mr. Hupp, who was in town on Monday, we learn that he will shut down the mill in a short time. He is already making preparations to work his large gravel claim at Centerville this winter with an increased force of men, and good clean-ups may be anticipated.

CALAVERAS.

A "CHAMPION" CLEAN-UP.—Calaveras *Chronicle*, Sept. 23: We have had frequent occasion, during the past few years, to refer to the unprecedented yield of the Champion mine, at West Point, in this county. Great as its product has been in the past, recent developments prove that the *ultima thule* of its prosperity has not yet been reached, and we frankly confess that the late returns from the mine have prepared us for believing any report, however extravagant, regarding its richness. A crushing of 65 tons of Champion ore, in Carlton's mill, yielded $11,000, an average of only a fraction less than $170 per ton. There is not another mine in the State that has or can make an equally good showing, and the yield mentioned is not an exceptional one for the Champion, either. The product of the mine for several years past has been surprising, and at the present depth—a little over 300 feet—the ledge is wider and richer than at any point above. Labor is being very actively pushed forward upon the mine, and we are prepared to hear of still richer developments in the future. The bullion resulting from the late clean-up was brought to town Tuesday, under a strong guard, and melted and assayed by our local banker, C. Schlund, Esq. May such mines as the Champion multiply.

ITEMS FROM COPPEROPOLIS.—Our correspondent sends us the following: Mr. R. Dean, of Salt Spring valley, came into Copperopolis a few days ago with upwards of $300 in clean river gold from his claim on the Stanislaus river. There has been a discovery made of an asbestos vein in Salt Spring valley, near Hettick's ranch, and is now being opened by parties who are confident of its value. T. McCarty, Esq., who is one of the owners, is also possessor of several quartz mines, which are now held in abeyance for the purpose of finding the latest improvements in mining machinery, so as to work them to the most profitable advantage.

REPAIRING THE DITCH. — The Mokelumne Hill & Campo Seco company's canal is being thoroughly cleaned and repaired preparatory to winter. It is the custom of the company to strengthen and clean the ditch every fall as a safeguard against "breaks" during the rainy season. The work does not interfere with mining operations, however, the, extensive system of reservoirs provided by the company preventing any interruption in that respect.

EL DORADO.

GOOD MINING NEWS.—*Mountain Democrat*, Sept. 22: The other day we were allowed to inspect several samples of ore recently taken from the 800-ft level in the St. Lawrence mine. All of these samples were exceedingly rich. One of them would yield, we should judge, at the rate of at least $5,000 per ton. This is the first ore taken out since the water was pumped out under the management of Messrs. Alderson and Mierson. It is gratifying to know that there is a compact and rich pay streak on the 800-ft level of this mine, for public confidence in the quartz interest in this entire section hinges largely on results at the St. Lawrence. We understand that about 10 days will be consumed in raising an air shaft, and then vigorous operations will be prosecuted on and from the 800-ft level.

INYO.

LOOKOUT MINES.—Coso *Mining News*, Sept. 23: From a special reporter, sent to examine and report upon the mines of this district, we have the following: Things are bright in Lookout. I visited the Minietta Belle, and drifts from the bottom of the main shaft have determined a veritable bonanza, north and south, to the extent of 40 feet, thickness unknown. The ore is of fine quality and daily improving. They have now at this mine a large quantity of good grade ore opened up ready to be converted into bullion at any given moment. I should judge that 15 tons of ore are being taken out daily at this mine. The Mountain View, to use a familiar Darwin phrase, is a bird, and is now in such shape that four men can extract ore in sufficient quantities to run a ten-stamp mill steadily for a long period. I was informed by Mr. Cox, the superintendent, that their water pipe and mill is about being contracted for and will soon be on the ground. It cannot come too soon, as their ore dumps are fearfully crowded. Mr. Cox says he can shell out 10,000 to 12,000 tons very cheaply and lively when required.

LOOKOUT.—In this mine, one of the Modoc company's series, we learn from Mr. Barber, superintendent, that a wonderful strike was made during the week. In the new tunnel of the Lookout, now in some 160 feet, at a depth of 130 feet from the surface a body of ore has been encountered which assays from $12,601.83 to $13,404.37. We saw a specimen of this ore, and handled the buttons from which these assays were obtained. It is nearly free milling ore, containing but a very small percentage of lead. It resembles very much the soft brown chloride ores found in the Ehernardt. The extent of this rich body is not yet determined, as no cross cutting at this depth has been done. In the upper tunnel, some 50 feet above, the width of the vein was 20 feet, of ore which will average $200 per ton. An immense pile of ore has been taken out of Confidence No. 4 in simply running tunnels and drifts, no stoping having as yet been done, except that the ore has been taken out between the walls for a width of 12 feet, and timbers placed overhead preparatory to stoping. In No. 3 the same body of ore is encountered as that in No. 4, and when 20 feet further they will be directly under the ore body of No. 4, where the latter tunnel was started. In No. 3 tunnel the ore body is widening constantly and the ore getting better in quality. In No. 2 there is a splendid pile of ore on the dumps, which has been carefully assorted. This ore averaged before being assorted $215 per ton.

THE FURNACES.—One of the furnaces is almost completed, and the other will be ready in less than a week. Teams have been sent to Panamint for more piping, and as soon as they return the pipe connection from the tanks to the water jackets will be made, when the furnaces will be put into operation. If they work successfully we may expect to record as large and fine shipments of base bullion as ever went from Inyo county.

MARIPOSA.

MINING ITEMS.—Cor. Tuolumne *Democrat*, Sept. 23: Situated about half way between the Mount Jefferson and Nonpareil is the Italian or Diamond Gulch mine, the owners of which are erecting a new ten-stamp mill, thus increasing their capacity and indicating financial prosperity. I paid a visit to the Douglass mining company's mines, the Potosi and May Harrison, about one and a half miles southwest of Coulterville, and found them stirring and lively on the Potosi. The company has sunk a shaft a distance of 240 feet perpendicular and have commenced drifting along the vein, which they have opened a distance of 100 feet, showing a width of six feet, with well defined walls. This is justly admitted to be the best paying mine in Mariposa county at the present time. The company has a large mill of 35 stamps propelled by a 60-horse power engine, and is capable of reducing 30 tons of ore daily. The crushed ores after escaping from the batteries are carried through sluices to six Wheelsr & Wilson's amalgamating pans and are here passed through a still finer course of pulverization. The ores being all free, no difficulty appears to be experienced in reduction. The company employs about 80 men at present. I passed the May Harrison and found that the owners had sunk to a depth of 450 feet with extremely good results, this mine showing a larger vein than the Potosi. The Hesalow mine (or Heslop) on Gentry's gulch has been lying idle since last November with but little apparent sign of awakening to activity. It is the old story so often reiterated, want of capital being the cause. The Bandarita, on the north fork of the Merced, is still pounding, but I believe with but indifferent results. There are, in fact, several mines in this vicinity whose successful progress is greatly retarded by a lack of the root of all evil to extract the crude rock from the veins and ledges. The Ferguson mine, which passed into the hands of an English company about six years ago, has again become the property of local owners, being owned by Mr. John Ferguson, of Sonora, and a company of gentlemen who with characteristic energy have resumed active operations. The mine, which is undoubtedly a good one, has lain idle for a number of years, and it has been found necessary to tunnel to reopen the works. A number of men are at work in this direction, working night and day.

MONTEREY.

ANTIMONY.—Salinas *Index*, Sept. 21: Mr. Shriver, superintendent of the Salinas quicksilver mining company, has presented us with a couple of fine large specimens of antimony ore, taken from the face of the tunnel, which is now in 70 feet on the lode. When they commenced the tunnel the seam of antimony was only about two inches wide, but it has now increased to two feet wide, getting larger the further in they go. One of the pieces of ore has quicksilver running all through it. The company are very jubilant over their prospects, being confident they have a good thing. The Stayton quicksilver mine, of which the Salinas mine is a continuation, has recently been sold to a company of capitalists, comprising W. M. Lent, J. F. Boyd, Wm. Willis and Mr. Harper, of San Francisco, and Jno. H. Moore and S. A. Bishop, of San Jose. The new proprietors have already commenced operations on the ground. The machinery for two or three large furnaces, costing in the aggregate $10,000, is on the way, and hands are employed excavating the foundation for the works. The building of the furnaces will be pushed forward as rapidly as possible, after which the mines, both quicksilver and antimony, will be worked up to their fullest capacity. All this is very encouraging to the owners of the Salinas mine adjoining.

NAPA.

SILVER ORE.—Napa *Reporter*, Sept. 23: Quite an excitement has been prevailing lately created by the discovery of some silver ore in the range of mountains west of Monticello. Some Mexicans are now at work on the ledge, but nothing more than a few croppings have been discovered.

NEVADA.

NORTH BLOOMFIELD MINE.—Grass Valley *Union*, Sept. 22: The North Bloomfield mine, located in this county, has at last allowed some figures of its production to be made public. On the 18th of this month, gold bars of the value of $15,800 were shipped from the mine to San Francisco. This gold is only the partial proceeds of a run of 22 days. The expense of taking out the amount is estimated at $7,800, which leaves a profit to the company, for the run, of $8,000 The Bloomfield mine is about the most extensive enterprise in the "hydraulic mining" line there is in the world. The company owns acres of gold, and the proceeds will increase for several years to come.

STRUCK THE CHANNEL.—Nevada *Transcript*, Sept. 20: The Cold Spring gravel mining company have been at work for a long time trying to penetrate the ancient river channel thought to run through their ground. They have struck gravel several times during the past six months, but have continued explorations with a view to get somewhere near the bottom of the channel, and to discover if possible its dimensions. All their work has been done by tunneling and drifting, and any one that knows anything about mining knows that it is difficult to tell what is ahead of you under ground, and where it is located providing it is there. The Cold Spring company have struck it, however, and have now reached a point where it is no longer doubtful where they are. They know for a certainty that the old channel on which was located the Live Oak and other fabulously rich diggings, runs through their grounds a mile and a half distant from those old claims. They have proved that the intervening ground, which had never been touched, is a part of the richest channel in the world, and they have, we feel sure, demonstrated facts sufficient to prove to capitalists that here is a field holding out inducements unsurpassed in the State. The company have established the fact that they are on the channel, and the gravel in the claim speaks for itself. All old settlers and miners who knew the old claims on this side of it, say the gravel and the gold in the two are identical. Residents here feel sure that the ridge between Sugar Loaf and Cold Springs will have a thousand laborers employed upon it inside of two years. The discovery at the Cold Springs gives new life to every one, and raises the most hopeful anticipations.

RICH gravel continues to be found in the Cold Spring ground. Bets are offered that on the bedrock of the channel the gravel will yield $100 to the pan. It used to do it on this end of the channel.

PLACER.

MINING ITEMS.—Placer *Argus*, Sept. 23: A small force of men are engaged in the shaft of the St. Patrick mine. The Pugh mill of five stamps is engaged in crushing the ore taken out. It is expected that work will soon begin on the new mill.

The Good Friday mine is looking well, and the prospect of striking the pay shute is excellent. At seventy feet deep a drift has been run fifty feet west, reaching the shute. At 120 feet another drift was run thirty feet west, striking it again, showing that the shute pitches east. At the west end of this drift a winze has been sunk in the pay shute thirty feet on the ledge, all the way in good ore. The ledge averages thirty inches in thickness at this point, of good ore. Work on the main shaft has been resumed, and at the rate the shute pitches to the east, it is expected that the shaft will reach it in about seventy feet.

McLaughlin, Hurst, Robinson and Bradbury are at work on the old Peter Walter ledge. They have pumped out the old shaft and are now in the lower level east of the shaft, stoping up, expecting to find the pay shute. The ground west of the shaft has been worked out, paying well, and there is no doubt that good ore will be found east of the shaft.

L. Shurtleff is prospecting a ledge on Duncan hill and is taking out some good rock. The ledge is large and the pay shute is about 40 feet wide. Some of the rock crushed has yielded an ounce to the ton.

John Bewen has taken about ten tons of good rock from an old ledge on Dutch ravine that promises to pay well. The ore is being crushed, and if the yield is satisfactory he will go ahead. The ledge was worked some years ago, and paid well.

Hawkins and Rhodes have sunk about ten feet on a ledge two miles below Ophir. The rock is said to be rich, but the water is so plentiful that they had to suspend work. They will go further when they get machinery to keep the water out of the way.

MINING ON RED DIVIDE.—Placer *Herald*, Sept. 23: In this hydraulic and sluice mines on the Divide, all is activity at present in preparing for the coming water season. In the drift claims, of which there are quite a number, it is different. Not depending on the water supply they work the year round, and are, therefore, at present very busy. The Weske claim and the Hidden Treasure, near Michigan Bluff; the Hope and Sebastopol, near Forest Hill, and the Centennial, near Todd's Valley, besides many others of which we have no present information, are all pushing things vigorously, and according to our information are, without exception, paying well. This character of mining is steadily increasing, and promises to become very extensive. The Forest Hill divide alone, which is underlaid entire with gold bearing gravel, supposed from prospects thus far made to contain sufficient of the precious metal to pay handsomely for drifting when worked systematically, is extensive enough to afford steady employment for 1,000 men for nearly as many years. In the whole upper part of this county there seems hardly a limit to the gold bearing gravel deposits, and in the opinion of most practical miners they will all in time be worked.

DITCH MATTERS.—The North Fork water ditch has been completely repaired from source to sink, and is now, in reality, better than new. The preliminary work of placing the main Bear River ditch and its tributaries in a similar condition has been commenced, and will from this time forward not be completed, we understand, be prosecuted with vigor. At Auburn station, some 500 or 600 feet of 22-inch iron pipe is being made, designed for carrying the water of the lower Bear River ditch across Little Dry creek, now crossed by a flume. So far as we can learn the company is sparing neither pains nor expense to put their ditch property in a first-rate and durable condition. They have established an office here and put the management of affairs in first-class hands. All of which indicates a steady water supply for consumers and prosperity for the proprietors.

SONOMA.

MT. JACKSON AND ITS MINES.—*Russian River Flag*, Sept. 21: The Mt. Jackson mine has been worked since 1873, but owing to the soft nature of the ore and consequent difficulty of extracting the mercury, it has not until recently been a paying mine. Last April the erection of three Eames furnaces was begun. They are completed and have been running a short time with marked results. After three years of heavy expense the Mt. Jackson has become one of the most profitable mines in the country. The reduction works consist of a large three-story building, with sheds and wings, and contain a 35 horse power engine, a crusher, pans, pumps, etc., and the three Eames furnaces. The ore from the mine is dumped on a level with the top of the building, and, passing through the crusher and furnaces, comes out in dust and quicksilver at the bottom. The capacity of the three furnaces as now worked is 18 tons every 24 hours. And with them it is found profitable to work one per cent. ore, even at the present low price of mercury. As but little of the ore falls below two per cent., and much of it averages five, large profits must accrue to the shareholders. There are at present employed about the mine and furnaces only 13 men. There are 2,400 feet of tunnels, 146 feet of shaft and four ore chambers; the largest chamber is 130 feet long, 18 feet wide and 18 feet high. Rich ore appears on every hand. A curious feature is that the walls are in many places covered with crystals of magnesia and epsom salts, some of them colored a dark green from the presence of verdigris.

THE GREAT EASTERN.—This mine, which adjoins the Mt. Jackson, is of the same character as the latter. The company has one Eames furnace, which is worked up to eight tons every 24 hours. This work on their present grade of ore averages two flasks a day. There are employed in the mine and mill about 20 hands. Ore enough is on the dump to supply the furnace a year. The mine has 1,800 feet of tunnels, 120 feet of shafts and an "uprise" of 60 feet.

TUOLUMNE.

MINING NOTES.—Tuolumne *Independent*, Sept. 23: The Ferguson mine has again started up and the company are to run a new tunnel. The Marks & Darrow is erecting a wheel to crush their quartz, with arastras attached. A five-stamp mill is being erected on the Jones & Woodman mine. A small affair for a large vein with plenty of good ore in sight. The Soulsby mine is yielding beautiful ore from the shaft. Buckets full are being brought to the surface, some of which is liberally stuck together with gold. The parallel vein adjoining the Soulsby is being developed by Glasson & Co. The rock on the dump looks well, with the same characteristics as the sister vein. There is a mine in this county where they are taking out from twenty to twenty-five thousand dollars monthly. This property not being for sale, we are admonished not to say anything about it. Therefore, not wishing to tell tales out of school, we keep our mouth shut.

WORK PROGRESSING.—*Union Democrat*, Sept. 23: Work on the Jones & Woodman mine in this county progresses rapidly, and 400 tons of the best kind of rock have been extracted and is now ready for milling.

Nevada.

WASHOE DISTRICT.

IMPERIAL CON.—Gold Hill *News*, Sept. 21: Everything running all right again. The new shaft to replace the broken one of the pump engine was put in place and started running on Friday evening last. It operated finely and the water was reduced at a lively rate. Owing to the energetic efforts brought to bear in the case the water was kept from rising high enough to do any particular damage. It did not get into the winze below the 2000-ft level. The bulkheads which were put up to defend against the water have been taken down, and everything is now going ahead regularly as before the accident. No damage was done to the mine.

NORTH CON. VIRGINIA.—The new machinery was started into operation last Friday and is running finely. Sinking the shaft deeper is resumed, the pump handling the water with perfect ease. The shaft will be continued to the 1500-ft level, 500 feet below the present lowest level, and a good paying mine is expected to be developed at that point.

OPHIR.—Daily yield, 300 tons. The ore breasts of the 1800 ft level are looking and yielding well, as usual, with no particular change to note. Some very rich ore comes from the eastern portion of this level. The cross-cut west near the Mexican line is pushing ahead in low grade ore, and the main incline is sinking at a good rate of progress.

BULLION.—The various drifts at the 1400, 1500 and 1600-ft levels are all being pushed ahead as usual, with encouraging prospects. Nothing doing at the lower levels, owing to too much water and bad air.

MEXICAN.—Northwest drift at the 1465-ft level is still running in fine looking vein matter, with streaks and bunches of low grade ore. Continued improvement is met with as the drift advances. Bottom of the winzs below this level shows good ore.

SOUTH END.—Shaft down 237 feet. The 200-ft station is completed, and when the shaft reaches the 300-ft level another station will be opened.

LADY BRYAN.—Shaft sinking lively. A portion of the new machinery has arrived and the balance soon will, as it is all paid for, and has to be delivered within 30 days.

OVERMAN.—Drifts north and south at the 1,200-ft levels are steadily advancing and both are in excellent looking quartz.

BELCHER.—At the 700-ft level the drifts both north and south are advancing well in favorable ground.

ROCK ISLAND.—The water being all out, work is driving ahead at the 650 and 750-ft levels under the most favorable auspices.

ALPHA.—The Imperial flood having subsided, the drift is being pushed ahead again, and will connect with the Imperial drift very soon.

AMAZON.—Shaft down 163 feet, with bottom in clay and quartz and showing streaks and bunches of low grade ore.

SUTRO TUNNEL.—Face of the header in porphyry with seams of quartz and clay. This material works very favorably. Total length of tunnel last evening, 14,390 feet.

SAVAGE.—The water is gradually being reduced, although occasional interruptions and delays occur, owing to repairs found necessary in the incline.

GLOBE CON.—The main drifts both north and south at the 300-ft level being pushed ahead, both in excellent vein matter, with fine looking streaks of quartz.

SUCCOR.—The masonry foundations for the heavy new surface machinery are being urged forward to completion as fast as practicable.

WEST BELCHER.—Plenty of pay ore coming from the up-raise as well as from the main drift at the 300-ft level. Dumps pretty well filled.

BEACH & PAXTON.—West cross-drift at the third level pushing ahead in good ore formations.

RESURRECTION.—This mine is a relocation of the old Santa Rita, so well known in the early history of the Washoe silver discovery and consequent excitement. It is situated in Spanish ravine, directly west of the great bonanza of the California and Consolidated Virginia, and some 200 or 300 yards up the ravine from the old Ocle company's tunnel and ledge. The Santa Rita was considerably worked in the early times, a tunnel over 900 feet long being run into it, developing a ledge 123 feet in width of the regular white Comstock ore. Drifts north and south were also run in the ledge 150 feet or more in length, and a large amount of low grade ore found, principally in the 30 feet lying next to the east wall. Considerable of it was extracted and milled, but it only gave an average of $8 or $10 per ton, which, with the imperfect milling appliances of those days, would not pay, therefore the mine was abandoned and remained so until a year or so ago, when the present company owning it obtained possession, relocated it under the mining laws of the State, perfected their title, and being principally composed of San Francisco and New York capitalists they are well prepared to develop and work the mine for all it is worth. They commenced active practical operations about a month ago and have cleaned out the old tunnel and drifts.

CALIFORNIA.—Daily yield, 550 tons, from the 1500, 1550 and 1600-foot levels. The various ore breasts and stopes continue looking and yielding finely as usual at all points. The 1600-foot level is looking especially well in the south drift and also in the drift or crosscut from the main south drift. A little over 300 tons per day is being hoisted through the O. & O. shaft and the balance through the Con. Virginia shaft; none through the Ophir at present. The new mill of the company is doing excellent work. The winze from crosscut No. 5, at the 1500 to the 1600-foot level is completed and will ultimately connect with the crosscut east at the last mentioned level which is running to meet it. The drifts and winzes at the 1400-foot level are being put in good repair for active ore production service. The C. & O. shaft is sinking at the rate of two feet per day and is now 112 feet below the 1500-foot station. The flow of water continues very strong, keeping the pumps pretty busy. Another station for a pump hoist is being cut out below the 1500-station, and a branch from the side track of the Virginia Truckee railroad is being completed to the shaft in order to bring requisite supplies of timber, lumber, etc., and transport the ore to the mill. The machinery works most excellently in every respect.

JUSTICE.—Daily yield 150 tons, the increase being allowed by the addition of the Pioneer mill, which has been set to work on ore from this mine since last week's report, making five mills in all, viz.: the Sherman, Excelsior, Woodville, Douglas and Pioneer. The ore comes from the 400, 500 and 600-foot levels, and also from the main drift at the 800-foot level, taken out in running the drift. The ore breasts in the upper levels mentioned are yielding some very rich ore, and there is plenty of it in sight. Another mill can be supplied very easily, and will be secured and set to work soon. No notable change to report in cross-cuts Nos. 1, 2 and 3, at the 800-foot level. They show good milling ore, with good promise of something better. At the 1000-foot level the northwest crosscut struck a heavy increase of water last evening, and the main south drift at the same level also tapped a strong increase of water. This caused a temporary suspension of work at that

level, bnt tbe water is reduced again, and work is resumed as before. Sinking the main incline was also suspended on account of this flood of water, but this difficulty being disposed of, sinking will be resumed forthwith.

CON. VIRGINIA.—Daily yield about 450 tons. It comes from the 1400, 1500 and 1550-foot levels, and keeps the Bacon, Trench and Brunswick mills steadily running. The Consolidated mill has not started working on ore from the mine, but will do so in about two weeks. It is needed, as the water supply of the Brunswick, as well as other mills on Carson river, is getting rather short. Tbe varions ore-producing sections of the mine are looking finely and opening up more extensive resources. At the 1550-foot level this is especially the case, the eastern workings showing decided improvement, and considerable ore is now being hoisted from that level, the repairs to the station and shaft being completed. Nothing is being done at the 1700-foot level, owing to the retimbering of the douhle winze above the level.

HALE & NORCROSS.—Water redneed 145 feet. Owing to breakage of compressor have had to bail or raise the water up the incline to the pump tank with the giraffe. The compressor will he repaired and the incline pump working again this evening. At the 400-foot station a large balance hob for tbe pump is heing pnt in. The incline is found to he in excellent order, notwitbstanding its heing so long submerged. Tbe heat is very great at present, hut hy the first of next week tbe 1900-foot level will be probably reacbed, when a good air circulation will be estabiished tbrough tbe main drift at that point.

AMAZON AND GLASGOW.—Waiting for tbe pump to arrive. Meanwhile the heavy flow of water from the ore vein developed at the 400-foot level is kept down by tbe haling tanks. As soon as the pump arrives it will be put in plsce and tbe new machinery hrought to bear in the matter

JULIA.—Main drift east at the 1800-foot level advancing well, through soft porpbyry, quartz and clay; more quartz is coming in; no increase of water. Tbe south drift at this level is showing a fine and most promising body of quartz, taking the whole face of the drift.

SILVER HILL.—North drift at 444-foot level making good steady advancement, with the face in favorahle vein material.

BELCHER.—Daily yield, 300 tons of ore from the old ore sections. Soutb drift at the 1,500-foot level steadily going ahesd, with no new features of interest to report. At the 1600-foot level the north drift, and also the drift east, are being pushed abead, showing no particular change wortb relating.

KOSSUTH.—Streaks of good ore are getting larger and plentier in the east crosscut at tbe 500-foot level.

SIERRA NEVADA.—The water at tbe 1750-foot level continues to obstruct operations at tbat point.

CROWN POINT.—Daily yield 60 tons, keeping the Rhode Island mill steadily running. The main south drift at the 1700-foot level bas completed its connection with tbe Belcher and Crown Point air and pump-shaft, giving a valuable and mucb needed resource in tbe way of ventilation.

SOUTH COMSTOCK.—Work in this valuable mine is to be resnmed shortly, after a rest of a few months. The old line of operations will not be followed, but a new programme pursned. A drift is to he started from the 300-foot level to cut and explore the east ledge, the west ledge being pretty well prospected hy the former workings.

FLORIDA.—Shaft sinking at the rate of tbree feet per day. Bottom in hard blasting ground composed of trachyte conglomerate. No increase of water. Northwest drift at 400-foot level pushing ahead at the rate of three feet per day with face in hard vein matter, mixed with more and more quartz. No west wall as yet. The machinery works well, and the pump is raising out the water at the rate of 30,000 gallons per hour.

GOULD & CURRY.—The retimbering and repairing of the shaft goes forward slowly, owing to tbe caving nature of the ground and the care necessary to be exercised in consequence. The joint winze below the 1600-ft level, at the Savage line, is down 346 feet and getting along finely in good sinking ground.

PROSPECT.—The drift west at the 400-ft level is being pushed ahesd at the rate of four feet per day, passing tbrough hard porpbyry. It is expected to reach the front ledge very sbortly, and will be continned through to the back ledge where the main ore body is.

NORTH CARSON.—Sbaft down 335 feet, with bottom in hard rock with seams and hunches of quartz and clay. Tbe ore body at the 300 ft level is showing splendidly and improves constantly as farther sought into. It stands at an angle of 45 degrees and tbe shaft will pass tbrough it in sinking deeper. It is within six feet of the shaft now.

YELLOW JACKET.—At tbe 2040-ft level the south drift is in 128 feet from tbe east winze; face of same in quartz and porpbyry.

TROJAN.—The shaft is in very favorable veln matter. Have sunk 80 feet since sinking was resumed, and for abont half that distance the south side or the shaft passed tbrougb a body of good milling ore, hut it dipped away and passed out of the shaft.

BALTIMORE AND AMERICAN FLAT.—Drifts both nortb and south at tbe 1050-ft level pushing abead with some improvement in the south drift, more and better quartz coming in at the face.

PHIL SHERIDAN.—Shaft 330 feet deep to-day. Bottom in quartz and porphyry, mixed, hard, but blasting well and working favorably. Will cross-cut the ledge soon, from the sbaft.

COSMOPOLITAN.—The stopes and breasts of the upraise are yielding considerable good milling ore, and tbe winze below the main tunnel or adit level is now down 84 feet, in good ore all the way.

SUPERIOR.—The drift west at tbe 160 ft level is now in 40 feet and will have to go ahout 50 feet further to reach the ledge. Water slacking off considerably. Drift running in a mixture of porpbyry, clay and streaks of quartz.

BERAIN.—During tbe week some very good ore bas heen met with at the bottom of the incline in sinking, and the prospects for a fine paying bonanza are excellent. It seems to dip away to the north, and a drift is to he run to more fully ascertain its value.

BALTIC CON.—Material in face of main west drift soft and easy to work, being composed of porphyry, clay and quartz. Large streaks of low grade ore continue coming in.

CALEDONIA.—Sinking the shaft progresses favorably, and good work is being done. Cutting out tbe tank pit at the 1500 ft level for the plunger pump.

BUCKEYE.—Tbe pumping arrangements have been enlarged and rendered more effective, and sinking deeper can he resumed wbenever it is tbought expedient.

WARD.—Sbaft down 623 feet to-day. No tronble from water yet.

UTAH.—Slnking the sbaft is temporarily snspended in order to allow the work of cutting ont a tank and hoh pit for the pump to go forward to the best advantage.

CHOLLAR-POTOSI.—Daily yield from 90 to 100 tons. Average assay, $30. No new ore developments to report.

BEST & BELCHER.—The work of enlarging and retimbering the donhle winze, cntting out and retimhering the station at tbe top of the winze, enlarging the east drift and resetting the engine is progressing at a good rate.

NEW YORK.—Pump tsnks at tbe various stations opened, and raising the pump shaft going abead lively, with tbree shifts of men.

NIAGARA.—Sbaft down 467 feet to-day. Rock softer at bottom, so that good work is heing done.

MINT.—Shaft 1,243 feet deep to-day. Very good ore indications at bottom of shaft.

EAST JUSTICE.—Bottom of shaft in favorable working ledge matter, allowing of good progress in sinking.

Continued on Page 228.

To Encourage the Growth of Timber.

EDITORS PRESS:—Will you publish the act referred to in your article "Important to Settlers" in the PRESS of August 12th? We are all on Government land, and if the act will help us, although not on the prairies, we would like to avail ourselves of it.—R. W. WATERMAN, San Bernardino, Cal.

The following is the act referred to as published in Dewey & Co.'s pamphlet on the "Public Lands of California and the United States Land Laws." The following, taken in connection with the amendment to which our correspondent refers, comprises the law as it now stands for the encouragement of timber growing:

Be it enacted by the Senate and House of Representatives of t e United States of America in Congress assembled, That the act entitled "An Act to encourage the growth of timber on Western prairies," approved March 3d, 1873, be, and the same is hereby, amended so as to read as follows: That any person who is the head of a family or who has arrived at the age of 21 years, and is a citizen of the United States, or who shall have filed his declaration of intention to become such, as reqnired by the naturalization laws of the United States, who shall plant, protect and keep in a healthy growing condition for eight years, 40 acres of timber, the trees thereon not heing more than 12 feet apart each way, on any quarter section of any of the public lands of the United States, or 20 acres on any legal subdivision of 80 acres, or 10 acres on any legal snbdivision of 40 acres, or one fonrth part of any fractional subdivision of land less than 40 acres, shall be entitled to a patent for the whole of said quarter eection, or of such legal snbdivision of 80 or 40 acres, or fractional subdivision of less than 40 acres, as the case may be, at the expiration of said 8 years, on making proof of such fact by not less than two credible witnesses: *Provided*, That not more than one-qnarter of any section shall be thus granted, and that no person shall make more than one entry nnder the provisions of this act, unless fractional subdivisions of less than 40 acres are entered, which, in the aggregate, shall not exceed one quarter section.

SEC. 2. That the person applying for the benefit of this act shall, npon application to the register of the land district in which he or she is about to make such entry, make affidavit before the register, or the receiver, or some officer anthorized to administer oaths in the district where the land is situated, who is required by law to nse an official seal, that said entry is made for the cultivation of timber, and npon filing said affidavit with said register and said receiver, and on payment of $10, he or she shall therenpon be permitted to enter the quantity of land specified; and the party making an entry of a quarter section under the provisions of this act shall be reqnired to hreak 10 acres of the land covered thereby the first year, 10 acres the second year, and 20 acres the third year after the date of entry, and to plant 10 acres of timher the second year, 10 acres the third year, and 20 acres the fourth year after date of entry. A party making an entry of 80 acres shall break and plant, at the times hereinbefore prescribed, one-half of the quantity reqnired of a party who enters a qnarter section; and a party entering 40 acres shall break and plant, at the times hereinbefore prescribed, one quarter of the quantity required of a party who enters a quarter section, or a proportionate qnantity for any smaller fractional snbdivision: *Provided, however*, That no final certificate shall be given or patent issned for the land so entered until the expiration of eight years from the date of such entry; and if at the expiration of such time, or at any time within five years thereafter, the person making such entry, or, if he or she be dead, his or her heirs, or legal representativea, shall prove, hy two credible witnesses, that he or she or they have planted, and, for not less than eight years, have cultivated and protected such qnautity and character of timher as aforesaid, they shall receive a patent for snch qnarter section or legal subdivision of 80 or 40 acres of land, or for any fractional qnsntity of less than 40 acres, as herein provided. And in case of the death of a person who has complied with the provisions of this act for the period of three years, his heirs or legal repreeutatives shall have the option to comply with the provisions of this act, and receive, at the expiration of eight years, a patent for 160 acres, or receive without delay a patent for 40 acres, relinquishing all claim to the remainder.

SEC. 3. That if at any time after the filing of said affidavit, and prior to the issuing of the patent for said land, the claimant shall abandon the land, or fail to do the breaking and planting reqnired by this act, or any part thereof, or shall fail to cnltivate, protect and keep in good condition such timber, then, and in that event, such land shall be subject to entry under the homestead laws, or by some other person under the provisions of this act: *Provided*, That the party making olaim to said land, either as a homestead settler or nnder this act, shall give, at the time of filing his application, snch notice to the original claimant as shall he prescribed by the rules established by the Commissioner of the General Land Office, and the rights of the parties shall be determined as in other contested cases.

SEC. 4. That each and every person who, under the provisions of the act entitled "An Act to secure homesteads to actual settlers on the public domain," approved May 20th, 1862, or any amendment thereto, having a homestead on said public domain, who, at any time after the end of the third year of his or her residence thereon, shall, in addition to the settlement and improvements now required by law, have had under cultivation, for two years, one acre of timber, the trees thereon not being more than 12 feet spart each way, and in a good thrifty condition, for each and every 16 acres of said homestead, shall, upon due proof of snch fact by two credible witnesses, receive his or her patent for said homestead.

SEC. 5. That no land acquired under the provisions of this act shall in any event become liable to the satisfaction of any debt or debts contracted prior to the issuing of certificate theretor.

SEC. 6. That the Commissioner of the General Land Office is hereby reqnired to prepare and issne such rules and regulations, consistent with this act, as shall be necessary and proper to carry its provisions into effect; and that the registers and the receivers of the several land offices shall each be entitled to receive two dollars at the time of entry, and the same snm when the claim is finally established and the final certificate issued.

SEC. 7. That the fifth section of the act entitled "An aot in addition to an act to punish crimes against the United States, and for other purposes," approved March 3d, 1857, shall extend to all oaths, affirmations and affidavits reqnired or anthorized hy this act.

SEC. 8. That parties who have already made entries nnder the act approved March 3d, 1873, of which this is amendatory, shall be permitted to complete the same upon full compliance with the provisions of this act.

Approved March 13th, 1874.

Farm Machinery.

One of the greatest leaks in farm economy may be found in the neglect into which machinery falls when the immediate time for its use is passed. We doubt not that many a reaper and header may be found to-day where Putnam left his plow, just in the place where they were last nsed. It may be permissable, when one's country calls, to leave the plow in the furrow, hnt in times of peace and leisure to leave a valuable farm tool in the open weather is a careless regard for valne which is not economical, to say the least of it.

This subject has received quite a generous and vigorons handling from Eastern agricultural speakers and writers for years. The result has been a more general housing of machines, although there is still room for improvement. We do not have the Eastern winter; the snow does not whirl around the abandoned separator, nor apply a heavy compress to the plow and harrow in the fence corners. But we have something which can he regarded as hardly less rninous to exposed machinery. The continued moistnre of the rainy season is an insidious foe to both the wood and iron of the implement.

The farmer uses machinery which far exceeds in cost the tools of the common mechanic, and yet the mechanic would rise at midnight to save a handsaw from exposure, while the thonghtless farmer will allow all his harvesting machinery, which cost him hundreds of dollars, to lie a twelvemonth subject to the disintegration of the elements. These things onght not to be so.

As a sample of the care that machinery should have on the farm we quote from the *Canada Farmer* the following recommendations for storing a reaper: "Not only should the reaper and mower be protected from the alternations of weather, that is, kept in an enclosed place, the harn, shed, or, better still, an implement honse erected for the purpose, but the manner and condition in which they are laid away must be very carefully attended to as well, it their futnre usefulness is expected or desired. First ot all, then, let them be well cleaned and dried, observing to pick away all tnts or blades of grass that may have become entangled amid the iron gearing; for wherever these are found, moisure is not far off; and moisture, iron and air in contact, mean simply oxidation or rust.

"Remove the cutter har. This is hy far the better plan, for it ohviates the sagging and twisting which usually follow either a folding np of the bar, or the more common practice of letting it lie in cntting order on the ground. Wipe every portion of the iron-work perfectly clean. For this pnrpose common coal oil is very serviceable to loosen and dissolve any oil that may have caked about the joints or axles. Dry thoroughly, and give the whole a light coat of good sweet oil. The wood-work may be treated in the same manner with the best results. The whole job may be accomplished in an honr or so, and at an expense ot abont ten cents, yet hy this hour's labor and insignificant expenditure at the proper time, yon do more to preserve yonr machine in good order than could be secnred for twenty times the amonnt had it been left, as so many are, uncared for and exposed." This advice of onr contemporary will apply to nearly all of the more complicated and expensive of farm machines. We trust that nsefnl hints may he taken from it hy any who may need them.

LATEST advices say that the rich diggings recently sirnck on Williams creek (British Columbia) were accidently discovered by the Well-Mary Anne (Chinese) hydraulic company, and are 1,000 feet hack in the hill on the east side of the creek.

Some Singular Phenomena in the Florida Mine.

A few days since the Virginia *Enterprise* reporter accompanied Superintendent Daly to the Florida and took a run through the mine. The location is an old one, having been made in 1859. It was originally known as the Pony Express. The original developments were made by running a tunnel some 500 feet into the hill. This struck the ledge about 280 feet from the month and was discontinned when the west wall was reached, showing a vein of promising quartz ot nnusnal breadth. This body of qnartz contains large amonnts of low grade ore and in places yields assays as high as $80.

The vein having been thus prospected the present shaft was located some 25 yards north of the tunnel and has been sunk a little over 400 feet. A drift was sent ont from the 400-foot level to prospect the ledge. After rnnning abont 140 feet through a mixed formation, composed principally of trachyte, the clay wall was reached. This is as fine a wall as any on the Comstock. Passing through this, a formation of black dyke is enconntered which is permeated all through by quartz in veins which run from the thickness ot a sheet of paper np to one and one-half inches. In the largest veins and bunches silver is fonnd, some of them giving liheral assays.

Since striking the dyke the drift has been continued 400 feet without yet striking the west wall of the formation. As was very natural, the flow of water therefrom was very strong. There have also been various drifts projected on this level, bnt a uniform formation has been everywhere encountered. This has a nearly polar trend and a dip of abont 35 degrees to the east. It is very evident that there is nothing to pay for work on this level exoept that the extent and "behavior" of the vein may be determined by reaching the west wall, and for this purpose only need tbe drift be continued.

The wanderings on this level have, however, not been without their value. Something like a year ago it will be remembered that water was struck and not a little difficulty enconntered in pursning the work. An examination of the place where this occurred is very interesting. While pushing the drift ahead, the dyke flow broke np through the floor of the drift, and for a time nothing could withstand the upheaval. The pressure was, of course, from below, and so great that 12 by 12 timbers were broken like pipe stems. The flow was of slum and brought with it some fine specimens of ore, which yielded very large assays. This flow continned till 1,100 car-loads were taken out, and then the drift was turned to one side, as the supply showed no signs of ceasing.

This phenomenon, taken in connection with the snrface indications all throngh the section, and the quar z and vein matter in the tunnel, is fnll of interest. The section shows abundant evidence of violent volcanic action. Even near the tops of the mountains in the vicinity are to be found vast masses of lava, deposited there by upheavals from below. Running along near the mine is a ridge of trachytic rock similar in formation to that enconntered in the drift before reaching the clay wall. The conclusion is inevitable, that after the regular deposition of country rock, in a fissure of which the quartz formation in the ledge was deposited, a subsequent npheaval displaced the vein and injected the black dyke. As this oooled and cracked, the pressnre from below was so great as to fill all the seams with what has produced the quartz veins permeating the whole body.

The original vein should then surely be found somewhere in the vicinity, or more probably lying qnietly and intact below this surface disturbance. Its natnre is snfficiently indicated hy the solid snbstances hronght np by the flow. That it contains mineral is evidenced by the ore hronght np. Its swelling nature is indicated hy the npward pressure, which broke through the floor of the drift and could not he controlled, and by the fact that a piece of the vein matter hronght ont, when exposed to the air, increases in size twofold. All can judge of the nature of these indications for themselves. All the phenomena connected with the drift go to show that at the point of npheaval the work cut very near the connecting line between the dyke and the ledge, which is pressing upward from below. This is to he tested, for the shaft is to be dropped on down immediately and another exploration made from a lower level.

THE earnings of the Central Pacific railroad in Angnst were $1,689,000. For the first eight months ot the year the total earnings amounted to $11,257,166, against $10,999,422 in the same period ot time last year. In 1875 they had 1,213 miles of road in operation. The gross earnings per mile were $14,032.16 and the operating expenses per mile, $6,115.

QUICKSILVER.—The Colusa *Sun* gives some information as to the cost of produoing qnicksilver in that county: At the Abbott mine last year it cost 31.4 cents per pound to produce the article, inclusive of the first cost of the furnace. It is thought the cost of production oan be reduced to 25 cents a pound. The market price of the article is about 45 cents.

A BIG STRIKE.—The unusnal spectscle of Chinese striking for higher pay is afforded at Oreana district A number of them employed at the Hnrricane smelting works hncked and quit work, in consequence of whiob the furnaces had to stop.

The Wheeler Expedition.

The Virginia *Enterprise*, in speaking of the advent of a part of the Wheeler expedition to their camp near Virginia, says:

The party is composed of Lieutenant T. W. Symons of the engineer corps; Dr. F. Kampf, astronomer; Antone Karl, topographer, and Louis Seckles, meteorologist. Simon B. Cameron was left for the time being in Sutro, but will join the others very soon. This is the central party of the expedition and are particularly engaged in triangulation, preparatory to making a contour map of this entire section of country, with curves 25 feet apart. This is to include Virginia, Gold Hill, Silver City, etc. The instructions given are to make this map very accurate, in fact as perfect as possible. The initial steps have already been taken and

A Base Line Established,

Four and one-quarter miles long in the valley on the old emigrant road, near Sutro. The method of its measurement is new and the invention of Dr. Kampf of the expedition. The old method was by alignment of posts with a theodolite, leveling the tops and then measuring by using three poles of known length, two being left in place and the third or last one being taken up and carried on ahead each time. Dr. Kampf uses a rod of fine wood, thoroughly seasoned, and compared every night and morning with a normal rod of known length at a certain temperature. The measuring rod is supplied with a level for showing when it is exactly horizontal and verniers at each end. In making the measurement three small iron stands are used, by moving which along the line the measurement is taken exactly.

Ten Mountain Stations

Have been already occupied, including Mount Davidson, which is the tenth. The distance between the stations is accurately determined by means of this base line. Its length and position being accurately determined, the distances and positions of these stations are calculated therefrom by means of the system of triangulation. These mountain stations being then placed and distanced, are again used as points of observation for new sections and so on, the adjoining parties of the expedition profiting by them in the same manner as this central party. The party yesterday afternoon and last evening occupied

The Astronomical Station on the Divide,

The position of which was fixed by Lieut. Wheeler's expedition some time ago. From this a base line is to be established to some point on Ophir hill, which is to be used for all future mining surveys and is also to be connected with the base already established, as above described, in the valley below. This will be of immense value to this section of country and especially to those engaged in developing our mining interests. The day has already come when the fraction of an inch of ground on the Comstock is worth contending for in the courts, and anything which will in future tend to establish exact boundaries or determine existing rights is of incalculable value. Lieutenant Symons is also instructed to collect all the

Information in Regard to the Mines

Which he can obtain while in this section: The exact location and extent of the Comstock so far as traced, the statistics as to the amount of its yield in gold and silver; the amount of rock and water that has to be raised and the cost of the work, the nature of the machinery used, its description, and the improvements which are being or have been introduced, the amount and cost of the fuel and timber used in the mines and in connection with the mining and milling of ores, etc.—all are wanted by Lieutenant Symons, and for the purpose of obtaining these he

Will Wait Upon our Mining Superintendents.

Lieutenant Symons is a man who will be popular among our mining men. He is very quiet, plain and unassuming, but possesses energy and determination—qualities essential to the success of an expedition such as the one upon which he is engaged. He is withal a young man, having graduated from West Point in 1874. He took the honors of his class of 113, and was the only one of the whole who was immediately transferred to the engineer corps, always regarded as the highest branch of the service. The information which he collects as to this section of the country is to be published by the Department at Washington. This affords an opportunity to spread correct information as to our mines, which if itself should open every avenue of information to the gatherer. We bespeak for Lieutenant Symons a hearty welcome.

The Other Branches of the Expedition

Are at work in this vicinity and further east. The whole is under the command of Lieutenant George M. Wheeler, of the United States army engineer corps, who is operating near Lake Tahoe with Lieutenant McComb. Another is north of Reno. The one to the east is beyond the 40-Mile desert, in the vicinity of Austin. The rendezvous camp is at Carson. Operations will be carried on till the severity of the season drives the expedition from the mountains. There are two other expeditions of a similar nature in the field, one in Colorado and one in New Mexico; but these travel all the time and are making topographical maps of the country only. This is all the meager appropriations of Congress will allow them to do.

Useful Information.

Interesting Facts About Grindstones.

A writer in the *Iron Age* makes a classification of grindstones which will furnish interesting information to many a mechanic. The English, Nova Scotia and Ohio grindstones are the principal kinds in use, but each of these sorts are subdivided into an endless variety of sizes and grits.

English Grindstones.

New Castle.—Yellow color and sharp grit; the fine soft ones for grinding saws, and the coarser and harder ones for rad irons and springs, pulleys and shafting (instead of turning), and for bend and face stones in nail works, and for castings (dry grinding).

Wickersly.—Grayish yellow color; for grinding saws, squares, bevels, and cutlers' work generally. A very soft grit to avoid taking out the temper.

Liverpool (or Melling).—Of a red color and very sharp grit; for saws and edge tools generally. An excellent grit for sharpening axes in ship yards.

Nova Scotia.—Blue or yellowish gray color, and of all grits, from the finest and hardest to the coarsest and softest; the large ones for grinding rad irons and hinges, springs and edge tools; the medium and small sizes for machine shops and for sharpening edge tools generally.

Bay Chaleur, N. B.—Of a uniform blue color, and soft, sharp grit; for manufacturing table cutlery, and is admirably adapted for machinists' tools, and for sharpening edge tools generally, when a fine edge is required.

Ohio.

Berea.—White color, fine and sharp grit; for sharpening edge tools, generally.

Amherst, (Black River).—Brownish white color, soft, loose grit; for edge tools, and the very soft ones for saws.

Independence.—Grayish white color, and coarse sharp grit; for grinding springs and files, and for dry grinding of castings.

Massillon.—Yellowish white color, coarse, sharp grit; for edge tools, springs, files and nail cutters' face stones, and for dry grinding of castings.

Huron (Michigen).—Of a uniform blue color, and fine, sharp grit; good for sharpening tools when a very fine edge is required.

Glass Cutters' Grindstones, of New Castle, Warrington, Craigleith and Yorkshire grits; for checkering, mitering, fluting and for punty stones.

Cutlers' Grindstones, of New Castle, Nova Scotia and Wiokersly grits; made to order, of any size.

Shank Stones; for table cutlery.

Courriers' Rubstones of New Castle, Nova Scotia and Ohio grits; for first and second stones; and Scotch Water of Ayr, Welsh and Hindosten, for cleering stones.

Scythe, Oil and Whet Stones, Ouachita, Arkansas, Orange and Scotch Water of Ayr stones and hones, of all shapes. Shoemakers' rubbers, and scythe stones of all sizes.

Judging Steel by the Eye.

At a meeting of the American association for the advancement of science, in Buffalo, a peper on "The Relations of Structure, Density and Chemical Composition in Steel," was read by John W. Langley. It has long been known to practical men, says the *American Manufacturer,* that the appearance of the fracture of steel bears some relation to its mechanical properties as developed in the machine shop. It has been further known in a general way that this appearance was connected with the quantity of carbon in the metal. The researches embodied in this paper extend over a period of two years, and show, first, that steel can be selected by ocular inspection alone with a high degree of precision, and that differences of less than seven-hundredths of one per cent. of carbon can be certainly known by the appearance of the freshly broken ingots. Twenty ingots, manufactured by Messrs. Miller, Metcalf & Parkin, of Pittsburg, formed the material for these determinations. Second, it was shown that in general the specific gravity decreases in proportion with the increase of carbon, though there are some apparent exceptions to the rule; and third, that when the metal is hardened by being plunged into water the density is less the greater the heat to which the specimen is subjected. The paper was accompanied by extensive tabulated reports. In conclusion it was asserted that the time had arrived when the eye had very nearly become the rival of chemical analysis in this branch of metallurgy.

Imitation Marble.—Carl Boschau says that if a statue, made of plaster of paris or *papier mache,* be coated with thick white dammar varnish, and then dusted with pulverized glass, it will have, when dry, the appearance of alabaster. If it be afterwards varnished a second time, and dusted with coarsely pulverized white glass or mica (*marienglas*) and again dried, it will be a very successful imitation of Carrara marble, especially if the marble veins be first traced with some delicate blue pigment. This method of preparation follows that of nature, for alabaster consists of very small crystals of sulphate of lime, and Carrara marble of somewhat larger crystals of carbonate of lime, which in reflected light glistens like white sugar. This effect is obtained with perfect deception by the brilliant white glass in coarse powder.

Combustible Silk.

The *Polytechnic Review* says: "It seems to be well established that black-dyed silk is liable to a similar alteration (i. e. spontaneous ignition) although its real cause has not yet been satisfactorily ascertained." Since the appearance of the contribution in question, a fact has come to the knowledge of the writer, that in all probability will throw some light on the subject, as will be perceived from the item herewith reproduced from *Harper's Annual Record of Science and Industry,* for 1875: viz: The debasement of silks by foreign admixture, if we may infer from the comments of journals devoted to textile interests, has of late reached such a hight as to promise shortly to rival that of a class of cotton goods which have added largely to the notoriety, if not to the fame, of one of the manufacturing centers of England. A writer in one of the French journals shows that the weighting of black silks—which began with the modest aim of making up for the loss sustained in ungumming—is now carried to the extent of 100, 200 and 300 per cent. This increase of weight is effected by treatment with salts of iron and astringents, salts of tin and cyanides. The bulk is augmented proportionably to the weight. The same writer points out very clearly the evils attending this excessive adulteration. The chemical and physical properties of the silk thus treated are materially modified. What is sold as silk is, in reality, a mere agglomeration of heterogeneous matters devoid of cohesion, held together temporarily by a small portion of silk. The strength and elasticity of the fiber are likewise reduced. From being in its natural state one of the most stable of substances, and but slightly combustible, in its adulterated state it burns like tinder if touched by a flame. It is likewise affirmed to be liable to undergo spontaneous decomposition, and to absorb gases with the evolution of heat which sometimes lead to actual combustion. The adulterated silk when burning scarcely gives off the characteristic odor of animal matter.

Crystalline Surface for Wood, Paper, etc.—The *Practical Magazine* says that the following is the simplest method of giving paper and wood surfaces a crystalline coating. Mix a very concentrated cold solution of salt with dextrine, and lay the thinnest possible coating of the fluid on the surface to be covered by means of a broad, soft brush. After drying, the surface has a beautiful, bright mother-of-pearl coating, which, in consequence of the dextrine, adheres firmly to paper and wood. The coating may be made adhesive to glass by doing it over with an alcoholic shellac solution. The following salts are mentioned as adepted to produce the most beautiful crystalline coating, viz.: sulphate of magnesia, acetate of soda and sulphate of tin. Paper must be first sized, otherwise it will absorb the liquid and prevent the formation of crystels. Colored glass thus prepared gives a good effect by transmitted light.

Restoring Damaged Velvet.—The *Moniteur de la Sulud* published the following method for restoring velvet to its original condition. It is well known that when velvet has been wet, not only its appearance is spoiled, but it becomes hard and knotty. To restore its original softness, it must be thoroughly dampened on the wrong side, and then held over a very hot iron, care being taken not to let it touch the letter. In a short time the velvet becomes, as it were, new again. The theory of this is very simple. The heat of the iron evaporates the water through the tissue, and forces the vapor out at the upper side; this vapor, passing between the different fibers, separates those which adhere together in hard bunches. If the velvet were ironed after damping, an exactly opposite result would be obtained. It is therefore necessary that the substance should not come in contact with the heated iron.

Good Health.

Recipe for Curing a Taste for Liquors.—At the festival of one of our reformatory institutions a gentleman is reported to have said: "I overcame the appetite by a recipe given to me by old Dr. Hatfield, one of those good old physicians who do not have a percentage from a neighboring druggist. The prescription is simply an orange every morning half an hour before breakfast. 'Take that,' said the Doctor, 'and you will want neither liquor or medicine.' I have done so regularly, and find that liquor has become repulsive. The taste of the orange is in the saliva of my tongue, and it would be as well to mix water and oil as rum with my taste." The recipe is simple; and has the recommendation that it can do no harm even if it does no good.—*St. Louis Medical and Surgical Journal.*

Butter.—Is butter a food—that is, does it nourish and strengthen the body? Answer: Butter is a food quite as much as meat. Indeed, there is more strength stored up in an ounce of butter than two ounces of the best lean meat; but butter will not furnish material to build up the tissues of the body as bread and meat do. A man would starve on a butter diet in a very short time. Butter is a fat useful in the body to support animal heat and generate force, as coal and wood do under the boiler, and of some use in building muscular and nervous tissues.—*M. L. Holbrook.*

Diphtheria.

Several new cases of this disease have been reported during the week, says the Napa *Reporter,* and one death. Our leading physicians inform us, however, that the disease is of a remarkably mild type, yielding to treatment readily and easily, and that the patients begin to convalesce, as a general thing, within four or five days from the time of attack. Parents should observe the utmost care to prevent the spread of the disease, as a spell of bad weather may cause it to take on the intense form.

A letter from the East to a friend says: "I see from the *Reporter* that you have diphtheria in your town. You may recollect the wonderful success of the late Dr. J. J. Williams in treating this disease, a success considered little short of marvelous by his professional contemporaries. He considered the malady a blood disease, and treated it with intense doses of chlorate of potassa of iron, cutting out the false membrane at least twice a day with dilute muriatic acid, applied on a swab. I think the dose of chlorate of potassa is a tablespoonful every four hours. I don't know how much tincture of iron he gave, but it was a strong dose. Medicines are but half the treatment, however. Milk punch, egg-nogg, and champagne must be given in quantity, not only to paralyze and subdue the enemy but to reproduce the blood which seems to be decomposed and poisonous. Beef tea first and rich juicy steaks subsequently, also form an important link in the treatment. After the patient has commenced to convalesce, in fact is able to leave the house, the doses of chlorate of potassa must be kept up constantly and regularly; which is under the theory, borne out in too many instances in practice, that the enemy continues to lurk, and may gain strength and make a new attack, which will be more virulent than the first.

"Understand that the theory of the disease is that the blood is in an abnormal, poisonous condition, produced by a cause. The specifics to check and overcome that cause are chlorate of potassa and iron and the dilute muriatic acid swabbing, but whilst you are battling to subdue your enemy you must supply new strength to your patient, or you will lose the fight. That strength is new blood, which new blood you get through the milk punches, egg-noggs, champagne, beef tea and beef. This treatment is so well understood here, and has been so successful, that this disease, generally so alarming elsewhere, has lost many of its terrors. The practitioner who grapples with this disease should know that his dispositions must be made for a sharp, short and fierce encounter. He must neither give nor expect quarter; he must neglect no precaution, for his foe is as treacherous as he is formidable. You must overcome him early or he will overcome you. It is murder to temporize with this scourge for a moment."

"Chlorate of potassa is also a preventive. As soon as one child in a family is attacked give all the others this medicine."

Headache from Eye-Strain.—Dr. Weir Mitchell, in the *American Journal of the Medical Sciences,* observes that few but ophthalmic surgeons are aware of the need of interrogating the eye for answers to some of the herd questions which are put to us by certain head symptoms; and he wishes to impress upon the profession: (1.) That there are many headaches which are due indirectly to disorders of the refractive or accommodative apparatus of the eyes. (2.) That in these instances the brain symptom is often the most, and sometimes the sole, prominent symptom of the eye trouble, so that while there may be no pain or sense of fatigue in the eye, the strain with which it is used may be interpreted solely by occipital or frontal headache. (3.) That the long continuance of eye trouble may be the unsuspected source of insomnia, vertigo, nausea, and general failure of health. (4.) That in many cases the eye trouble becomes suddenly mischievous, owing to some failure of the general health, or to increased sensitiveness of the brain from moral or mental causes. Several illustrative cases are given, and the moral is: Be careful not to strain your eyes.

Extraction of a Living Insect from the Ear.—The *Archives Medicales Belges* relates the following case: A little girl, three years old, put an insect, "*bete a bon Dieu,*" into her ear. Sharp cries, agitation, convulsive symptoms, ensued; injections of water were made without result. The physician then conceived the idea of asphyxiating the insect by means of chloroform; he dropped four drops of chloroform upon a small piece of cotton which he introduced into the ear. Immediately the child ceased crying, and complained no further of any disagreeable sensation; the insect had become asphyxieted; an injection of warm water brought it away dead, and no further trouble ensued.

Cause of Decay of the Teeth.—Dr. L. B. Palmer, of New York, has been led to conclude, from a series of experiments, that the decay of the teeth is not, as is generally supposed, due to acids, but to alkalies (*Cosmos and Brit. Jour. of Dental Science*). With alkalies he reproduced decay of the teeth as it is seen in the mouth, but was unable to do so by acids. With the assistance of an electric current, acids simply acted on and destroyed the whole of the enamel.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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Our latest forms go to press on Thursday evening.

San Francisco:
Saturday Morning, Sept. 30, 1876

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Talloch's Automatic Ore Feeder, S. F.; Saws, Emerson, Ford & Co., S. F.; Sacramento Boiler Works, Hall & Kelshaw, S. F.; Mariposa South Mining Co.—Sale; Union Stone Company of California—Sale.

FOUNDRY WORK AT SACRAMENTO.—Root, Nielson & Co., of the Union iron works, are quite busy in their foundry department turning out the iron for a large Howe truss bridge for the Sacramento river at Red Bluff; for the Odd Fellows' building at Reno, Nevada; and for the Tulare county court house, Visalia. This firm has also orders for lathes to be used in polishing large granite columns for Griffith's quarries at Penryn. A large amount of job work is done at this foundry for local purposes and for foothill, mountain and valley customers, who can get their work here to advantage. The proprietors of these works are all practical and experienced workmen.

NOTICES OF PATENTS.—We are obliged this week to omit our usual list of patents and also the notices of recent patents. When the force in the patent office was reduced recently, a circular was received stating that owing to that circumstance the business could not be transacted with that promptness which had formerly characterized the patent department. It must be owing to this, therefore, that our usual list of patents failed to come to hand on time this week. We will give the list in our next issue.

SUCCESSFUL ENGINEERING.—The reef at Hell Gate, the entrance to New York harbor, was successfully demolished by the explosion last Sunday. Great preparations were made for the event, and thousands of people were present. Although very effective, the blast did not make so much of a "spectacle" as was anticipated. There is now plenty of water for vessels to pass over the place where the reef was before the explosion.

Small and Large Mining Companies.

We frequently hear complaints from various mining camps on this coast that, "the camp will never amount to anything until some big company takes hold of it." There is no doubt that many camps have been "brought out" by big companies; but how about the hundreds of other prosperous camps which never had any big companies? Something must have brought these camps to the front, and if it was not a big company what was it? In truth, it is not always best to tie to the large companies with the capital stock in eight or nine big fat figures on paper. Large companies are good things, no doubt, to carry out large operations, but they are not always blessings.

We ourselves, like many others, believe that more can be accomplished to develop a camp with small companies of honest, hard-fisted miners, with some capital of course, than when one large company takes hold of the whole thing. With the small companies a dozen or two claims are prospected at once, and if any one or two of them are moderately successful it incites others to renewed exertions. They generally pay their way pretty well and stick to the camp where all their interests are. With the large companies, with their offices in San Francisco, London or New York, the superintendent or resident manager reigns supreme. If you don't work for him you don't work at all, and of course under such circumstances a man will become arbitrary and overbearing.

When there is one large company "running" a camp much less interest is felt in the smaller ones. If these claims do not come up to what the big one is supposed to, purchasers are scarce. We are speaking, of course, of the smaller camps, not referring to Virginia, Eureka and such places where they are all large companies. A great deal can be accomplished by half a dozen energetic men with a few thousand dollars, provided the money be expended prudently. One of them can act in one capacity and one in another, and expensive salaries, incident to large companies, are saved. As for milling machinery, there are now-a-days so many custom mills or works, that it is by no means a necessity for every mine to have its own mill. We think really that as much harm has been done by companies trying to get extensive works before they knew what their mines were, than by anything else. It not only costs money to build mills but a great deal of money to maintain and run them. Moreover, everybody does not know how to do it. Some companies would do first rate as far as the mining goes, but when they come to take hold of a mill they fail; and the worst of it is they will never acknowledge the failure. It is a mighty hard thing to get a miner to confess he does not know everything worth knowing about metallurgical processes. But a man who has worked half his life underground, and has a general knowledge of milling or smelting, is not always competent to take charge of metallurgical works on his own hook; nor on the other hand is the metallurgist always able to manage the mining department.

When a few men who understand their business take hold of a mine, they know how to make every dollar count in the work. It is not always so with big companies. The employees are only directly interested as far as their salaries are concerned. To keep them running they often do things which small companies would not do. If it is found that a mine is worked out or will pay no longer without heavy outlay, why not drop it? A mine cannot be expected to last forever. Everybody can't find a Comstock ledge, and everybody need not think he has one when he has a mine. Small companies can do better with small ledges than large companies can; and a number of small companies and some capital can do more than a few large companies with large capital.

BULLION SHIPMENTS.—The bullion shipments from prominent mines have been as follows since our last report: California, Sept. 20th, $125,974.56; Ophir, Sept. 21st, $22,077.49; Con. Imperial, Sept. 20th, $10,912.44; Northern Belle, Sept. 19th, $12,009.45; Comanche, Sept. 19th, $7,535.22; California, Sept. 21st, $71,264.01; Tybo Con., Sept. 18th, $8,739.45; Justice, Sept. 22d, $20,211; Sept. 23d, $16,118; total to Sept. 23d for month, $98,209; California, Sept. 25th, $66,152.49; Ophir, Sept. 26th, $25,348.80; Leopard, Sept. 24th, $7,600; California, Sept. 26th, $86,281.48; Con. Virginia, Sept. 25th and 26th, $85,247.89; Leopard, Sept. 24th, $7,685.63; Northern Belle, Sept, 24th, $17,366.63, Tybo, Sept. 22d, $12,831.01; total this month, $43,755.11.

THE SACRAMENTO BOILER WORKS.—These works are located at No. 37 Fremont street, corner of Mission, in this city. The proprietors were established in business in Sacramento City for some nine years. Messrs. Hall & Kelahaw are practical boiler makers, and also manufacture hydraulic pipe, oil or water tanks, gasometers, girders, bridges, and do all kinds of sheet iron work and repairing.

ON FILE.—"Tybo District," J. D. P.; "More of the Mines of Nye County," A. C. K.; "Items from Ward District," Fox; "Alpine County Mines," Victor Harlaud.

MECHANICAL ORE CONCENTRATION.—The continued article on this subject is deferred this week, as certain engravings to accompany it were not completed in time.

Comstock Papers.

NO. 6.

The Pioneer Locators on the Comstock—Their Fats and Their Fortunes.

As some account of the history and subsequent fortunes of the men who first located claims on the Comstock lode, or who, through the purchase of interests, the construction of mills or otherwise, became prominently identified with its early annals, might prove of interest to the general reader, we will at this stage of our remarks and before proceeding to speak of the era of its active development, give to the public such scraps of information on these points as we can now recall to mind or have been able to pick up from conversations with Washoe pioneers. It may be observed at the outset, that a large proportion of these men, once seemingly so favored of fortune or who enjoyed such rare opportunities for the easy acquisition of wealth, are now dead, only moderately rich, or abjectly poor. Although but little more than seventeen years have elapsed since the occurrence of these events, more than half the first locators on the Comstock lode are dead, while very few of the survivors are possessed of large pecuniary means; results attributable, in good degree, to their liberal and improvident habits, coupled very often with a rough and careless life.

Comstock Himself

Soon spent the proceeds realized from the sale of his different pieces of mining ground, amounting, perhaps, to twelve or fifteen thousand dollars altogether. After remaining about Virginia City for five or six years, during which he made many prospecting tours into the country adjacent, he left his old stamping grounds and went to Montana, where he perished from a pistol shot through the head inflicted by his own hand while laboring under temporary insanity. This condition of mind was induced by hardships and exposure suffered while on an exploring expedition in the mountains of that Territory during the winter of 1869. Failing in these prospecting tours to find any mineral deposits of value, he never succeeded in restoring his wasted fortune, but died leaving neither money or possessions behind. For a number of years Comstock, as was the case also with many of his companions, made some money testifying in the courts of Nevada in regard to the early location of claims along the great lode that now bears his name, issues involving millions of dollars being sometimes dependent upon the testimony of these men.

Fennimere, "Finney," "Old Virginny,"

(For by all these names was he known,) the first mentioned being, no doubt, his true and proper cognomen, died in destitute circumstances near Virginia City, which was named after him, a couple of years after the outbreak of the Washoe excitement, a few of his old cronies having contributed to his support towards the last. His death was caused by advanced years and a rather free indulgence in alcoholic stimulants, a habit to which he appears to have been long addicted. As already stated, he received nothing for his interest in claims upon the great mother lode, nor did he, like many others, benefit by his knowledge of the locations first made along it, his demise having happened before any of the more important legal contests came on. Of all the original claim owners none fared so badly, in a pecuniary point of view, as "Old Virginny," a man who, in so far as there was any merit in being early on the ground, deserved to have profited from this circumstance above all others.

Peter O'Reilly,

Who realized more from his Comstock claims, perhaps, than any other of the original locators along it, having in the fall of '59 received from John O. Earl and Judge Walsh $36,000 for his interest in the Ophir ground, had for several years before been a resident of the Washoe country. Besides mining, he also engaged in farming, having been the owner of a well cultivated piece of land, situated two miles below Dayton, on the Carson river. O'Reilly was a man of good appearance and possessed of more education and intelligence than most of his companions, though exceedingly visionary and at times supposed to be a little flighty on some subjects. He engaged in a number of unprofitable enterprises, among others the erection of a capacious and costly stone edifice, commenced in the fall of '59 at Virginia City, having been the first structure of large dimensions undertaken in that place. He did not live to see it finished, having died the next year in a lunatic asylum, very far from being the Crœsus that, in his dreams of great wealth, he imagined himself destined to become.

McLaughlin, The Winters Boys and Hammack.

Patrick McLaughlin the same fall disposed of his Ophir ground to Morrison & Hurst for the trifling sum of $2,500, nor did he ever after succeed in raising any large stake out of Washoe. He left the country poor, and has of late been following the laudable but ill requited and uneventful calling of a sheep herder in California, a bonanza that yields him probably from ten to fifteen dollars per month of net profits. Of the Winters Brothers, John D., Joseph and Theodore, who at one time owned amongst them extensively in the best mines at Virginia City and Gold Hill, all are living on or near a large ranch owned by Theodore on Putah creek in this state. These boys removed with their parents from California to the "Eastern slope" some years before the discovery of the Comstock lode, having been residents of Washoe valley at the time of that event. They followed farming and freighting over the mountains, having belonged to what was in early times denominated the "bullwhackers' brigade." The mother of these boys was a woman of great energy and decision of character, and the sons took after her, exhibiting at times rather an excess of action and animal spirits. What with the sale and working of their mining properties, they made at first a good deal of money; but being no niggards, it went at the same time pretty freely, Theodore being now the only one of their number who has much property left.

A. G. Hammack, one of the primitive stock of miners on Gold canyon, managed to secure, partly by location and partly by purchase, considerable interest in the Central, Chollar and Yellow Jacket grounds, the 100 feet he held in the latter having been received from the owners for running short open cut on the claim. He sold his interest in the Central for $20,000, got several thousand dollars besides for his other interests and left in the fall of '59, returning to his family in Alabama, who were said to have been in needy circumstances. Hammack enjoyed a good reputation among his companions for honesty and square dealing, and possessed many strong traits of character. He is reported to have been killed during the Rebellion, fighting on the Confederate side, though his advanced age, over sixty, renders this statement somewhat problematical.

California Mines.

Although the State of California has a reputation throughout the world as the "land of gold," the citizens of her metropolis are much more interested in the silver mines of the adjoining State than in the gold mines of their own. In fact, as a general thing they manifest a remarkable apathy in connection with them. They do not care to post themselves about the California mines, much less foster them, but utilize their spare time and cash in developing the silver interests of Nevada. We all acknowledge that the Comstock is the most wonderful and richest of all ledges; but that it is the only thing in the mining line which is worthy of attention is by no means true. There are in California to-day, hundreds of gold mines which only need a small capital and intelligent labor to develop to good paying properties.

But of the mines here that are paying well now, very little is known. As most of them are private companies with no stock for sale, little attention is paid to their operations. The local papers published in the vicinity of these mines speak of them occasionally, but as most of the city papers only refer to such mines as are dealt in at the stock boards, the class of mines referred to are not widely known. The PRESS has always made a specialty of collating the mining news of the week from all parts of the coast and presenting in the "Mining Summary" the latest news from all these mines, whether on or off the boards. We flatter ourselves that by so doing we have benefited the California mines particularly, for the reasons above mentioned.

A glance over the "Mining Summary," published on other pages of this issue will show that among the mines mentioned this week only, many of them are paying handsomely, and that more real genuine work is being done than most people imagine. Taking a few items as they appear in the "Summary," they prove that California mines are by no means "played out." On the Main Feather River company's claim in Butte county, work has been commenced to tap the the river bed by a novel system. In Calaveras county the Champion mine has just cleaned up $11,000 from 65 tons of ore, an average of about $170 per ton. They do not find so very much ore outside this State that actually works up to that figure. In the St. Lawrence mine in El Dorado county, on the 800-foot level, exceedingly rich ore has been found. In Inyo county the base bullion yield is increasing, and a number of these new mines are yielding immensely rich ore in large quantities from large ore bodies. In Mariposa county several old mines are being reopened. The North Bloomfield hydraulic mine in Nevada county shows $15,800 as the partial proceeds of a 22 days' run, with a profit to the company of $8,000. This mine is not fairly in its work yet, but when all opened will increase the yield for many years. In the Cold Spring gravel claim, in the same county, they have struck the channel where formerly the gravel has yielded $100 to the pan. In Placer county, in the upper part, are immense bodies of gold bearing gravel deposits which will all in time be worked. Those now being worked are paying well. In the same county, in the Old St. Patrick, they have just struck rich rock in the new shaft. The new 20-stamp mill of the Green Mountain company in Plumas county started up last week. In Trinity county the other day, some boys struck a pocket which has yielded to the hand $30 to $40 per day. In Tuolumne county the *Independent* mentions a mine which is taking out from $20,000 to $25,000 a month. Other mines in the county are mentioned as paying very well.

Some of the Mines of Nye County.

[From our own Correspondent.]

A ride of some 80 miles south from Austin, most of the way through Smoky valley, with an occasional glimpse of a farm house in the distance, brought us towards evening to

Jefferson Canyon

And district. It only required a moment's glance at the general geological features of the surrounding country; the bold and massive croppings of quartz, extending as far as the eye could reach, bordered on one side by the slate as country rock, and the other by broad belts of granite, to leave a most favorable impression as to its prospective value as a metalliferous district. After what had been said in my letters from Austin so highly commendatory of her mines, the account of the "marriage supper" where "the best wine was reserved to the last," was very naturally suggested, particularly after reaching Barcelona and Belmont, both extensive mining camps with numerous locations, and where, it may be stated, barring some slight modifications, were encountered similar formations, croppings and ledges, as at Jefferson. They, in fact, while not so large as regards the veins, in many respects bear a very striking resemblance to those of Gold Hill and Virginia City. Although some of the

Mines of this Region

Are somewhat under a cloud, in other words depressed in the stock market, yet intrinsically they are as valuable, and stand in the estimation of the community as high as ever. You are aware that there are laws psychical as well as laws physical. If the law in regard to equality of action and reaction belongs to the one, it must be alike applicable in the other. If the one has its cataclysms, its ebb and flow of tide, so must the other. In the physical world the storm cloud bursts in a moment, as it were. Its work of desolation is done, to be followed, perhaps, by years of uninterrupted sunshine. In the great "struggle for existence" arising from the varied play of forces, rational, mental and passional, and from the clashing of different interests, storm clouds meet and burst and temporary disasters follow; finally a reaction comes, the financial atmosphere is purified, and the errors and mistakes of the past set up as beacons. So the great world, gathering up new strength from its lessons of wisdom, and following the eager tread of ever expectant hope, marches onward to other struggles and for further conquests.

With all the losses, failures and mistakes heard of in mining operations, mining as a business has been made profitable, and can and will be made even more so, and a great future may safely be predicted for this and neighboring localities.

The Jefferson Mine,

Whether taking its name from the district or vice versa it matters not, although at present taking out but little ore, being engaged principally in making further developments, has the name of having had in the past some of the richest ore in the State, giving assays from $25,000 to $27,000 per ton, whether of pulp or otherwise was not learned. The entire product of bullion from its location to date, so far as could be ascertained, approximates $300,000. Owing to the absence of the superintendent, only a few facts were obtained as to its present condition and workings. The company have a good 15 stamp mill with a White furnace attached, and about 20 men employed about the mine, where good hoisting works and the usual necessary appurtenances were found. The greatest depth attained is about 600 feet, on which level a drift had been run on the ledge over 150 feet. A winze 100 feet or more was being lowered from the 400-foot level towards the 600-foot, with the view of getting a better circulation, when more men would be put on.

This ledge is very well defined from the very surface, from two to nine feet wide, usually known as the Prussian ledge. The company are also running, from the 320-foot level, a crosscut, now in 140 feet, with 100 more to go before cutting the other ledge of the company's, the Jefferson proper, in which, if we did not misunderstand Mr. Fleming, the foremen, some $800 rock had been found.

The Prussian

Has a vein fully 10 to 12 feet wide, and 50 feet of ledge matter between the two formations, dipping to the east at an angle of about 45 degrees, and may be set down as a true contact vein—the character of the ore, chloride, changing with depth to the black sulphuret, and perhaps to ruby, as in the Jefferson location. After sinking to the depth of 300 feet, a very large body of water was struck and the work stopped, as it was thought the machinery was not capable of handling it at that point.

I learned from Mr. A. Bray, formerly of the Golden Chariot, Idaho, and who had been recently sent up by the company as superintendent, that the prospects of the ledge were such as to recommend the sinking of a new double compartment shaft 1,000 feet east of present workings, at the foot of the mountain, where the ground is 100 feet lower than the present depth attained. By sinking 600 feet at this point the dip of the ledge would be reached, the present engine being of sufficient capacity to meet all the requirements. The mine thus far has yielded in the neighborhood of $175,000. In connection with the property there is an excellent 10-stamp mill, and room for the addition of 10 more, and an assay office completely furnished, at a cost of some $2,000. All the usual and necessary appliances found in any well regulated mill were here, including self-feeders, settlers, tanks and pans. Weight of stamps, 800 pounds. Engine and boiler from Booth & Co.'s. The power of former sufficient for 20 stamps.

In Jefferson canyon work was going on at three different mines, located near together on the same ledge, with very flattering prospects, although still very near the surface. The Rappahannock, located by Geo. Savelon, in 1872, had one that worked as high as $732, second class, $400; ledge, three to four feet; character of ore, chloride and horn silver. The Hillside—Harris Bros.—first class, $600; second class, $432; and third class, $250. The Troy had similar ore. As the owners are all working men and of limited means, it is to be hoped that their anticipations will be realized.

Jett District.

The Jett district, a recent discovery, is situated 15 miles west of Jefferson canyon, in the Toiyabe range, and the same district south of Ophir canyon. The first location made was the Wildidle, by Jett & Davenport. Incline 100 feet; getting good smelting ore all the way down, said to average $80 to $85 per ton.

The Centennial,

Is represented by the Volmer Bros., principal owners and among the staunch business men of Belmont, as one of the most promising ledges of the district. It was located on the 4th day of last July, by James White and John Terrill, is of mammoth proportions, and traced by the croppings for more than 2,500 feet.

The impression prevails that if it only holds out in width and in quality of ore as depth is attained, that the receipts of the coming assessor will be considerably swelled. Be this as it may, the average of assays, at different times and from many different places on the course of the ledge, was entirely satisfactory to the owners, giving in silver $81.40 per ton, and 60 per cent. lead. The vein from wall to wall is now six feet. A furnace test will soon be made, which, I trust, will not only fully but satisfactorily settle the question as to the richness of the argentiferous ores of the county and district. In addition to the Wildidle and Centennial, several other locations have been made; among the most promising spoken of are the Jett and the Hollis, which exhibit good smelting ore. Wood and water are said to be abundant, and expectations run high for the future of the district.

Some eight miles from Jefferson, on stage route to Belmont, is Barcelona City, in the center of Spanish Belt district, where there is a perfect swarm of locations.

The Barcelona Consolidated,

At the foot of a 200-foot incline, has a ledge, represented to be as much as 40 feet in width, lying between the two great formations of this section, with slate on the hanging wall and porphyry on the foot wall, and at no great distance from the granite, with dolomite occasionally making its appearance in the vicinity of the ledge. A cross-cut had been run from the 200 foot level, cutting the vein at 32 feet east of the incline—14 feet more bringing it to the hanging wall, and giving them that width of good ore, represented by Mr. W. V. Price, in charge of mine, as averaging for first class $200 per ton, and consisting of copper glance, antimonial silver, chlorides, together with some other varieties, and occasionally a little native silver.

If Mr. Farish, the superintendent, had not been absent, no doubt a much fuller account, with interesting details, could have been obtained in reference to the mine. It is looked upon as one of the leading mines of the district and exceedingly promising. A. C. K.

Pacific Coast Awards at the Centennial.

The awards of medals and diplomas at the Centennial exhibition have nearly all been made by the president of the Centennial commission. There are still some 4,000 to be passed upon. We give below those made to Pacific coast exhibitors, as far as yet made public:

California.

San Francisco—J. W. Gashwiler, silver and gold ores; John S. Frink, silver ores; William Willis, silver ores; Jas S. Pierce, gold gravel and cement; J. A. Pritchard, silver ores; Thomas Ball, quicksilver ores; Joel F. Lightener, gold and silver ores; Bradley & Rulofson, photographic designs; Will & Finck, table cutlery; Tiburcio Parrott, sulphur and quicksilver; W. Leots Oliver, gold ores; B. B. Minor, silver and gold ores; W. F. Palmer, axes, hatchets, adzes, chisels, drawknives; Newman & Co., glass demijohns covered with tule packing; Consolidated Tobacco Company of California, cigars and cut smoking and granulated tobacco; J. S. Harbison, honey; Adolph Asman, caviar prepared from cod roe; Hopgood & Co., canned salmon; Miller & Sievers, cones of California *coniferæ*; Oscar Tiffany, fruit-drying machine; Mission Woolen Co., blankets; Joseph Neumann, raw silks and silk cocoons; Herzog & Co., imitation of horse-hair gavel; Louis Herrison, railroad axle and independent wheels; Mrs. A. G. Supplee, needlework; Thomas Houseworth, landscape photographs; C. E. Watkins, photographs.

Temescal—San Jacinto tin manufacturing company, tin and tin ores.

New Almaden—J. B. Randol, quicksilver ores.

Lake county—Great Western quicksilver mines, ores.

Napa City—George Fellows, quicksilver ores.

Cherokee Buttes—Louis Glass, gold, gravel and cement.

Chico—George A. Dietz, fruit dryer.

Woodland—R. B. Blowers, dried fruits.

Dutch Flat—T. B. Ludlow, Cedar Creek mining company, gold, gravels and cement.

French Corral—V. G. Bell, gold gravel and cement.

Nevada.

Virginia City — John Lambert, gold-bearing silver ores; John W. Mackey, gold-bearing silver ores; S. L. Jones, gold-bearing silver ores; Theodore Winters, gold-bearing silver ores; T. C. Kyles, gold-bearing silver ores; J. A. Myrick, gold-bearing silver ores; Henry Donnelly, gold-bearing silver [ore; James G. Fair, gold-bearing silver ore; S. T. Curtis, gold-bearing silver ore.

Austin—Melville Curtis, silver bullion, silver pulp, etc.; Theodore Hale, native sulphur; A. Curtis, silver ores.

Churchill county—B. F. Leet, salt and saltpeter; Browning, crude soda.

Eureka—Thomas Wren, silver and lead ores; John Shaw, gold-bearing silver and lead ores; James M. Haggin, gold-bearing silver and lead ores; J. J. Corrigan, gold-bearing silver and lead ores; Rhodes & Wasson, borax and salt.

Pine Grove District—E. R. Willis, gold-bearing ores.

Cortez Mining District—S. Wenden, silver and lead ores; Joseph Trask, silver ores.

Battle Mountain—Joseph Richards, copper ores.

Morey District—W. F. Randolph, silver ores.

Pioche—Captain H. H. Day, silver ores; T. A. Butler, silver ores; Charles G. Heath, silver ores and rock salt.

Gold Hill—Charles C. Stevenson, amalgamating machine.

Unionville—J. C. Fall, silver ores.

Cornucopia Mining District—Dr. J. M. Goodfellow, silver ores.

Belmont—J. Grimes, silver ores; L. Hanchett, silver ores.

Oneota Mining District—John Howell, silver ores.

Mineral Hill—Captain F. H. Haskins, silver ores.

Tybo—B. Judson, silver and lead ores.

Hamilton—Captain F. Drake, silver ores.

Reveille Mining District—George B. Clark, silver ores.

Oregon.

Portland—Koshland & Bros., hemlock and oak-tanned harness leather; McDoren Bros., oatmeal; Oregon pickling company, preserved fish, salmon; Oregon furniture manufacturing company, burlap, maple and shittim wood; A. Booth & Co., Oregon preserved salmon.

Clifton—J. W. & A. Cook, salmon in pickle and cans.

Columbia River—Myler & Jewett, canned salmon.

Salem—Benjamin Forstner, patent perpetual paper-hits.

Oregon City—D. D. Prettyman, Oregon City mills, flour from winter wheat; Oregon City woolen mills, fancy cassimeres and blankets; John Marion, pruning shears.

Baker City—J. C. Jackson, gold ores.

Utah.

Salt Lake City—General P. Edward Connor, ores; P. R. Chambers, silver ores; Colonel William Johns, silver and lead ores; W. B. Wells, silver and lead ores; D. K. Bentley, silver and lead ores; Walker Bros., silver and lead ores.

Lucien District—G. N. Adams, lead ores and arragonites.

St. George—W. S. Barbee, silver ores.

Bingham Canyon—Nez Perces and Montreal mines, silver and lead ores.

Washington Territory.

Olympia—W. O. Bush, cereals:

Eagle Cliff—William Hume, canned salmon.

British Columbia.

Victoria—F. M. John, specimens of prepared fish; Holbrook & Cunningham, canned salmon; A. Loggie & Co., salt salmon front in barrels and kits.

The Juniata.

Many a school-boy of the last generation will find his ear ringing with schoolhouse songs at the thought of "The Blue Juniata." Our illustration fitly portrays one of the many entrancing scenes along the gentle river. The location is on the line of the Pennsylvania railroad, and travelers on that line can recall the landscape.

Massiveness, softness of outline, and variety, are the distinguishing peculiarities of the Juniata scenery. The miniature river, in its course of 100 miles through the numerous outlying mountains, has apparently overcome the obstacles in its way by strategy as well as by power. At many places it has dashed boldly against the wall before it and torn it asunder; at others it winds tortuously around the obstructions—creeping stealthily through secret valleys and secluded glens. At some points the mountains appear to have retired from the attacking current, leaving numerous isolated hills standing, as sentinels, to watch its progress. But the severed mountains, the towering embankments, and the sentinel-like hills, are all toned into form and molded into shape by the action of the elements and the foliage of nature, leaving no abrupt precipices and but few naked rocks to mar the uniform beauty.

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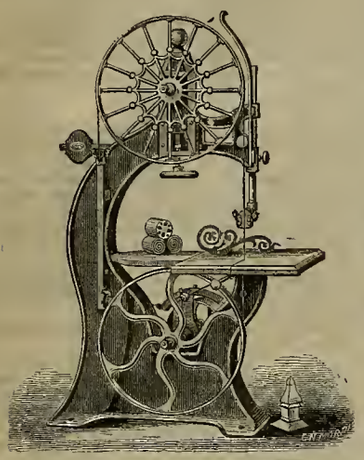

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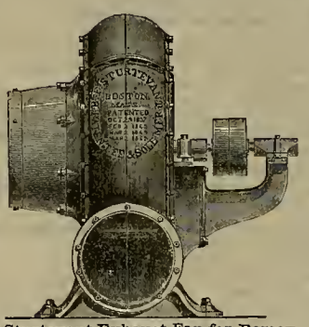

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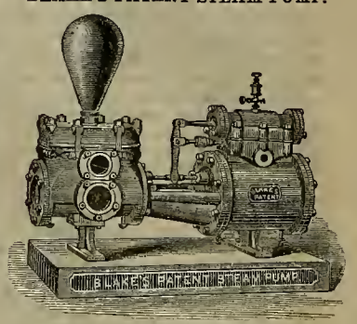

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DEWEY & Co., Patent Solicitors, S. F.—*Gents:* I am much obliged to you for courtesy shown me, and am well pleased with the manner in which you have done my business, and a-sure you, will cheerfully recommend you to my acquaintances needing such services. Hope to have a case again before long, of my own. I have been an inventor all my life, but let others reap the benefit, or had work stolen from me. Please have the extra copies of my patent, etc., mailed to me direct, and oblige Yours truly, J. H. WOONRUM.

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I have just received Canadian letters patent for Fuse Lighter. Also, Canadian letters patent for the Drill Extractor. I return you my thanks for the able manner in which you have conducted the business.

Yours respectfully, JOHN W. PLATT.

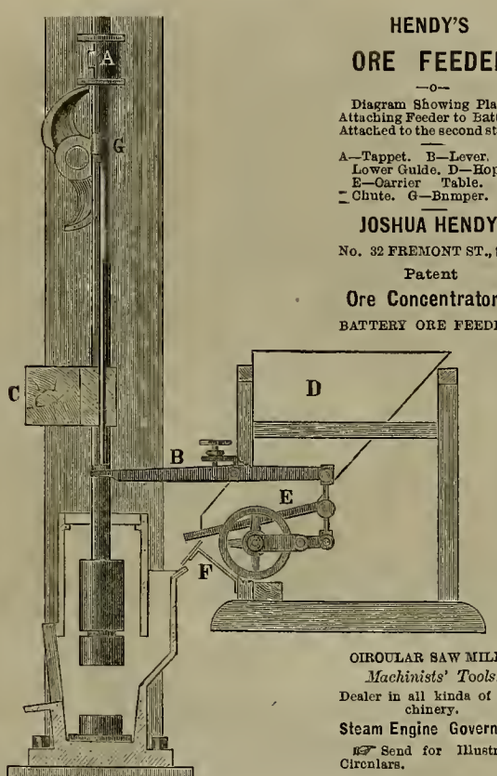

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Diagram Showing Plan of Attaching Feeder to Battery. Attached to the second stamp

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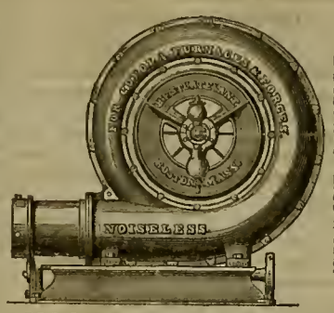

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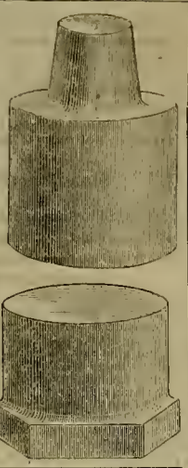

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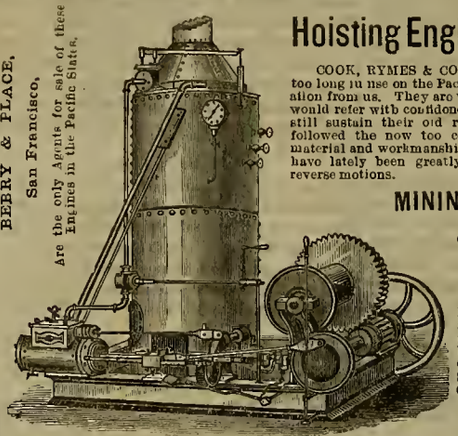

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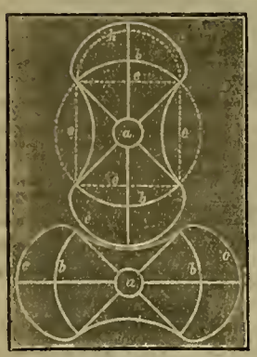

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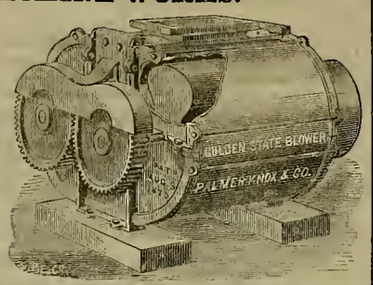

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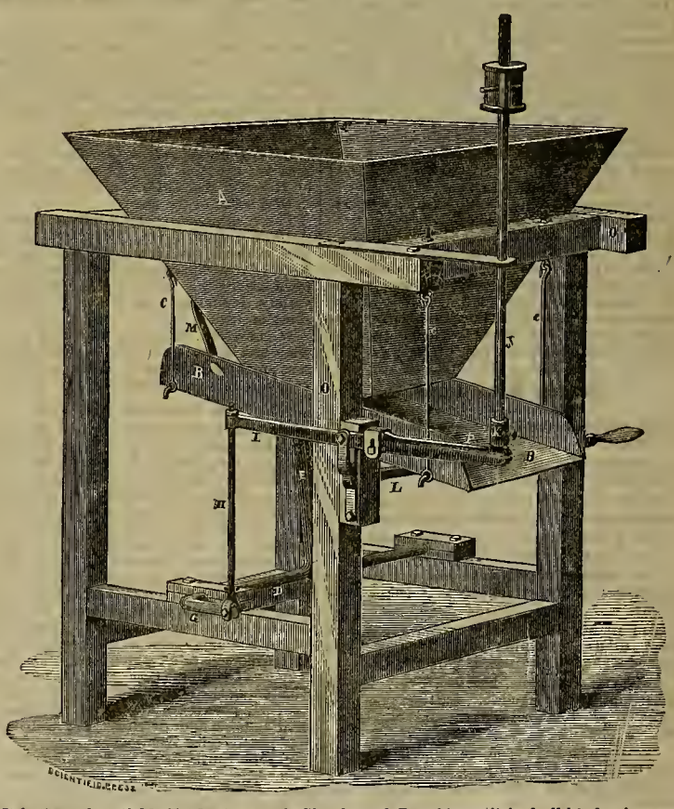

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(Continued from Page 222.)

Arizona.

BULLION.—Wallapai *Enterprise*, Sept. 15: Two bars of bullion from the Hackberry mill, which we saw in the store of Messrs. Davis & Randall, to-day, were stamped as follows: The first 1,183 ounces, 915 fine, value, $1,396.41. The second was only 883 fine, weighed 1,212 onnces and is wortb $1,383.74. It is seldom the huilion prodnced at this mine is under 960 fine.

THE "63" mill at Cerbat is about ready to start in working ore. Mr. Blakely has removed with his family to the "63" mine, and will soon have a force of men at work taking out ors.

Montana.

WILLOW CREEK MINES. — Cor. Helena *Independent*, Sept. 14: Morley runs a five-stamp mill, and Getchell is putting up a two battery mill. We visited the mines, and, to say the least, were agreeably surprised to find them so extensive and rich. The main paying or producing lodes are located on a spur or hog back that extends laterally east from the main range east of South Boulder. The Strawberry lode, owned hy Moreland & Roheson, lies first to the east. It is developed to a depth of 30 feet, and shows 100 feet of qnartz on the surface, which pays $29 to the ton. Whether this immense body of rich ore represents the lode or a fortunate enlargement, remains to be proved. Some of the ore has run up to $80 per ton, and Mr. Moreland, proprietor of the east half, could work 100 men if he had stamps to reduce the ore.

Gems and Precious Stones.

[Written for the PRESS by HENRY G. HANKS.]

Obsidian or volcanic glass is sometimes nsed for jewelry and ornemental purpoees, and especially for monrning jewelry. It doee not command a high price, althongh the variety which is iridescent is beautiful and ie much admired. Obsidian ie very abundant in Lake connty, near Clear lake, in Inyo county and in Mono county. It is never found crystallized. The fractnre ie perfectly conchoidal; it heats with sherp edgee and has been need even in pre-historic ages for arrow-heads, knivee, epeare, etc. The Aztecs used knives of obeidian to cnt ont the hearte of the human eecrifice which they offered to their idols.

Obsidien ecratchee glase elightly. Specific gravity, 2.34 to 2 39. B. B. fuses with difficnlty to one opaqne, scoriaceoue mass. The following ie an analysie of obsidian: Silica, 83,-38; protoxide of iron, 5.46; alnmina, 3.79; soda, 4.53; lime, 2.42; wster, .15=99.73.

Obsidian was well know to the ancients. It ie said to have taken its name from Obeidianns, a Roman, who first brought it from Ethiopia. According to Pliny it was also called liparen, from the island of Lipari, from which it was obtained. It was nsed for mirrors, pleced in walls. The inhabitents of Quito, not many years ago, made the same uee of it.

When, in the early deye of California, it was first discovered at Cleer lake, a company was formed to make hottles and other glassware of it, but, of course, without snccess.

Hanyne occure crystallized in the isometric system in lavas of Vesnvius. Hardnees, 5 5 to 6; specific gravity, 2.4 to 2.5; color, light blue, sky hlne, asparagus green; etreak slightly blue to nearly white, snhtraneparent to translucent. Its chemical composition is as follows: Silica, 32; alnmina, 27.4; lime, 9.9; soda, 16.5; enlphnric acid, 14 2=100.0 Hanyne is sometimes nsed in jewelry, and is need for rings, esr-rings, hrooches, etc., but ie not very highly prized.

General News Items.

THE procese of fumigation of Chinatown still oo ntinnes.

A TREATY with the Indians of the Spotted Tail agency has been conclnded.

THERE ie a great rnsh to the Centennial exhibition now that it is drawing to a close.

BOSS TWEED is heing reluctantly carried back to New York on the U. S. steamer *Franklin*.

THE Ruesian government has ordered the regietration of horseeliable to he eeized in case of wer.

THE amonnt thns far collected for a new Germen hoepital in this city, to replace that hurned a short time since, ie $40,000.

EVANSVILLE, Indiana, hed two lively shocke of earthqueke last Sunday. Earthqnekee aleo occurred at Louieville, Ky., and St. Louis, Mo.

PARTIES who have heen engaged in jnmping land in Astoria, Oregon, have heen enjoined by an order from the State Circnit Conrt for the district.

THE Servian war still continnes, and the Turke are still committing atrocities. The latest newe ie to the effect that tbey recently massacred 700 Armenian Christians.

THE training ship *Jamestown* has arrived in port from a crnise to Honolulu. Wm. H. Perritt, one of the hoye, wae drowned on the 2d inetant while practicing making sail.

COMMODORE AMMEN, of the United States navy, ie preparing a paper for the American geographical society concerning the resulte of the varions surveye for an interoceanic ehip canal acroee Central America, made nnder the direction of the navy department.

TERRIBLE euffering is heing experienced in Puerto Principe, formerly one of the richeet citiee of Cnha. Forty thousand ratione are distrihuted in the market place to the poor twice a week. Property and housee can he hought at very low pricee. The Spaniarde are fortifying the approaches to Cienfuegoe from hoth land and sea with heavy gnns detsched from forts.

California State Fair.

Contrary to nsual cnstom during fair week in Sacramento, the weather thie year was very pleesant and cool most of the time. The Sacramento deilies failed to publish the entries at the fair this year. Therefore the premium list in another part of this issne will give a fnller idea of what was exhibited than has been otherwise publiehed.

The deily receipts at the fair gronnd were reported larger than usual thie year, hnt to the eye the crowds seemed lees nnmerons than at previoue seasons.

The display of horees was fine indeed, hnt not so notable as on some former occasions.

Among the horned etock we noticed the absence of eeveral of the moet famous (if not the best) herde in the State. Theee present, however, were worth coming a long way to see. Thie pert of the show lacked mnch in numbers in comparison with that of the year previous. We regret not having notee snfficient to do justice to the very fine etock in this department at present.

At the Pavilion

Things were arranged in hetter order than ever before, and as a whole the display was hetter than usual. The frnit exhibit was all very fine, although the number of exhibitors were few.

The Sacramento heet sngar company, among other choice eamples, showed some fine crystallized cubes made hy the new Wadeworth machine.

Sewing machines occupied a large spnce, ee gay and lively ae ever. Useful and ornnmental merchandiee and home mannfactured wnree were abnndent and choice in variety.

Fisk & Gill exhibited electric burglar alerms, electric engines in operation, and gave electric shocks free to visitors, oansing mnch merriment. They are mannfecturers of electricnl instrnmente and their ehow was one of the most engaging in the fair.

The Angora robe and glove mannfactnring company gave an exhibit worthy of a world'e fair; we shall speak of the articles exhibited at another time.

In the fine art department were many good pictnres and as many poor ones. Lnssier & Hill'e collection, altogether, we think was nnsurpeesed. Considerng Mr. Hill'e age and experience, hie modern and ancient harveet scenee were considered remarkable productione.

In the Lower Hall.

Here, appropriately at the hace of the whole concern, the *Fair Daily Gazette* was iseued free hy H.S. Crocker & Co. It imparted much life to that realm of the fair.

The Sacramento plow compeny ehowed the California frnit drier, (Dietz patent) in fnll size working machine. The semi-pyramid of its dried frnite made a good exhibit and attracted mnch attention. The samples embraced a good variety, including figs, raisins, tomatoes and common fruits.

We have not epace to mention hut a little of whet was creditable in hoth halle of the pavilion, emong others the floral display, which was very rsre in some of its features.

The Agricultural Implements

Were mostly displayed at the fair grounds. The circnlar cutting edged gang plow, exhibited hy Baker & Hemilton, and teeted in the field, attracted more attention probahly than any other one implement. Hundreds who saw it operate in a dry alfalfa field spoke favorahly of its working. In due time we expect to give an illnetration of it in our columns. In the meantime, gentlemen, make the most of yonr old gange, and never wait for the wagon or any other newfangled notion nntil it is thoroughly proven.

Byron Jackeon, of Woodland, hed a veteran looking eteam wagon working as eteedily es an old ox team and twice as obedient. It ran his improved eeparator, which wonld have threshed a stack of grain as lerge as the State capitol (including the legislature when in session) if properly placed on hie combined patent eelf-feeding table and derrick. Hie are ingenious and practicehle inventions.

Joseph Enright'e straw hurning engine, from San Jose, a handsome piece of machinery, worked qnietly and admirably.

Rice'e "straw-hnrner" was exhibited hy Marens C. Hawley & Co., with lots of other first-claes ngricultural machinery. Their Perpetnal hay baling prees wae much observed and favorably mentioned.

Brewster & Co., Roseville, Placer county, ehowed several of their iron sectional harrowe. They are hona fide, eubstantial implements which are meeting with euccese. They will hear the cloeest examiuation, and we can advice armeie to give them a trial.

Perkineon's flexible harrow, on the ground from Santa Roea, is highly recommended. It was recently illnstrated in the PRESS.

Naeh & Cutts' grain separator had the field to itself. It is a California invention worthy of the consideration of our farmere.

The Sacramento plow company are doing a good husinees in the manufacture of Ready'e gang and single plows. Tbe gang has been well tried and ie very popnlar in many parts of the State. Ready'e slip share, made of the best steel, ie a new patented improvement calculated to meet with favor, eepecially as a home prodnction. Mr. Ready aleo exhibited a new mower of simple oonstruction yet to be tested in thie State.

Haswell's Champion horse-power and pnmp combined ettracted much attention for its novelty. Drawings (which the inventor promiees ns), are necessary to give n good idea of the machine.

Lenikotter Broe.' horee-power for pnmping hae heen well tried and with euccess. They are simple and durable, and we should think calculated to give ample eatiefaction to farmers and othere. They also exhibited from their store, corner of 10th and J streete, an improved valve for snction and lift-pnmps which we may deeorihe hereafter.

The Pacific artesian and prospecting auger, Price & Morgan, patentees, Oakland, Cal., ie apparently a great improvement for well horing. We expect to give drawings of it in fnture. It hringe the dehrie to the snrface in a manner similar to the screw of an anger.

The Receipts.

We are not eble to give at this time the exact receipts hy the society during the fair, hut the *Bee* gives the following summary of the result: "The receipts of the week will not fell short more than $4,000 of last year'e show, when the fair lasted 10 daye. The expenees thie year were so mnch lees than leet that the profit will equal if not exceed last year'e figures."

State Fair Premium List.

The following are the awards for excellence in the eeverni departments mentioned, at the State fair at Sacramento, September, 1876:

Implements and Machinery.

Strsw hurning portable engine, California manufacture—Jos. Enright, prem and diploma, $25.

Imported portable straw hurning engine—M. C. Hawley & Co., diploma.

Portable Saw Company and Sweepstake Plow Company—Baker & Hamilton, honorable mention.

Patent shingle macbine, California manufacture—M. C. Hawley, $5.

Threshing macbine (Buffalo Pitts)—Baker & Hamilton, diploma.

Sulky and bay rake (Tiger Rake)—Baker & Hamilton, diploma.

Perpetual bay press—M. C. Hawley & Co., honorable mention.

Hay press, California manufacture, (Miller Press)—M. C. Hawley & Co., $40.

Feed Cutter—Keller & Co., diploma.

Sweep horse power, California mannfacture—Wm. Laufkotter, premium, $10.

Post anger, California manufactnre—M. C. Hawley & Co., $5.

Well auger—M. C. Hawley & Co., $5.

Horse power for pumping, California manufacture—Baker & Hamilton (Gillis power), diploma.

Header, California manufacture, S. B. Bowen, $50.

Imported header—Keller & Co., diploma.

Mowing machine, imported—Sacramento plow company, Superior mower, diploma.

Seeder—Keller & Co., Gorbam seeder, imported, diploma.

Broad-cast Seed Sower, California mannfactnre, $10.

Combined reaper and mower, imported—Baker & Hamilton (Buckeye), diploma.

Harrow, California manufactnre—E. Perkinson, (flexible harrow), $10.

Double shovel plow, California mannfactnre—Sacramento plow company, $5.

Cultivator, California manufacture—Sacramento plow company, $10.

One-horse cultivator, California manufacture—Sacramento plow company, $5.

Windmill, California manufacture—M. R. Bose, $25.

Farm gate, California manufactnre—E. L. Brooks, $15.

Grain separator, California manufacture—Nasb, Miller & Co., $5.

Farm feed mill, California mannfactnre—William Berringer, $10.

Apparatus for raising water for irrigating purposes, California manufacture, $20.

Pump well, California manufacture—Mr. Rose, $10.

Gang plow, California mannfacture—Sacramento plow manufacturing company, $100.

Gang plow (deep tiller), California manufacture—Baker & Hamilton, Sweepstakes Plow Co., $20.

Imported gang plow—M. C. Hawley & Co., John Deere plow, diploma.

Assortment of imported single plows—Frank Bros., Blackhawk patent, diploma.

Display of cast cast etesl, casting and chilled plow—diploma.

Sod plow, California manufacture—Sacramento plow company, $10.

Stubble plow, California mannfactnre—Sacramento plow company, $10.

Farm wagon for general purposes, California manufacture—J. F. Hill, $15.

Spring market wagon, California manufacture—J. F. Hill, $15.

Street goods wagon, California mannfacture—J. F. Hill, $5.

Two horse family carriage, California manufacture—J. F. Hill, $5.

Assortment of springs and axles—J. F. Hill, diploma and $10.

Imported farm wagon (Bain wagon)—Baker & Hamilton, diploma.

Hay loader (Foust's hay loader)—Keller & Co., diploma.

Plastering lathe, California manufactnre—T. A. Scheller, prem recommended.

Artesian and prospecting anger, California mannfactnre—Price & Morgan, prem recommended.

Patent portable field fence and gate, California manufacture—Von Bregman & Bryant, honorable mention.

Engine, Eastern mannfactnre—M. C. Hawley, diploma.

Hot air engine—Huntington, Hopkins & Co., diploma.

Fruit drier—Sacramento plow company, prem and diploma recommended.

One mortising machine, one scroll saw, one wood turning lathe; one circnlar sawing machine—Cshorn & Alexander, diploma for eacb.

One lawn mower, one sprinkler—Hnntingion, Hopkins & Co., diploma.

Beehives—C. A. Davis, $3 and diploma.

Fanning mill, $5; grain separator, diploma—Nash, Miller & Co.

Regulator windmill—M. C. Hawley & Co., diploma.

Refrigerator, California manufacture—E. K. Howes & Co., $5.

Feed cooker—George McDaniel, diploma.

Pump—Wm. Lanfkotter, $10.

Pump valves—G. D. Hopper, prem recommended.

Beer valves—G. D. Hopper, diploma.

Washing machine—E. K. Howes & Co., diploma and $5.

Butter worker—E. K. Howes & Co., $5.

Churn—E. K. Howes & Co., $10.

Clothes horse—E. K. Howes & Co., $5.

Milk cooler—D. N. Thorp, diploma.

Improved Little Giant machine for hydraulic mining, R. Hosken, special prem and diploma recommended.

Display of pumps—M. C. Hawley & Co., diploma.

Display of cordage—Tubbs & Co., of San Francisco, silver medal).

Hardware.

Five fire and hurglar proof safes—Detroit safe company, hy W. G. Williams, agent, Sacramento, $20.

Display of window blind and shutter trimmings (fastener and regnlator)—Bullard & Byam, Sacramento, $5.

Display of brass work—Hnntington, Hopkins & Co., Sacramento, diploma and $20.

Display of door trimmings—Huntington, Hopkins & Co., Sacramento, $5.

Display of locks—Huntington, Hopkins & Co., Sacramento, $5.

Display of window trimmings — Hnntington, Hopkins & Co., Sacramento, $5.

Display of lamps—C. E. Aiken, Nebraska, $10.

Display of general hardware—Huntington, Hopkins & Co., Sacramento, $10.

Display of table cutlery—Huntington, Hopkins & Co., Sacramento, silver medal.

Display of pocket cntlery—Huntington, Hopkins & Co., Sacramento, $5.

Hand saws—Hnntington, Hopkins & Co., Sacramento, $5.

Pruning shears—Hnntington, Hopkins & Co., Sacramento, $5.

Pruning knives—Huntington, Hopkins & Co., Sacramento, $5.

Display of anti-friction metal — Huntington, Hopkins & Co., Sacramento, $5.

Display of sbot—Huntington, Hopkins & Co., Sacramento, $5.

Display of block tin pipe—E. B. Mott, Jr., Sacramento, $5.

Three combination locks—Detroit safe company, by W. G. Williams, agent, Sacramento, diploma recommended.

One double chronometer bank lock—Detroit safe company, hy W. G. Williams, agent, Sacramento, diploma and silver medal recommended.

Window blind fastener and regnlator, Bullard & Byam, Sacramento, diploma recommended.

Cracking picks—John Henry, Sacramento, diploma recommended.

Mechanics' tools—Hnntington, Hopkins & Co., Sacramento, special mention recommended.

Table cutlery—Huntington, Hopkins & Co., special mention recommended.

Pockst cutlery—Huntington, Hopkins & Co., special mention recommended.

Railway car trimmings—Huntington, Hopkins & Co., diploma recommended.

English and American guns and pistols—Hnntiogton, Hopkins & Co., special mention recommended.

Horseshoe nails ready pointed—Huntington, Hopkins & Co., special mention recommended.

Tree pruner (Water's patent)—Huntington, Hopkins & Co., special mention recommended.

Burglar proof windows—George C. Batee, Sacramento, special mention recommended.

Eighty boxes horseshoe nails—Union horseshoe nail company, Chicago, Ill.; Hnntington, Hopkins & Co., Sacramento, diploma recommended.

Game trap—George U. Mayherry, Sacramento, diploma recommended.

Cooking stove for wood—L. L. Lewis, $5.

Parlor stove—E. B. Mott, Jr., $5.

Cooking stove for coal—L. L. Lewis, $5.

Warming furnace—L. L. Lewis, $5.

Cooking range, L. L. Lewis, $10.

Parlor grate—E. B. Mott, Jr., $3.

Ornamental iron vases—E. B. Mott, Jr., $3.

Specimen of marbleized iron—E. B. Mott, Jr., $3.

Portable range, E. B. Mott, Jr., $5.

Laundry stove—L. L. Lewis, $5

Display window blinds—Taft & Bennett, Sacramento, $5.

Display pine door, $10; best display turning latbe work, $5; column and pedestal, special mention; display fancy molding and scroll sbwing, $5—Hartwell, Hotchkiss & Stalker, Sacramento.

Display cedar ware, $5; display pine wars, $5; display oak ware, $5; display wooden ware, $25—E. K. Howes & Co., San Francisco.

Premium flonr safe — J. H. Taggart, Sacramento, special mention and diploma recommended.

Display of soap—Withington & Bagley, Saoramento, silver medal.

Display of stove polisb — Hun'ington, Hopkins & Co., Sacramento, $5.

Manufactures.

Display of leatber—Brown, McKay & Co., of Benicia, silver medal and $10.

Set double harness—J. T. Stoll, silver medal and $10.

Set single harness—A. T. Nelson & Son, $10.

Display of Mexican saddles—J. T. Stoll, $10.

Display of saddle and bridles—S. Roth, $10.

Display of saddle trees—M. Shink, $5.

Improvement on single harness—to shorten croup strap, raise hreecbing and hreast collar with bnt one buckis instead of four, as on ordinary barness—S. Roth, special premium recommended.

Improvement on Stoll's jockey saddle—bis own invention—J. T. Stoll, special mention.

Display of horse collars and borse boots—A. T. Nelson & Son, special mention.

Best exhibition of silk goods by one factory—R. Dals & Co., $25.

Best display of woolen goods hy ons factory—Capital woolen mills, $100.

Donble carpet coverlet—R. Dale & Co , $5.

Mackinac blanket—Capital woolen mills, $5.

Stocking yarn—Capital woolen mills, $3.

Silk hat—J. C. Meussdorffer, $5.

Soft hat—D. H. Quinn, Sacramento, $5.

Exhibit of men'e hats and caps—J. C. Menssdorffer, Sacramento, silver medal.

Collection of furs—D. H. Qainn, Sacramento, $25.

Display of colors in printers' ink—Horace P. Fletcher, San Francisco, diploma recommended.

Display of men's and hoys' boots and shoes—James Parsons, Sacramento, silver medal.

Display of ladies' and girls' boots and shoes—James Parsons, Sacramento, silver medal.

Pair ladies' gaiters—James Parsons, Sacramento, $3.

Pair gent's dress shoes—James Parsons, $5.

Pair Congress gaiters—J. Kaerth, Sacramento, $5.

Pair ladies' slippers—J. Kaerth, $3.

Two-horse family carriage—Carvill mannfacturing company, diploma and $30.

One-horse family carriage—California carriags mannfacturing company, diploma and $25.

Top buggy—Carvill manufacturing company, diploma and $20.

Two-seated open carriage — Carvill manufaoturing company, $20.

Trotting wagon—To J. F. Hill.

Farm wagon for general nse—To J. F. Hill.

Spring market wagon—To J. F. Hill.

Street goods wagon—California carriage mannfacturing company, $5.

Carriage for children—To Richard Dale.

Assortment of carriage trimming and material—Waterhouss & Lester.

Carriage springs—California carriage manufacturing company (Dolan & Scherb spring), diploma and $10.

Display of carriage wbeels, hubs, etc.—Waterbouse & Lester.

Exhibit of express wagons, farm wagons and carriages—J. F. Hill, of Sacramento, special prem recommended.

Best ladies' phaeton and best trotting huggy on exhibition—California carriage mannfacturing company, special prem recommended.

Best open hnggy on exhibition, Eastern manufacture—Studebaker Bros., special prem recommended.

Miscellaneous.

Display of California tobacco—O. A. Davis, $25 and silver medal.

Exhibit of hops—W. A. Haynie, $10.

For the most meritorious exhibition in the juvenile department, the committee awarded the Society's gold medal to Miss Carrie M. Taft.

Display of drugs, chemicals and perfumery, etc.—Kirk & Co., Sacramento, diploma.

Three wooden slat window shades—E. W. Brady, Davenport, Iowa, diploma.

Display of home manufactured candies and candy work—W. F. Peterson, Sacramento, special prem or medal.

Display of mirrors—Whittier, Fuller & Co., San Francisco, diploma.

Best general display of confectionery, including foreign work—H. Fisher, Sacramento, special prem or medal.

Two mammoth cucumbers—P. Wetzell, Sacramento, special mention.

Display of ornaments of California wood—Mrs. R. W. Brehm, San Francisco, special prem.

Fancy cigar case or stand—Mrs. Henderson, San Francisco, diploma.

Glass bottle puzzle—Mrs. N. S. Allen, Sacramento, special mention.

Model of portfolio for engravings (California invention)—Mrs. R. W. Lewis, Sacramento, diploma.

Printed advertisement of domestic patterns—L. Bien, Sacramento, special mention.

Display of ornaments made of California wood—G. F. Atkinson, Sacramento, special mention.

Display of California manufactured shell jewelry—R. W. Jackson, San Francisco, special prem and diploma.

Specimen shell work—R. W. Jackson, San Francisco, $5.

Gilt Edge yeast powder—H. G. Boisseller, Stockton, $5.

Display of blacking—Huntington, Hopkins & Co., Sacramento, $3.

Pottery, silver medal; roofing tile, $5; terra cotta, diploma; Buckinghem ware, diploma; stone ware, diploma—Bergman Bros., Sacramento.

Display of California marble—Aitken & Luco, Sacramento, $20.

Exhibit of salt—Theo. Winters, Reno, Nev., $3.

Wm. Gwynn, Sacramento—Hydraulic cement, $5; lime, $5; pressed brick, diploma; fire brick, $3.

Dressed stone—Aitken & Luce, Sacramento, $5.

Aquarium of fishes—E. B. Mott, Jr., Sacramento, silver medal.

Lubricators (California invention), machinery, oil, etc.—Huntington, Hopkins & Co., Sacramento, diploma recommended

Axle grease—Pitcher & Palmer, Sacramento, diploma recommended.

Display of coals (California and other varieties)—Jacob Hoehn, Sacramento, diploma recommended.

Salamander felting company, Seward Cole manager, San Francisco, diploma and special mention.

Display of glue—C. Weisel & Co., Sacramento, $5 and diploma recommended.

Guild & Church pianos—Special prem recommended.

Smith's organs—Special prem recommended.

Display of paper hangings and borders—C. H. Krebs, Sacramento, $5.

Electric machine—Fisk & Gill, Sacramento, diploma.

Breech-loading shotgun (California make)—A. Flohr, Sacramento, $5.

Sporting rifle (California make)—A. Flohr, Sacramento, $5.

Game-bag (California make)—A. Flohr, Sacramento, $3.

Surgical instruments—G. A. Stephenson, diploma.

Diploma and special attention recommended to R. Phillip for display of die-sinking etcuci1, etc. Also, a diploma to J. P. Dixon for Dixon's reticule bracket; diploma to Henry Eckhart for display of [illegible]. Also, recommended that a gold medal or diploma be awarded the National fire alarm telegraph company, Fisk & Gill, agents, Sacramento for a specimen of the system. Also, that a special medal or a silver medal be awarded A. Flohr, Sacramento, for display of firearms, cartridge-carrier, shot bag, gun material and fishing tackle. Also, a diploma to A. Hallidie, of San Francisco, for fire extinguishers, and a diploma to H. C. Kirk & Co., for display of drugs and perfumery.

Toilet soap—Alta soap company, San Francisco, diploma

Samples of paint (California make)—O. H. Krebs, Sacramento, $5.

Prussian blue—Whittier, Fuller & Co., $5.

White lead—Whittier, Fuller & Co., $5.

Jesse Healy & Co., of San Francisco—Pacific rubber paint, exhibited by Whittier, Fuller & Co., silver medal awarded.

Examples of paint as exhibited by I. L. Merrell & Co.—honorable mention.

Display of California minerals—Charles Allman, Sacramento, silver medal.

M. S. Hammer, Sacramento—Hammer's compound syrup glycerine of tar, diploma recommended.

Eugene Ruby—Display of cleansing soap, Alta Soap Co., San Francisco, box borax soap, diploma and special and honorable mention recommended.

F. M. Leaf & Co., Sacramento—California yeast cake, diploma and $5.

G F. Atkinson, San Francisco—Smith Bros., chemical refined borax, $5 recommended.

Sample varnish—J. L. Chadderdon, San Francisco, $5 and diploma recommended for display; also, a diploma recommended for artist and finishing brushes, and a diploma and $5 recommended for wax flower material.

I. L. Merrill, San Francisco—diploma recommended for sample of asbestos from the Merrill mine, Placer county, California; also, a diploma recommended for steatite roofing, soapstone pulverized, improved and pulverized talc and fire brick.

S. Cole, San Francisco—diploma recommended for samples of Eestern, Californian and Italian asbeetos, and a premium of $5 recommended for his sample of asbestos material and silver medal recommended for sample of steatite boiler and steam pipe covering.

Display] of mechanics' tools—W. F. Palmer, San Francisco, $10.

Display of chandeliers and globes—Bush Bros., Sacramento, $10.

Display of home production of manufactured mechanics' tools—W. F. Palmer, San Francisco, diploma and silver medal recommended in addition to the premium offered.

Display of chandeliers and globes—Bush Bros., Sacramento, diploma recommended.

Display of garden and lawn wire work—A. S. Hallidie, San Francisco, diploma and silver medal recommended.

Family sewing machine—Wheeler & Wilson, San Francisco, medal and $100.

Special prem recommended to J. A. Stewart & Co., for best pleating machine; also, special mention of miniature steam engine for running sewing machines, exhibited by Samuel Hill (made by Ed. F. Verrill); and honorable mention of sewing machine attachments exhibited by D. W. Campbell, of Sacramento.

A dispatch from Melbourne says that the steamship *Dardening*, from Melbourne to Sydney, foundered near Jervis bay during a hurricane on the 10th instant. Sixty of the crew and passengere were drowned.

Woodward's Gardens embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Housee, Menagerie, Seal Ponds and Skating Rink.

The Itch, which is a protean disease, and undoubtedly of animalcular origin, can only be effectually and permanently cured by sulphur. Glenn's Sulphur Soap presents the remedy in its most agreeable and effective shape. Sold everywhere.

A refrigerator car containing 4,000,000 of salmon eggs left Sacramento by the passenger train on Tuesday last, consigned to Professor Baird, U. S. fish commissioner, and in charge of Livingston Stone. The eggs are made up into packages, addreseed to such State fish commissioners as have applied for them, and will be delivered to the expresse companies as the car passes the station nearest their destination. The first will be delivered to Utah, and the last about a week later, to the Centennial exhibition.

Knight's American Mechanical Dictionary is a book for all persons who make, buy, sell, use, or want to know anything about tools for machines, or are curious as to the history and development of mechanic art. It is a descriptive word-book of tools, instruments, machines, chemical and mechanical processes; civil, mechanical, railway, hydraulic and military engineering; a history of inventions; general technological vocabulary; and digest of mechanical appliances in science and the industrial and fine arts, etc. For circulars or price address or apply to A. Roman & Co., wholesale and retail booksellers, 11 Montgomery street, San Francisco.

ISSUED OCT. 1st, 1876.

Testing and Working Silver Ores.

The above is the title of an illustrated work for miners and prospectors by Chas. H. Aaron, which will be issued immediately by Dewey & Co. Mr. Aaron has managed to give a great many useful hints and suggestions, free from all technicalities, and in such a style as to be easily comprehended. It is written for the miner, with no chemical symbols or metallurgical technicalities to confuse those who are not chemists or metallurgists. The following summary of the contents of the work will give an idea of its scope:

Under the heading of the first chapter, 'Testing Ores for Silver," we find paragraphs on ore formation, test for silver, with heat and water, acid or blow pipe. In speaking of testing for a process, the extent and richness of ore is considered, smelting ores, selecting and working sample, appliances for testing, roasting, etc. Under the head of "Working Ores" the author describes Aaron's process, hae something to say of superheated steam, preparation of dichloride of copper and protochloride of copper, use of copper and iron, quantity of chemicals, carbonate of lime, chloride ores, amelgam, Patchen's process, etc. He also describes the methods of working roasted ores, treatment of base metals, stirring, heat of furnace, went of sulphur, etc. Under the head of "Leaching Processes" are the titles, Smelting, Mexican process, Kroencke's process, Chilean process, etc. Under "Pulverizing Machines" are described the arastra and its construction and operation, stamp batteries, screens, Crocker's trip-hammer battery, Paul's pulverizing barrel, Kendall's battery, Nolce's pulverizer, a cheap rock breaker, etc.

In speaking of amalgamators the author describes a cheap amalgamator, grinding the ore, directions for making a barrel, preventing mechanical wear, use of quicksilver, copper in bars, Freiberg barrel, cheap barrel, trough, barrel on rollers, Aaron's amalgamator, separator, etc.

He describes an improved retort, roasting furnace, furnace tools and furnace building. Among the miscellaneous mention may be found Aaron's leeching apparatus, with two or three different arraagements, a small mill, sampliog tailings and settling tanks, dichloride of copper, etc.

The book is a serviceable one for miner's and prospector's use. Price, post free, (in leather,) $2.00. Address Dewey & Co., Mining and Scientific Press, 224 Sansome street, San Francisco.

METALS.

[WHOLESALE.

THURSDAY, M., Sept. 28, 1876.

American Pig Iron, ₩ ton	22 00	@	— —
Scotch Pig Iron, ₩ ton	31 50	@	32 00
White Pig, ₩ ton	30 00	@	50 00
Oregon Pig, ₩ ton	31 50	@	32 50
Refined Bar	— —	@	— 4¼
Boiler, No. 1 to 6	— —	@	— 5¼
Plate, No. 5 to 9	— —	@	— 5½
Sheet. No. 10 to 14	— —	@	— 5¾
Sheet. No. 15 to 22	— 5¾	@	— —
Sheet. No. 22 to 24	— 6	@	— —
Sheet, No. 26 to 28	— 6½	@	— —
Horse Shoes, per keg	7 00	@	8 50
Nail Rod	— 10	@	— —
Norway Iron	— 8½	@	— 9½
Rolled Iron	— 7	@	— 8
Other Irons for Blacksmiths, Miners, etc.	— —	@	— 4¼
COPPER.—			
Copper Tin'd	— 37	@	— 40
Sheathing, ₩ lb	— 24	@	— 40
Sheathing, Yellow	— 21	@	— 12½
Sheathing, Old Yellow	— 10	@	— 11
Composition Nails	— 21	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ₩ lb	— 20	@	— 28
Anderson & Woods' ordinary sizes	— —	@	— 15
Drill	— —	@	— 18½
Fist Bar	— 16	@	— 20
Plow Steel	— 8½	@	— 9
TIN PLATES.—			
10x14 I O Charcoal	11 00	@	— —
10x14 I X Charcoal	13 00	@	— —
Roofing Plate I O Charcoal	10 00	@	10 50
Banca Tin	— 21	@	— —
Australian	— 25	@	— —
ZINC....By the Cask	— —	@	— 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₩ lb	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 7x4 ft, No 8 to 10	— —	@	— 12½
do do 8x4 ft, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	3 60	@	3 75
QUICKSILVER, per ₩	— 40	@	45 —

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by Sutro & Co.]

SAN FRANCISCO, Sept. 27, 3 P. M.

Legal Tenders in S. F., 11 A. M., 91 to 91½. Silver 66@67½

Gold in N. Y., 110

Gold Bars, 880 to 890. Silver Bars, 11@21 per cent. discount.

Exchange on N.Y., 50@55-100 per cent. premium for gold; on London bankers, 9; Commercial, 8¾; Paris, five francs per dollar; Mexican dollars, 5 per cent. discount.

London — Consols, 96½; Bonds, 102¾

Quicksilver in S. F., by the flask, per ₩, 44@45c.

Mining and Other Companies.

Mariposa Land and Mining Company

of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa county, Cal. Notice is hereby given, that at a meeting of the Board of Directors, held on the seventh day of September, 1876, an assessment, No. 7, of one dollar ($1) per share was levied upon the capital stock of the Corporation, payable immediately in United States currency, to the Secretary, at the office of the Company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary at the office, No. 9 Nassau street, New York, N. Y.

Any stock upon which this assessment shall remain unpaid on the ninth day of October, 1876, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Monday the thirtieth (30th) day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors

LEANDER LEAVITT, Secretary.

Office, Room No. 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal.

Mariposa South Mining Company—Location

of principal place of business, San Francisco, Cal. Location of works, Spanish Belt Mining District, Nye county, Nev.

Notice.—There are delinquent upon the following described stock, on account of assessment (No. 1), levied on the eighth day of August, A. D., 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No Shares.	Amount
Buckley, Thos	143	500	$ 50 00
Buckley, Thos	144	500	50 00
Buckley, Thos	148	200	20 00
Caldwell, J A	113	500	50 00
Caldwell, J A	114	500	50 00
Caldwell, J A	115	500	50 00
Caldwell, J A	118	500	50 00
Caldwell, J A	117	500	50 00
Caldwell, J A	118	500	50 00
Caldwell, J A	119	500	50 00
Caldwell, J A	120	500	50 00
Caldwell, J A	121	250	25 00
Caldwell, J A	122	250	25 00
Caldwell, J A	123	250	25 00
Caldwell, J A	124	250	25 00
Caldwell, J A	125	250	25 00
Caldwell, J A	126	250	25 00
Caldwell, J A	127	250	25 00
Caldwell, J A	128	250	25 00
Caldwell, J A	129	100	10 00
Caldwell, J A	130	100	10 00
Caldwell, J A	131	100	10 00
Caldwell, J A	132	100	10 00
Caldwell, J A	133	50	5 00
Caldwell, J A	134	50	5 00
Caldwell, J A	135	50	5 00
Caldwell, J A	136	50	5 00
Cooper, A B	183	100	10 00
Cooper, A B	184	50	5 00
Cooper, A B	185	20	2 00
Cooper, A B	186	20	2 00
Flint, Benj	167	1000	100 00
Flint, Benj	168	500	50 00
Flint, Benj	169	500	50 00
Lewis, L J	159	500	50 00
Lewis, L J	163	100	10 00
Moore, S Grant	65	500	50 00
Moore, S Grant	66	500	50 00
Moore, S Grant	67	500	50 00
Moore, S Grant	68	500	50 00
Moore, S Grant	69	500	50 00
Moore, S Grant	70	500	50 00
Moore, S Grant	71	500	50 00
Moore, S Grant	72	500	50 00
Moore, S Grant	73	250	25 00
Moore; S Grant	74	250	25 00
Moore, S Grant	75	250	25 00
Moore, S Grant	76	250	25 00
Moore, S Grant	77	250	25 00
Moore, S Grant	78	250	25 00
Moore, S Grant	79	250	25 00
Moore, S Grant	80	250	25 00
Moore, S Grant	81	100	10 00
Moore, S Grant	82	100	10 00
Moore, S Grant	83	100	10 00
Moore, S Grant	84	100	10 00
Moore, S Grant	85	50	5 00
Moore, S Grant	86	50	5 00
Moore, S Grant	87	50	5 00
Moore, S Grant	88	50	5 00
Nicholl, Geo, Trustee	8	500	50 00
Nicholl, Geo, Trustee	9	500	50 00
Nicholl, Geo, Trustee	10	500	50 00
Nicholl, Geo, Trustee	11	500	50 00
Nicholl, Geo, Trustee	12	500	50 00
Nicholl, Geo, Trustee	13	500	50 00
Nicholl, Geo, Trustee	14	500	50 00
Nicholl, Geo, Trustee	15	500	50 00
Nicholl, Geo, Trustee	16	500	50 00
Nicholl, Geo, Trustee	17	500	50 00
Nicholl, Geo, Trustee	18	500	50 00
Nicholl, Geo, Trustee	19	500	50 00
Nicholl, Geo, Trustee	20	500	50 00
Nicholl, Geo, Trustee	21	500	50 00
Nicholl, Geo, Trustee	22	500	50 00
Nicholl, Geo, Trustee	23	500	50 00
Nicholl, Geo, Trustee	24	500	50 00
Nicholl, Geo, Trustee	25	500	50 00
Nicholl, Geo, Trustee	26	500	50 00
Nicholl, Geo, Trustee	27	500	50 00
Nicholl, Geo, Trustee	28	500	50 00
Nicholl, Geo, Trustee	29	500	50 00
Nicholl, Geo, Trustee	30	500	50 00
Nicholl, Geo, Trustee	31	500	50 00
Nicholl, Geo, Trustee	32	500	50 00
Nicholl, Geo, Trustee	33	500	50 00
Nicholl, Geo, Trustee	34	500	50 00
Nicholl, Geo, Trustee	35	500	50 00
Nicholl, Geo, Trustee	36	500	50 00
Nicholl, Geo, Trustee	37	500	50 00
Nicholl, Geo, Trustee	38	500	50 00
Nicholl, Geo, Trustee	39	250	25 00
Nicholl, Geo, Trustee	40	250	25 00
Nicholl, Geo, Trustee	41	250	25 00
Nicholl, Geo, Trustee	42	250	25 00
Nicholl, Geo, Trustee	43	250	25 00
Nicholl, Geo, Trustee	44	250	25 00
Nicholl, Geo, Trustee	46	250	25 00
Nicholl, Geo, Truetee	47	250	25 00
Nicholl, Geo, Trustee	48	250	25 00
Nicholl, Geo, Trustee	49	250	25 00
Nicholl, Geo, Trustee	50	250	25 00
Nicholl, Geo, Trustee	51	100	10 00
Nicholl, Geo, Trustee	52	100	10 00
Nicholl, Geo, Trustee	53	100	10 00
Nicholl, Geo, Trustee	54	100	10 00
Nicholl, Geo, Trustee	55	100	10 00
Nicholl, Geo, Trustee	56	100	10 00
Nicholl, Geo, Trustee	57	100	10 00
Nicholl, Geo, Truetee	58	100	10 00
Nicholl, Geo, Trustee	59	100	10 00
Nicholl, Geo, Trustee	60	100	10 00
Nicholl, Geo, Trustee	61	50	5 00
Nicholl, Geo, Trustee	62	50	5 00
Nicholl, Geo, Trustee	63	50	5 00
Nicholl, Geo, Trustee	64	50	5 00
Nicholl, Geo, Trustee	167	250	25 00
Plumb, W G	89	500	50 00
Plumb, W G	90	500	50 00
Plumb, W G	91	500	50 00
Plumb, W G	92	500	50 00
Plumb, W G	93	500	50 00
Plumb, W G	94	500	50 00
Plumb, W G	95	500	50 00
Plumb, W G	96	500	50 00
Plumb, W G	97	250	25 00
Plumb, W G	98	250	25 00
Plumb, W G	99	250	25 00
Plumb, W G	100	250	25 00
Plumb, W G	101	250	25 00
Plumb, W G	102	250	25 00
Plumb, W G	103	250	25 00
Plumb, W G	104	250	25 00
Plumb, W G	105	100	10 00
Plumb, W G	106	100	10 00
Plumb, W G	107	100	10 00
Plumb, W G	108	100	10 00
Plumb, W G	109	50	5 00
Plumb, W G	110	50	5 00
Plumb, W G	111	50	5 00
Plumb, W G	112	50	5 00
San Pedro M	158	500	50 00

And in accordance with law, and an order of the Board of Directors, made on the eighth (8th) day of August, A. D., 1870, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, on Tuesday, the seventeenth (17th) day of October, 1876, at the hour of two (2) o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Secretary.

Office, 418 California street, San Francisco.

Northerly Five Cent Hill Gravel Mining

Company. Location of principal place of business, San Francisco, Cal.

Notice.—There are delinquent upon the following described stock in said company, on account of an assessment, levied on the ninth day of August, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
T G Belty	9	20	$ 1 00
T G Belty	60	200	150 00
T G Belty	62	200	150 00
T G Belty	89	3000	2250 00
T G Belty	122	20	15 00
T G Belty	123	10	7 50
T G Belty	185	300	225 00
J M Buffington, Trustee	149	500	375 00
Werren Bryant	188	3000	2250 00
Warren Bryant, Trustee	192	875	656 25
F C Carter	162	625	468 75
G M Condee, Trustee	177	100	75 00
G M Condee, Trustee	178	100	75 00
G M Condee, Trustee	179	100	75 00
G M Condee, Trustee	179½	100	75 00
G M Condee, Trustee	180	100	75 00
G M Condee, Trustee	181	100	75 00
G M Condee, Trustee	182	100	75 00
G M Condee, Trustee	183	100	75 00
G M Condee, Trustee	184	50	37 50
G M Condee, Trustee	185	20	15 00
W A Cornwall	13	100	75 00
W A Cornwall	14	100	75 00
W A Cornwall	15	50	37 50
W A Cornwall	16	50	37 50
W A Cornwell	17	20	15 00
W A Cornwall	18	20	15 00
W A Cornwall	21	10	7 50
W A Cornwall	22	10	7 50
W A Cornwall	75	100	75 00
W A Cornwall	84	20	15 00
D W Frery	171	100	75 00
D W Frary	172	100	75 00
D W Frary	173	50	37 50
D W Frary	174	30	22 50
O Marchant	25	100	75 00
Peter McConaghey	175	20	15 00
A H Stinson	176	500	375 00
N H Stinson	104	2000	1500 00
N H Stinson	105	1800	1350 00
N H Stinson	106	200	150 00
N H Stinson	107	875	656 25
N H Stinson	111	25	18 75
N H Stinson	126	50	37 50
N H Stinson	128	20	15 00
N H Stinson	129	10	7 50
N H Stinson	131	10	7 50
N H Stinson	187	3000	2250 00
J A Upton	170	500	375 00
J Warner	189	3000	2250 00
V P Yelmine	49	50	37 50
V P Yelmine	50	50	37 50
V P Yelmine	53	20	15 00
V P Yelmine	135	10	7 50
V P Yelmine	136	10	7 50
V P Yelmine	138	10	7 50

And in accordance with law, and an order of the Board of Directors of said company, made on the 11th day of September, 1876, so many shares of each parcel of such stock as may be necessary, will be sold at public action, at the office of said company, room No. 33, Merchants' Exchange Building, San Francisco, Cal., on Monday, the second day of October, 1876, at the hour of one o'clock, P. M., of that day, to pay the delinquent assesement thereon, together with costs of advertising and expenses of the sale.

WARREN BRYANT, Secretary.

Office, Room No. 33, Merchants' Exchange, San Francisco, Cal.

Union Stone Company of California—

Location of works and principal place of business, the city and county of San Francisco.

Notice.—There is delinquent upon the following described stock on account of assesement (No. 4) levied on the 22d day of August, 1876, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Miller, Wm J	5	50	$ 10 00
Miller, Wm J	6	300	60 00
Miller, Wm J	7	500	100 00
Miller, Wm J	8	500	100 00
Miller, Wm J	9	500	100 00
Miller, Wm J	10	500	100 00
Peter Dean	3	250	50 00
Dougine, J T	101	100	20 00
Dougine, J T	201	100	20 00
Dougine, J T	301	100	20 00
Dougine, J T	501	100	20 00
Dougine, J T	601	100	20 00
Dougine, J T	701	100	20 00
Dougine, J T	1301	100	20 00
Dougine, J T	1401	50	10 00
Edward Commins	1051	50	10 00

And in accordance with law, and an order of the Board of Directors made on the 22d day of August, 1876, so many shares of each parcel of said stock as may be necessary will be sold at public auction at the office of the company, No. 19 First street, San Francisco, California, on Tuesday, the 17th day of October, at the hour of three o'clock P. M., of that day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

R. F. KNOX, Secretary.

Office, No. 19 First street, San Francisco, Cal.

Amusements.

GRAND OPERA HOUSE, Mission Street, near Third. Open every evening with first-class Dramatic Company. Box Office open from 9 A. M. to 10 P. M. Doors open at half past seven. Commence at eight o'clock. TONY DENIER.

CALIFORNIA THEATER, Bush Street, above Kearny. Open every evening with the best Dramatic Company in the United States. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance. Doors open at half past seven. Monday, September 4th, EDWIN BOOTH.

Iron and Machine Works.

WM. HAWKINS. T. G. CANTRELL

HAWKINS & CANTRELL,

MACHINE WORKS,

210 & 212 Beale St.,

Near Howard, - - - SAN FRANCISCO.

MANUFACTURERS OF

Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horse Power.

N. B.—Jobbing and Repairing done with Dispatch.

FULTON

Foundry and Iron Works.

HINCKLEY & CO.,

MANUFACTURERS OF

STEAM ENGINES,

Quartz, Flour and Saw Mills,

Hayes' Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard, San Francisco.

THE RISDON

Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,

SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cama and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors:

Joseph Moore, Jesse Holladay, O. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary

24v17-ay

THOS. PENDERGAST. HENRY S. SMITH.

ÆTNA IRON WORKS.

MANUFACTURERS OF

IRON CASTINGS

and MACHINERY,

OF ALL KINDS.

Fremont Street, bet. Howard and Folsom,

SAN FRANCISCO.

SHEET IRON PIPE.

THE

Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,

Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

☞ All kinds of Machinery made and repaired.

24v22-3m JOSEPH MOORE, Superintendent.

THOMPSON BROTHERS,

EUREKA FOUNDRY,

Light and Heavy Castings of Every Description Manufactured.

Sole Proprietors and Manufacturers of

LYNCH'S

Ventilating and Illuminating Tile,

The Only Illuminating Tile Manufactured for Lighting Cellars, Basements and Dark Rooms which provides proper ventilation for such places.

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Rolling Mill Company,

SAN FRANCISCO, CAL.

Established for the Manufacture of

RAILROAD AND OTHER IRON

—AND—

Every Variety of Shafting,

Embracing ALL SIZES of

Steamboat Shafts, Cranks, Piston and Connecting Rods Car and Locomotive Axles and Frames,

—ALSO—

HAMMERED IRON

Of every description and size.

☞ Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2032, San Francisco, Cal., will receive prompt attention

☞ The highest price paid for Scrap Iron.

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Manufacturing Company,

MANUFACTURERS OF ALL KINDS OF

Wharf and Bridge Bolts, Railroad Trestle Work, Car Frames and Bolts, Machine Bolts, Set Screws and Tap Bolts, Lag or Coach Screws.

ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGON AND SQUARE NUTS, WASHERS, BOLT ENDS, TURN-BUCKLES, ETC., ETC.

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137 and 139 First street, - San Francisco.

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IRON FOUNDERS.

Quicksilver Condensers and Furnace Castings.

Sole manufacturers of the Hepburn Roller Pan and Callahan Grate Bars, suitable for Burning Screenings.

NOTICE.—Particular attention paid to making Superior Shoes and Dies.

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STEAM ENGINES, BOILERS,

CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets,

SACRAMENTO CITY.

Brass Foundry & Pump Factory.

A. J. SMITH, Plumber,

Sole Proprietor and Manufacturer of the

Celebrated Hudson Force Pumps, Atwood & Bodwell Windmill Brass Pumps, Smith's Copper-Lined Pumps, Plumbers' Force Pumps.

☞ Special attention paid to Brewers', Distillers', Beer and Hot Liquor Pumps, and Wine Pumps. Particular attention paid to AIR PUMPS, also to

DIVERS' SUBMARINE PUMPS.

Artesian Well Pumps Made to Order.

☞ Brass Castings Made to Order.

No. 222 FREMONT STREET, - - SAN FRANCISCO

CALIFORNIA BRASS FOUNDRY,

No. 125 First Street, opposite Minna,

SAN FRANCISCO, CAL.

All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings. Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells, and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch

☞ PRICES MODERATE. ☜

J. H. WEED. V. KINGWELL.

California Machine Works,

119 BEALE STREET, SAN FRANCISCO.

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Builders of QUARTZ, SAW AND FLOUR MILLS

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THE ECONOMY HYDRAULIC HOIST FOR STORES, And General Machinists. 25v28-3m

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Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

10v27tf J. HENDY, No. 32 Fremont Street.

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Miners' Foundry and Machine Works,

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First Street, bet. Howard and Folsom, San Francisco

Machinery and Castings of all kinds.

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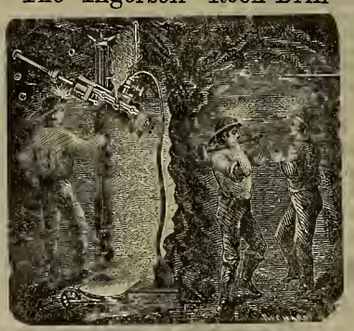
Machinery.

The Ingersoll Rock-Drill



Is Extensively Used in the East and

TAKES THE PLACE OF ALL OTHERS,

Wherever introduced, because it can be run with less power, labor and repairs, and do more work than any other Drill in the market. It has but few parts, is easily handled, being light, and HAS AUTOMATIC FEED, which saves labor. WE ASK FOR TRIAL AGAINST ANY COMPETITOR. For particular information regarding Drills or Air Compressors, send for circular to

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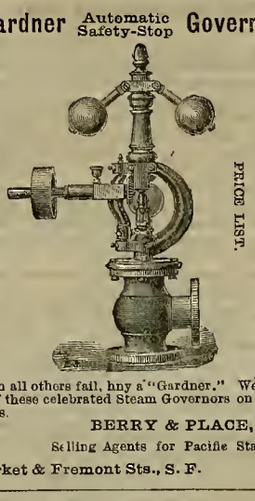
The Gardner Automatic Safety-Stop Governor.

MORE THAN TEN THOUSAND NOW IN USE. EVERY ONE WARRANTED.



SEND FOR DESCRIPTIVE CIRCULAR AND PRICE LIST.

☞ When all others fail, buy a "Gardner." We have all sizes of these celebrated Steam Governors on hand at all times.

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Selling Agents for Pacific States,

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CHLORIDIZING FURNACE.

Guaranteed to Chloridize from 85 to 95 per cent. of any gold or silver ores that are not more profitable for smelting. Will also desulphurize ores and put them in proper shape for working in cupola furnaces.

Cost of Roasting and Chloridizing by this Process:

Two cords of wood at $6	$12.00
Two firemen at $4	8.00
1500 lbs of salt at 1½c	22.50
Wear of shoes and power	1.50
Cost for 15 tons	$44.00
Cost for one ton	2.93½

In a furnace of three or four times this capacity the cost is decreased by 20 per cent.

The furnace is now working successfully at the Poe Consolidated Co.'s mines, in the Peavine District. For further information, apply to

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ROASTING FURNACE,

For Gold, Silver and Copper Ores.

The roasting capacity of the Furnace, per 24 hours, is from 6 to 50 tons, according to percentage and nature of the sulphureted ore, with an expenditure of one and a half to two cords of wood, and two to three shifts of unskilled labor, according to amount of ore handled. The Furnace is adapted for chloridizing, as well as oxidizing, roasting, and for the manufacture of sulphuric acid. In point of cheapness of construction and efficiency in working, the Furnace is far the best in use. Millmen in need of a cheap and efficient Roasting Apparatus will apply to

G. F. DEETKEN,

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Furnace can be seen on application for permit, at Grass Valley.

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The undersigned, owners of LESCHOT'S PATENT for DIAMOND-POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

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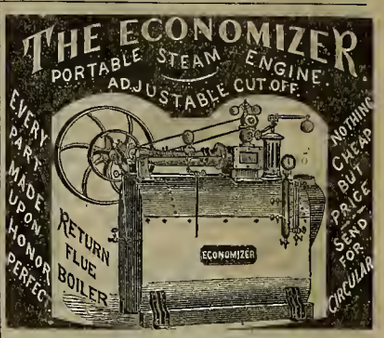

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And BOILERS for driving Model Yachts from one to ten feet in length, and Row-Boats or Skiffs 16 feet and upwards in length; either plain castings, partly finished, or complete ready for use, so constructed that a speed of from six to twenty miles per hour can be easily obtained.

The Engine can be quickly detached from the Yacht or Boat, and is then suitable for Agricultural, Domestic, Mechanical, Commercial or Amateur requirements, when small power only is needed.

☞ 100 Scroll Work Designs free on receipt of Stamp.

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NOTICE TO PARTIES ORDERING FURNACES.

The mining public is hereby notified that all persons who represent themselves to be my agents or to have authority under my patents to build and use, or to contract with others for the right to build and use a Cylindrical Rotary Roasting Furnace (except in Lander county, Nevada,) are frauds, and any person or persone that constructs one of my furnaces either with or without additions, alterations, or supposed improvements, or attempts to use one constructed under a contract with any such unauthorized person, will be prosecuted as infringers of my rights on the premises. I have made arrangements to have all my furnaces constructed by the Etna foundry, in this city, and no other foundry has a right to make one without my written consent. For rights to build and use, address

GEO. W. WHITE, Patentee, care of Etna Foundry.

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Clothing,

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These goods are specially adapted for the use of FARMERS, MECHANICS, MINERS, and WORKING MEN in general. They are manufactured of the Best Material, and in a Superior Manner. A trial will convince everybody of this fact.

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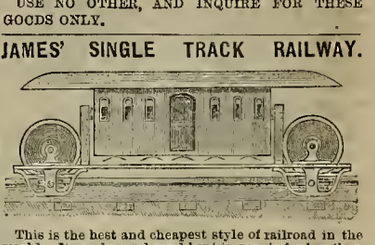

This is the best and cheapest style of railroad in the world. It can be made and kept in repair for less than the cost of a county road. It can overcome any grade, and make any curve. Can be run on wood or iron (wood the best). It places railroads within the reach of any village. Can be used to great advantage in transporting coal, ore, gravel, rock, lumber, or any class of freight. Any company or persons desiring a cheap and safe railroad will do well to correspond with

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Having struggled twenty years between life and death with **ASTHMA**, I experimented by compounding roots and herbs and inhaling the medicine. I fortunately discovered a sure cure for **ASTHMA** and **CATARRH**. Warranted to relieve any case of Asthma instantly, so the patient can lie down to sleep. By mail, **$1.00** per box. Address

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For sale by Druggists.

A Boy for the Country.

An intelligent lad, 13 years old, wants a permanent home in the country. Address J. B. PORTER, dentist, Oakland, Cal., or at this office.

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San Francisco Steam Pumps.

PREMIUM AWARDED TO W. C. WILCOX & CO., FOR BEST STEAM PUMPS. Wilcox's Patent. 1875.

We are prepared to furnish PUMPS UNDER CONTRACT, guaranteeing their ability to perform any specific work for which steam pumps are adaptable, such as

RAISING WATER FROM MINES

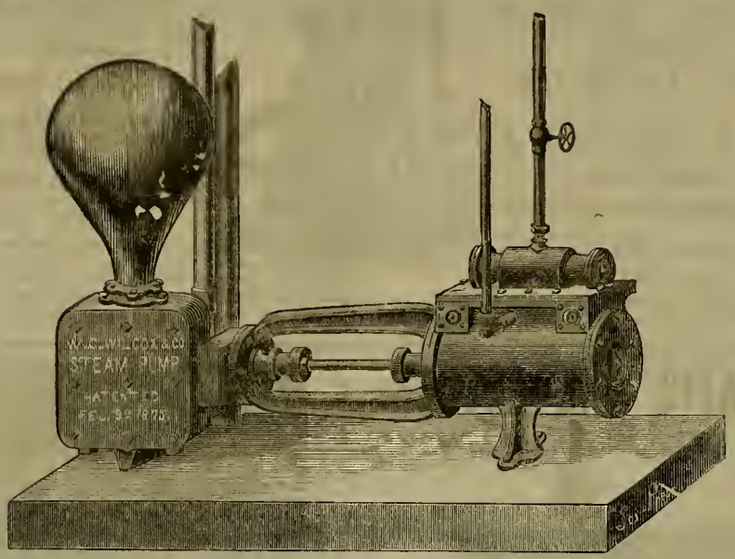
FOR WATER WORKS,

FEEDING BOILERS, RAISING WATER FROM WELLS; STEAMER AND SHIP PUMPS, ETC.

We would also call the attention of those interested, to our Direct Acting Deep-Well Pumps for raising water from

Any Desired Depth.

Also to our Especial Construction of Pumps FOR HANDLING QUICKSILVER or heavy liquids.



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Ever Had in the United States,

BETWEEN COMPETITORS

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Best Established Reputation,

In which, at great expense, the different Steam Pumps were tried under every test known to experts, the Examining Committee of the Tenth Industriel Fair of the Mechanics' Institute have awarded to us their

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Best Steam Pumps on Exhibition.

We claim thet our Pumps are the **best** ever made in **simplicity** of construction, economical use of power, **durability** and perfect adaptebility for generel uses, and we ask all persons interested to investigete **our title to this claim.** Selesroom at our Mechine Shop, 114 and 116 BEALE STREET, SAN FRANCISCO.

W. C. WILCOX & CO., Proprietors.

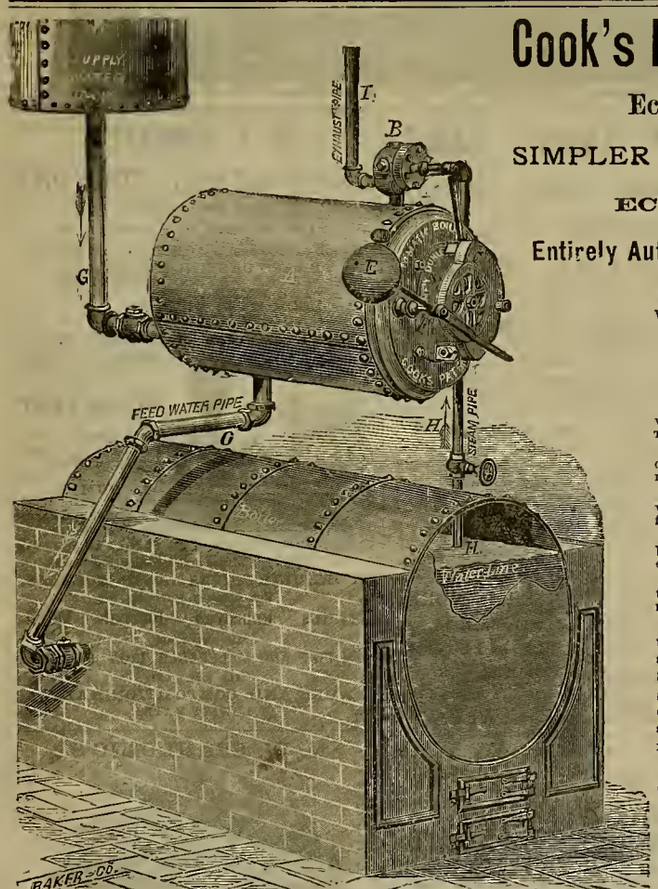
Cook's Patent Automatic Boiler Feeder & Regulator.

Economy in Operation. Absolute Safety from Explosion.

SIMPLER THAN A PUMP, AS IT REQUIRES NO ATTENTION.

ECONOMY IN FUEL.

Entirely Automatic, Reliable & Durable.



Cook's Automatic Boiler Feeders

WERE AWARDED THE HIGHEST PREMIUM OVER ALL MACHINES EXHIBITED AS BOILER FEEDERS AT THE CINCINNATI EXPOSITION AND THE ST. LOUIS FAIR.

The cuts show the operation of the Feeder. It was described in detail in the MINING AND SCIENTIFIC PRESS of May 20, 1876.

This Feeder will discharge from 40 to 200 gallons of water at one movement, where a pump would require hundreds of strokes to do the same work.

The water is kept exactly at the proper line, whether running fast or slow, without attention from the engineer.

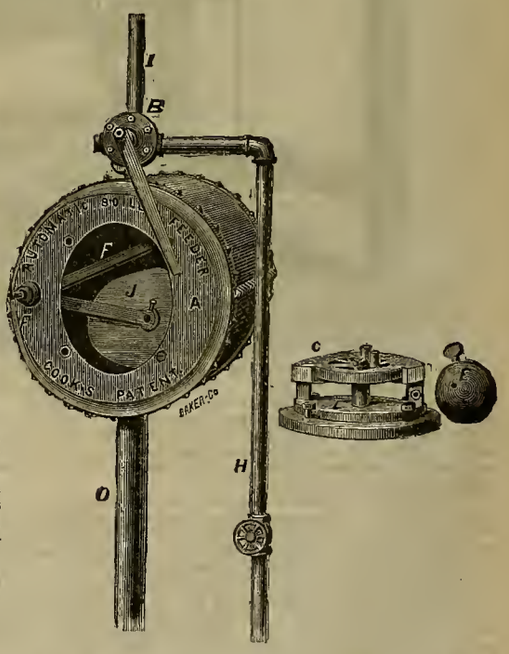
Feeders, Heaters and Regulators Combined are made on this principle. Simple and economical.

The control of feeding water to the boiler is taken out of the hands of the engineer and left to unerring natural laws.

These Machines are now introduced on this coast for the first time, although they are extensively used in the Eastern States. They supply the boilers with great regularity, and keep the water at exactly the same level. As a protection against explosion they are simply perfect, leaving nothing to be desired.

ONE OF THESE FEEDERS CAN BE SEEN IN OPERATION AT THE PACIFIC IRON WORKS.

Address,
For Circulars and further information,



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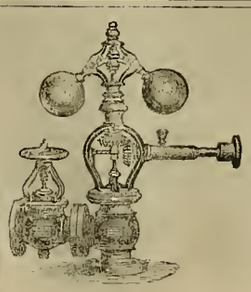
Persons engaged in the following business can have their Signs Painted at contract prices, for goods or articles in which they trade, viz:

Merchant Tailors,	Gents' Furnish'g G'ds
Bootmakers,	Furniture Dealers,
Hatters,	Jewelers,
Hotels,	Piano Fortes,

Wine Merchants, Etc., Etc.



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The BEST & MOST RELIABLE

IN USE.

Send for Circular and Price List to

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Assay Office and Chemical Laboratory,

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Deposits of bullion received, melted into bars, and returns made in from 24 to 48 hours.

Bullion can be forwarded to this Office from any part of the interior by Express, and returns made in the same manner.

Careful Analyses made of Ores, Metals, Soils, Waters, Industrial Products, Etc. Mines examined and reported upon. Consultations on Chemical and Metallurgical questions.

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PARKE & LACY, 417 Market Street, S. F.

SOLE AGENTS FOR

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ROCK DRILLS and

Tunneling Machinery.

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ENGINES AND BOILERS,

(SEMI-PORTABLE)

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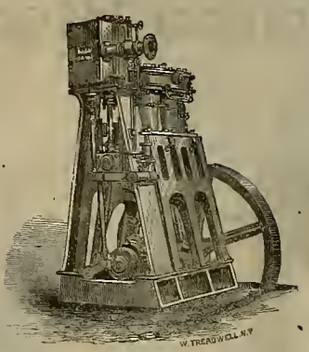
WRIGHT'S

Bucket-Plunger Steam Pump.

COSMOPOLITAN EMERY WHEELS AND STANDS.



Putnam Machine Company's

MACHINISTS' TOOLS and

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Centrifugal Steam Pumps.

FARMER'S ELECTRIC MACHINE FOR BLASTING AND HILL'S EXPLODERS.

HASKINS' BLOWING ENGINES

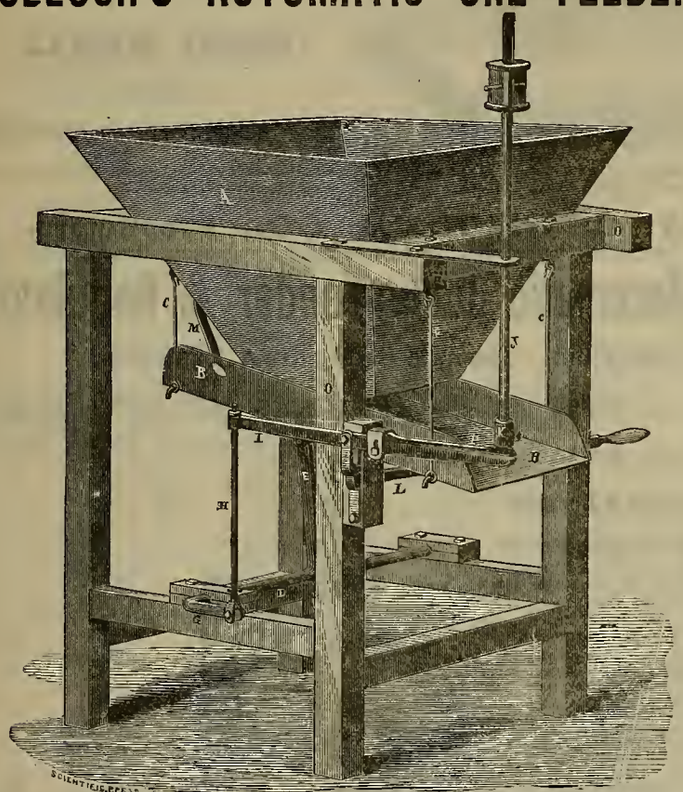
For Mines.

Large Assortment of

MORSE TWIST DRILLS.

HASKINS' PORTABLE HOISTING ENGINES, constructed especially for economical use in mining districts, with Compressed Air or Steam, adapted to all classes of underground work and made throughout on the interchangeable plan, so that all parts can be duplicated when desired. Catalogues and Estimates given on application.

TULLOCH'S AUTOMATIC ORE FEEDER.



The TULLOCH AUTOMATIC ORE FEEDERS have been practically tested during the last year and a half in 40 mills, of from five to 80 stamps each, and have, in every case, given perfect satisfaction. The Tulloch machine is so constructed that the drop of the stamp feeds the ore in just such quantities as the stamps require. Each drop regulates the supply required for the next drop, whether it be more or less, and this is the true principle of an automatic feeder. The tray moves longitudinally, and a stationary scraper forces the material forward at each backward movement of the tray, thus insuring the perfect feeding of all classes of ore, whether it be dry or wet.

We append a few extracts from the many testimonials which we have received from mill men and practical mining men, of the effectiveness and positive action of the Tulloch Feeder. We do not depend solely upon these testimonials, as we are aware that testimonials are easily secured for almost any machine, but the high character of the parties certifying to those herewith given, will establish their value and genuineness:

Mr. Jas. G. Fair has 28 in use; says: I regard them superior to any Feeder with which I am acquainted; I consider no mill perfect without them. Mr. E. R. Burke, Sumner mine, Kern county, has 16: They never get tired; no man living can feed a battery as well; they save us in labor alone $48 a day. Mr. Green, of the Phœnix mill (12), Amador, writes: The first machine we had is working away; is as good as ever; have not spent a dime on it; in use 14 months; you need fear no competition on wet ores. Mr. W. H. Armstrong, of Consolidated Virginia mill: We are running 60 stamps with your Feeders; they give unbounded satisfaction; they have not cost the company one dollar since starting up. Mr. H. C. Bidwell, Supt. Green Mountain and Gold Stripe companies, Plumas county, writes: From the start they have done splendidly; no trouble whatever; requiring but little attention; a boy can manage them; the saving in both labor and castings is fully one-half over the old style of feeding by hand. Mr. Presto writes: I have four of your Automatic Self Feeders, and my mill men each and all say they are the best they have ever used. They are an improvement on all I have ever seen, being simple in construction, and good for either wet or dry crushing; refer to over 40 mills using them; they are guaranteed to give perfect satisfaction. Send for circulars.

F. OGDEN, 417 Market Street, S. F.

SANTA CLARA, CAL., April 6th, 1875.

MESSRS. DEWEY & CO.—*Gents:*—We have just received Patent No. 160,535, for J. T. Watkins & Co's Mammoth Road Grader, which was patented through your Agency. It is the neatest and best that we have ever received. We feel proud of it and thankful to you for the care and attention that you have given it, and when we have anything to do in that line of business we will surely give you a call. Very respectfully,

J. T. WATKINS & CO.

PASO ROBLES, CAL., October 18th, 1875.

DEWEY & CO.—*Gents:* The letters patent for the Tire Upsetter have come to hand. For the prompt manner with which you have brought the matter to a successful issue, please accept my thanks.

Yours Respectfully, JOHN H. MERTZ.

Dewey & Co. {224 SANSOME ST.} **Patent Agt's.**

GOLD, SILVER AND COPPER MINING, Refining and Concentration Machinery.

Patent Stamp Shoes
FRASER, CHALMERS & CO.
SUCCESSORS TO EAGLE WORKS M'F'G. CO.
MANUFACTURERS OF
STEAM ENGINES, BOILERS AND STAMP MILLS
CRUSHING ROLLERS
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AGENTS FOR BLAKE STONE BREAKER
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FLOUR MILL FURNISHING
CHICAGO.
ROASTING CYLINDERS
GENERAL MACHINERY

Hoisting Engines, Diamond Pointed Rock Drills, Manufactured by M. C. BULLOCK,

Address, FRASER, CHALMERS & CO., Chicago, Ill.

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Celebrated Solid Tooth & Inserted Tooth

CIRCULAR SAWS;

—ALSO—

Mulay, Cross-Cut and Other Saws,

FOR SALE AT

No. 1 SPEAR STREET, San Francieco.

During my absence in Oregon, and till further notice, all orders for the above Saws or Saw Teeth addressed to D L. EMERSON, No. I Spear street, will receive prompt attention by my agent, Wm. L. Jones.

We have a large number of Saw Teeth and Saw Bits—about 15,000—now on hand, and are receiving new invoices to supply the demand.

D. L. EMERSON.

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37 Fremont St., Cor. Mission, S. F.,

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PRACTICAL BOILER MAKERS,

Marine, Stationary and Portable Boilers, Smoke Stacks, Hydraulic Pipe, Oil or Water Tanks, Ore and Water Buckets, Gasometers, Girders, Bridges and Iron Ship Building.

ALL KINDS OF SHEET IRON WORK.

Repairing promptly attended to at the lowest possible terms.

"Faith and Confidence"

LIVERMORE, Oct. 1st, 1875.

MESSRS. DEWEY & CO., Patent Solicitors: *Gentlemen*—Yours of the 29th ult. containing my patent to Elevated R. R. duly received, and I hereby return my sincere thanks to the MINING AND SCIENTIFIC PRESS Patent Agency for your promptness and honesty in regard to our business connections. I have received a flood of circulars from Eastern firms, desiring to deal with me, but I have declined any communication with them and prefer, as soon as circumstances will permit, to negotiate with and patronize a home institution; one in which I have faith and confidence—DEWEY & Co.

Again thanking you for your promptness in securing my patent, I remain, obediently yours,

WM. H. HARRISON.

PATERSON, N. J., Aug. 28th, 1876.

MESSRS. DEWEY & Co.—*Gentlemen*:—I have just received United States letters patent for fuse lighters. I return you my thanks as usual. You seem to always have success as agents in your applications for patents. I remain, yours respectfully, J. W. PLATT.

SUTTER CREEK, February 26th, 1875.

MESSRS. DEWEY & Co.—I have received my Letters Patent through your agency. And, for your promptness, accept my thanks. Yours, S. N. KNIGHT.

W. T. GARRATT'S

BRASS and BELL FOUNDRY

SAN FRANCISCO,

MANUFACTURER AND IMPORTER OF

Church and Steamboat BELLS and GONGS,

BRASS CASTINGS of all kinds,

WATER GATES, GAS GATES,

FIRE HYDRANTS,

DOCK HYDRANTS,

GARDEN HYDRANTS.

A General Assortment of Engineers' Finding.

Hooker's Patent Celebrated

STEAM PUMP

☞ The Best and Most Durable in use. Also, a variety of other

PUMPS

For Mining and Farming Purposes.

ROOT'S BLAST BLOWERS,

For Ventilating Mines and for Smelting Works.

HYDRAULIC PIPES AND NOZZLES,

For Mining Purposes.

Garratt's Improved Journal Metal,

IMPORTER OF

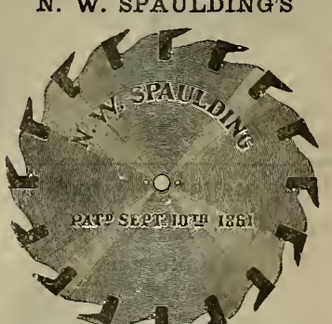
IRON PIPE AND MALLEABLE IRON FITTINGS,

ALL KINDS OF

WORK AND COMPOSITION NAILS,

16-tf AT LOWEST RATES.

N. W. SPAULDING'S



PATENT DETACHABLE TOOTH SAWS.

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NO AGENTS are authorized to receive subscriptions for this paper at less than our advertised rates.

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, OCTOBER 7, 1876.

VOLUME XXXIII. Number 15.

What a Patent Agent Ought to Be.

[For the MINING AND SCIENTIFIC PRESS, by JOHN L. BOONE.]

A patent agent ought to be careful and honest, because he is the repository of his clients' secrets. No class of property is more highly valued by its possessors than that which derives its origin from invention. No matter how trifling the idea may be, the person who conceives it is apt to place a much higher estimate upon its value than others, and he is therefore jealous of its possession. This jealousy is exceedingly commendable, however, on account of the fragile nature of the tenure by which he holds possession, and because his title cannot be permanently established until the patent is actually allowed and issued. An improper exposure or unwise placing of confidence in a third party by the inventor or his confidents is liable and often has cost the inventor not only time and money to obtain his rights, but has entailed the entire loss of his invention.

It is therefore necessary that the patent agent or attorney should not only have the confidence of the inventor, but that he should carefully guard the interest of his client and see that no injudicious exposure or explanation is made that parties liable to create trouble can get hold of. The utmost confidence ought to be maintained between an inventor and his attorney or agent.

A patent agent ought to be patient. Inventors are proverbially tedious. They like to talk about their inventions, especially to the person whom they have employed to prepare their patent papers and attend to prosecuting their applications. This is also excusable, because it relieves the mental pressure. It is the inventor's safety valve. Fear of exposing his secret to others compels him to keep it locked up in his brain, and there it lies unfolding itself, expanding in value and importance and permeating every tissue of the human anatomy until the accumulated pressure is relieved by a distribution of the burden with a confident, and the patent agent is usually that confident.

The agent should patiently listen, for the talk of an inventor is valuable to him. It gives him the inventor's peculiar ideas, and if he is a student of human nature, it enables him to frame the case so that the inventor will be satisfied with it in every particular.

The patent agent should be accommodating; inventors are often whimsical, the very nature of their undertaking is apt to lead them to peculiar theories and incorrect conclusions, although the general result of their theories and conclusions may be correct. These theories the agent must not combat, unless they are vital and enter into the essence of the case. He had better let their possessor retain them than incur his distrust and possible enmity by opposing them. The inventor will find his errors when he comes to enter upon the actual and practical field of operation.

The patent agent must be familiar with the law of patents, otherwise how can he guard the vulnerable points of the invention? Every specification must be prepared with a view to its having to pass at some time or other through the ordeal of a judicial examination, and a judgment as to its validity and scope, and unless the person who prepares the specification fulfills the legal requirements, and in a legal manner sets forth the description and claims, the patent will not stand.

No general knowledge which he may possess will make up for the want of legal knowledge; it is the one thing that may defeat the end sought, if it is not properly possessed and properly employed.

The patent agent must be a mechanic, theoretical, at least. In this particular patent agents must be qualified by nature, and not by education, although education is necessary to enable him to dress his mechanical points in proper language and render his points plain, certain and intelligible. Technical knowledge of each particular art, trade, or profession is not required, but a general knowledge of the various steps and requirements are necessary. A person who possesses the inventive faculty, if otherwise qualified, makes the best patent solicitor; he can then see each invention through the same medium and in the same light that the inventor himself sees it; he can pick out and embody the small mechanical points that form the real safeguards of a patent, and thus more absolutely prepare the case for the scrutiny of judicial investigation and the criticism of mechanical experts.

Few men possess all of these qualities, therefore we might say that few men are competent to serve as patent solicitors. The want of proper qualification in patent agents is the cause of so many worthless patents being issued from the patent office. The inventor must absolutely depend upon the preparation of his case for his security and defense, and it therefore behooves him to examine into the character and qualifications of the person in whose hands he places his invention and secret.

The safest and best guide for inventors who require the services of a patent agent is to choose those who have been long in the business and who have acquired a settled reputation for integrity and capacity. Mushroom patent agents exist everywhere. They employ the most specious means to entrap the uninformed inventor, but their services are an actual damage nine times out of ten. It is an hundred fold cheaper to pay a competent attorney or agent a fair fee than to accept the services of such men for nothing.

AN IMPORTANT DECISION.—A recent decision by the Commissioner of Patents and concurred in by the Secretary of State and Secretary of the Interior of the United States, establishes a feature in connection with our trademark laws that is of great importance to foreigners. It is that subjects of Great Britain, residing and doing business in a foreign country, cannot register trademarks under our law. The case under which this decision was rendered was as follows: On the 11th day of May, 1875, Messrs. F. Chevalier & Co., of San Francisco, California, registered the words "Old Castle" for whiskies. They retained undisputed possession of this mark until February, 1876, when Walter and Alfred Gibbey, of London, England, filed an application to register the same mark, and demanded an interference with Messrs. Chevalier & Co. We were retained by Messrs. Chevalier & Co. to defend their interest, with the above result. The decision is important, as it regulates the status of British subjects residing and doing business in a foreign country in regard to trademarks in the United States.

MARTIN FARQUHAR TUPPER, the English poet, is on his way to California.

Gems and Precious Stones.

[Written for the PRESS by HENRY G. HANKS.]

Q. Lazulils (Azure Stone).

A beautiful blue mineral, sometimes used as a gem. Is named from the Arabic word *azul*, signifying the heavens. Crystalline form, monoclinic; hardness, 5-6; gravity, 3.057; luster, vitreous; color, azure blue to fine deep blue; streak, white; subtransluscent, opaque; fracture, uneven; brittle. When pure it has the following composition: Phosphoric acid, 43.88; alumina, 31.79; protoxide of iron, 890; magnesia, 9 89; water, 5.56=100.00.

In a matrass yields water and loses its blue color. B. B. on charcoal intumesces slightly, assumes a glassy appearance, but does not fuse. With borax forms a clear, colorless globule; with cobalt solution gives a fine blue color, when strongly heated. Colors blow pipe flame slightly green. Scarcely acted on by acids in its natural state, but after heating becomes soluble.

This mineral occurs both crystallized and massive. The massive varieties traverse clay slate.

Good specimens of lazulite are very pretty, but they are neither fashionable nor much admired in jewelry.

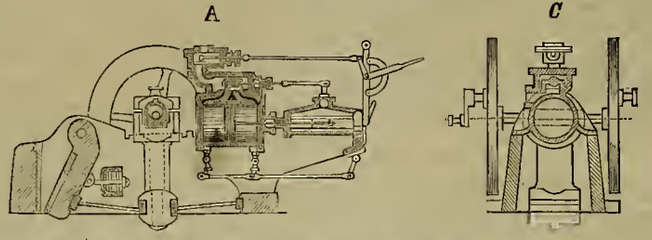
R. Cyanite, Kyanite.

Triclinic; hardness 6.-7.25; specific gravity, 3 45-3.7, (white 3 559), (blue transparent 3,675); color generally pale blue; crystals often soft on lateral surfaces and hard on extremities; luster, vitreous, pearly; streak uncolored; translucent, transparent. Although generally blue it is sometimes white (rhœtizite), also gray, green and black. When pure has the following composition: Silica, 36.8; alumina, 93 2=100 00; often impure from admixture with oxide of iron and other foreign substances.

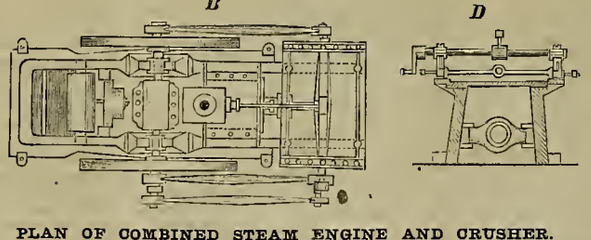
B. B. unaltered. With borax fuses slowly to a colorless glass; with cobalt solution gives a dark blue color. Occurs in gneiss and mica slate. Found both massive and in crystals.

The electrical properties of cyanite are remarkable, for, according to Cleaveland, the crystals when electrified are sometimes positive and sometimes negative. When cyanite is found in pieces sufficiently large, and when transparent and of a pure blue color, it is much prized as a gem, being substituted for the sapphire. The name is derived from a Greek word signifying blue. Cyanite is found in numerous localities in the Eastern States, but is as yet unknown on the Pacific coast.

BONANZA BOUNDARIES.—If Mr. Attwood's statement is correct, that branch fissures carry the different ore bodies in the Comstock lode, we imagine the limit of each bonanza may be easily estimated, as the foot wall of the main fissure would form the boundary.



ROCK CRUSHER COMBINED WITH STEAM ENGINE.



PLAN OF COMBINED STEAM ENGINE AND CRUSHER.

[Copyrighted.]

Mechanical Ore Concentration and Separation.—No. 8.

(Written for the PRESS by FRANCIS F. M. CAZIN, M. E., Santa Fe, New Mexico.)

Breaking the Ore.

We will continue the discussion on how far breaking the ore should go and with what machinery it should be done. Would it serve any practical purpose to break, into the size of a pea or bean, ores carrying the metallic part disseminated very finely in the rock (gold in quartz). Would not the single pieces carry both rock and valuable parts connected? What could separation by specific gravity do with them unless first broken so as to really set apart the particles of one quality from the particles of the other? By loosening one from the other their mixture may be dealt with by the proper action, utilizing the difference in their gravity.

It takes the experience belonging to the trade to decide the size to which a special ore should be broken or divided, but with proper consideration of the above remarks the correct conclusion can always be come at as close as required by practice.

Crushing Machinery.

Once the size is decided upon, the selection of machinery is a matter of experience. The breaking machinery may be distinguished in machines for breaking into one coarse, two middle and three fine sizes; but the action of either will infringe on the department of the others. They are: 1st, crushers; 2d, rollers or grinders, and 3d, stamps or pulverizers. One and the other may be combined, or be a separate contrivance.

Leaving the Blake and Dodge crusher for consideration further on, we give engravings, *A*, *B*, *C* and *D*, showing the construction of a rock breaker combined with a steam engine.

The difference between this crusher and Blake's is that the crushing jaws have no alternate ribs, but are flat, it being considered that they will maintain shape for a longer time and do more uniform work without ribs than with them. The scale to which the figures are drawn is one-fourth of an inch to one foot. The jaws can be so arranged as to break the rock in pieces from two inches down to three-fourths of an inch. The motion of the movable jaw is regulated by more or less lining being put in between the swing crank and its base where fitting to the crank shaft. From 200 to 250 revolutions will give proper effect for breaking ores, and 160 to 180 for breaking to a small size. The rock in passing the crusher is broken so as to yield 80 per cent. of the coarser kind, and about 20 per cent. of the smaller sizes, but with loose sand rock the percentage of smaller rock is higher.

THE INTERNATIONAL EXHIBITION OF 1876.—Bayard Taylor, the eminent traveler and writer, who has been a careful observer and attendant of all the great exhibitions throughout the world for the past 25 years, says of the display at Philadelphia: "Taken as a whole, the exhibition surpasses all its predecessors in beauty of position, convenience of arrangement and variety of interest."

GENERAL NEWTON announces that the roof at Hallet's point has been swept away, and says: From 180 feet distant from the shore line to the line of buoys, the bottom slopes from eight feet of depth at low water to 20 feet outside the line of buoys. There is not less than 20 feet depth at low water. The divers have been examining the reef, and report a thorough break-up.

THERE is a grasshopper invasion in some counties in Texas, and they are destroying vegetation. Sowing has been delayed until it is ascertained whether the hoppers will remain long enough to deposit their eggs.

EDWARD BITTENBENDER, who murdered his brother and was sentenced to life imprisonment, committed suicide in the county jail last week.

CORRESPONDENCE.

Some of the Mines of Nye County.

[From our own Correspondent.]

The South Barcelona.

Which is a southern extension on the Barcelona Consolidated has a similar character of ore, carrying, however, much more of the ruby silver. In addition to the work heretofore done in the development of the mine, two drill holes had been made, one 170 feet east of air shaft, and another 180 feet further east in a line with a large joint tunnel, seven feet by seven in the olear, now being vigorously run by the Barcelona Consolidated and the Barcelona South, which will strike the main Barcelona ledge at the depth of 680 feet from the surface, in accordance with surveys made on the ground. This tunnel has been extended 310 feet and is within 30 feet of the Oriental ledge, crossing which there will be only 300 feet more to run bsfore tapping the main ledge, when some rich developments may be expected, as some very high grade rnby ore is said to have been strock by the diamond drill in one of the perforations alluded to, at the depth of 138 feet, for which point the South Barcelona tunnel is now driving. A nice little vein of cinnabar was cut in its oourse, which went, after retorting, as high as 40 per cent., and may prove of great value

Mr. Harvey, to whom I was referred, in absence of the superintendent, for information in regard to the South Barcelona, was nnfortunately not interviewed as to some points of interest, particularly as to the amount of ore extracted, or as to yield per ton. Madam Rumor, (sometimes good anthority), put much of it at from $40 to $50 per ton, some lots at $180, with a little choice first class, as high as $800. It also is numbered among the promising mines of the district, hut it may be several months before its trne status can be fully determined, as this will depend much on the result of developments in progress.

The Spanish Belt,

Adjoining the last described, has an incline on the ledge 118 feet. A cross-cut had heen run 20 feet through the vein without reaching the hanging wall from which they were taking ore, principally low grade. It had been worked only ahout two months. The indications were considered very good, with some assays as high as $270 per ton.

The Barcelona Central,

Mr. J. B. Hollis, euperintendent, was sinking a straight shaft, which was down about 75 feet on the east side of the ledge. Assays from near the surface went all the way from $50 to $1,000 per ton.

The Mariposa South

Has an incline 110 feet, following the hanging wall, and a cross-cut 10 feet, said to prospect favorably, with some good ore found all through the vein. The tunnel is 320 feet in length; crossed one very promising ledge and had not reached another for which it was running. The outcrop of the back lode was very large, it is said, and carrying good ore.

The Valenciana—tnnnel, 215 feet; cross-cnt 80. Ledge not yet reached. The San Francisco had a nice stratum of ore exposed, but little work has been done. Along the same helt were the Homming-Bird, the Summit, the Pennsylvania and other locations not at present worked.

On the North

Of Barcelona City about a mile, the Eclipse had sunk a shaft 85 feet and run a cross-cnt 40 feet—all ledge matter, with some good ore.

The Transit, lying next north—tunnel 300 feet—had just cut into ledge 8 feet, ore so far low grade, formation good; ledge well defined. The Spanish Consolidated, Original Yellow Jacket, not far from the last mentioned, had crossed a fine little vein two and a half feet in width, thonght to be a spur from the main ledge, giving assays from $50 to $80, the latter expected to be reached by a run of 60 to 70 feet further.

Silver Hill,

Abont three miles from town, on the same mineral belt, the property of Messrs. Barrows, Ditmar & Harding, has had abont $400 worth of work done on the claim, the ledge being traceable for more than a mile. Assays from croppings, $18 to $68 per ton. Tunnel now running to reach the ledge at the depth of 200 feet.

San Pedro Mining Company,

Mr. L. A. Gould, superintendent and chief owner, has commenced to run a seven by seven feet tunnel, similar to that of the Barcelona Consolidated and the Sonth Barcelona, for one or two ledges standing out in bold relief at a considerable hight above the surface and extending along the side of the mountain. The principal ledge will be tapped at the depth of 400 feet. Here was noticed, and being got in readiness for operation, one of the Morse diamond tunneling drills, a similar pattern having been seen on exhibition last year at the Mechanics' fair, in your city. Immediately adjoining and belonging to Mr. J. R. Seymour, of Belmont, are the Cosmopolitan—linear extent, 1,500 feet—and the Clipper, below, 600 feet. A short incline had beeu run on the former, and a cut of 90 feet in length and 10 feet in depth had been made on the other. The San Pedro, as well as the Cosmopolitan and Clipper, gives good fair assays, and all havs the usnal favorable indications of the district.

A Cinnabar Discovery.

Abont three miles southwest of Barcelona City, a very promising vein of this mineral is said to have been found, on which about a dozen locations have been made. A brief description of the Maryland, belonging to Messrs. Oberdorf, McCrea et al, will snffice for all and close the accounnt of Spanish Belt. Ths cinnabar is found in a vein running through the granite, in connection with spar, near the surface, cropping out from 10 to 15 feet, but said to change to porphyry as it was followed down the distance of 12 feet, the greatest depth as yet reached. It assays from two to 24 per cent., and was looked npon as an important discovery.

Belmont District.

Belmont, 90 miles south of Austin, is rather a neat and comparatively flourishing mining village, of about 500 inhahitants, giving a good support to at least one weekly joornal, the Belmont *Courier*, and very justly hoasting of having one of the handsomest brick structores in the State, wherein even-handed justice is meted out, it is presumed, in strict accordance with law—*lex scripta* as well as *lex non scripta*, as the lawyers would say. At any rate, several intelligent gentlemen of the legal fraternity were met with here, together with many mechanics, miners and citizens, directly or indirectly interested in the development of the mines of the country, who were unmistakahly very appreciative readers of the MINING AND SCIENTIFIC PRESS. A constant reader and a wide-awake mechanic of the place gave me some very interesting facts in reference to the

Pecuniary Value of Your Paper,

Which I regret not noting down at the time, as the illustrations were so apropos and so much to the point; the gist of the matter, however, being that he had realized many times the amount of the subscription, in a moneyed point of view, saying nothing of the intellectual treat served upfrom week to week in the columns headed, "Scientific and Mechanical Progress," or under the more general caption, "Useful Information." Many oases might be reported of the valne of the PRESS in this respect, where single articlss led to the realization of larger or smaller amonnts; one gentleman in Sacramento having, from a paragraph on "Lead Pipe," made the snug little sum of $500 within the space of a couple of months. I hope you will pardon this little disgression, as it might meet the eyes of some one who thinks he cannot afford to subscribe for the PRESS, when, in fact, if he only knew it, he cannot well afford to be without it.

The Mineral Deposits of Belmont

District, are bounded with granitic rock on the west, extending in a northerly and soutberly direction, and on the east by the slate and quartzite. In accordance with the view of Mr. W. F. Leon, superintendent of the El Dorado South, a gentleman of much prnctical experience and apparently well versed in the geological formation of the country, there is here one large, true fissure or mother vein, from its gangue and salvage helieved to be similar in kind and cheracter to some of the most celebrated mines of the world.

Excepting abont 250 feet at the southern extremity, the vein is plainly traceable throughout the entire property of

The El Dorado South,

Which consists of 1,000 feet, covered hy U. S. patent to W. F. Leon & Co., saiö to be the first issued for mining property and signed by Andrew Johnson. It presents all the characteristics of a true fissnre vein; the formation, slate. The contents of vein consist of a "camphory" looking quartz, richly clouded with black and antimonial snlphurets of silver, which are represented to be in a more or less advanoed state of chlorinization ahove the water line.

The pay stratum is found at times permeating the entire vein, at other times in chloride strata above the solid ledge. The ores consist chiefly of beautiful crystallizations, including native or metallic silver, a combination of silver and antimony, horn or chloride of silver, sulphurets of silver and iron, stromeyerite, stetefeldtite and carbonate of copper; the best ore heing associated, uanally, with the oxide of oopper and irou. In such cases, the percentage of silver is very great, amounting at times, to 25 per cent. of the entire mass. Formerly the mine was worked by an incline from the croppings. Large quantities of chloride and sulphuret ores were extracted, yielding to date over $1,000,000, the average per ton being given at $100. It is now bsing systematically opened by a perpendicular double-compartment shaft, to tap the ledge at the depth of several hundrsd feet, after which there will he sofficient backs of ore to rnn the company's 20-stamp mill for many years, the same being so conveniently situated that the ore can he dumped into its ore-chambers from the shaft. Tbe pay shntes formerly worked were from three to fiftesn feet in width. The depth of the Leon ehaft, alluded to, is at present in the neighborhood of 420 feet. The 300-foot level has been extended nbout 90 feet, and the 400-foot level about 200 feet. In connection with this property of the company, they also own the Arizona, from which large hodies of chloride ore have been taken. On the south of the company's ground is the Josephine, although as yet worked to no great depth, nnd it seemed to be the general impression among miners here that nll the bodies of ore fonud in the former will run also into the Josephine, and, in consequence, considerable hopes are entertained for the fntnre. Owing to the absence of the snperintendent of

The Belmont Mining Company,

Another leading mine of ths district, only a few facts were obtained, but sufficient, it is hoped, to show something of its great value, past, present and prospective. Its past history is well known to have heen an exceedingly prosperons one up to about one year ago, having yielded to that date, according to different estimates, from $900,000 to $1,300,000, the latter amonnt being believed as nearer the correct figures. Dnring the past year the work has been vigorously prosecuted in making further developments, having now reached the perpendicular depth of 530 feet. The east vein was cut at the depth of 430 feet and the west vein, supposed to be the celebrated High Bridge ledge, at the bottom of the shaft, whence levels are now being run, one from the cross-cut from shaft 60 feet on the east vein and another on the hack ledge, extending 100 feet. There is a stope of ore between the 200 and 300-foot levels 350 feet long by 150 feet deep and 6 feet thick, from which very high grade ore is now being extracted, thought to he the richest ever taken from the mine, and if any one will take the pains to calculate the cubical contents from the figures given above, it will be seen that the quantity is by no means inconsiderable, and as the ore is estimated to average somewhere from $150 to $250 per ton, with samples running as high as $600, the prospects for a good yield for some time to come ought to be looked upon, to say the least, as flattering.

The immense body of water encountered a year or so ago has oow been pretty thoroughly drained by means of their fine pumping machinery, consisting in part of two 10-inch Cornish pumps, costing, with setting up, it is said, about $25,000, and at present in splendid condition, giving entire satisfaction to the company.

From 35 to 40 miles sontheast of Belmont is the Tybo mining district, an unusually lively camp, made so particnlarly through the operations of one company.

The Tybo Consolidated,

Comprising the Two G, from which most of the ore is derived, the Bunker Hill and other olaims, has two furnaces in snccessful operation with daily capacity for 40 and 60 tons respectively and now prodncing about 175 tons of bullion per month, although not being worked up to their full capacity; the bullion running from $400 to $500 per ton.

The company's large 20-stamp mill will bs started up together with one of the White roasting furnaces, recently procured, ahout the 1st of December, for the purpose of working a large amonnt of low grade milling ore already on the dump, with much more within sight in different portions of the miue. It was not until very lately auy process was known here for its profitable reduction, until a quantity was tested in one of these furnaces at the Jefferson mill, where the ore was found to chloridize as high as 94 per cent. The ledge is well defined, average width 6 feet, in some places as much as 20 feet, and the wider the vein the richer the ore, just the reverse of the fact as observed in the Austin mines. It is denominatsd hy experts a "contact fissure" hetween the limestone and porphyry. As the lime is bounded hy the slnte aud the porphyry by the granite, these, in a broader sense, might be viewed as the walls of the ledge, particularly as what is called porphyry at certain points examined seemed to bs nothing more nor less than a metamorphoeed granite.

The Two G

Is a remarkable mine in view of the fact that the surface, so far, bas scarcely heen scratched, the greatest depth of main shaft only 230 feet, although, owing to the trend of the mountain as related to the conrse of the vein, a greater depth from surface has been reached in one direction. Six levels have been opened, the fifth and largest abont 700 feet, the ore bodies holding out well in all the winzss, drifts and stopes and improving in character with the developments. There is more thau enough of ore in sight to keep the mill and furnaces running for the next 12 months if sinking and drifting were stopped to-day. But these move forward like clock-work simultaneously with the working of the furnaces, which not only pay all running expenses as well as for progressing developments, bot leave a considerable margin for profits besides. At leaet two more furuaces will be found necessary and will be eréoted during the year.

Every facility for information was furnished by Mr. W. W. Bausman, in charge of the books, and by Mr. M. D. Howell, the snperintendent, and hy Mr. F. Nowell, the foreman, for a thorough examination of the entire undergronnd workings, to whom great credit is due for the perfect system, exhibited not only in all the interior developments hut also in regard to all the exterior arrangements, whether of mill, mine or furnace, as compared with some bungling end "dead work" occasionally encountered.

Work is progressing on the Bunker Hill, another mine of the company, from which some good ore has been worked. It is called a western extension and looked upon as promising.

The Virginia,

Adjoining the Two G on the east and on higher ground, has a linear extent of 1,500 feet wide, and has been opened by a shaft 80 feet deep; ore vein, two and one-half feet wide and taking out ore similar in character to that of the Tyho Consolidated, and at the same depth may show a vein fully as large and valuable. It is owned by Messrs. Dimick, O'Connel, Garrett and Josleyn, citizens of Tybo or vicinity, and is looked upon, prospectively at any rate, as of great value. There was another location made hers by Messrs. Garrett, Josleyn and others, which probably should have had precedence in the order of mention from priority of location, which exhibits on the surface, or at the depth of 65-foot shft, ore similar in all respects to the above mentioned.

The Thunderstorm,

Owned by Mr. Rosenthal and others, one-half mile helow the mill of the Tyho Consolidated, is said to have been pronounced by the State geologist, and at least one distinguished professor, as a true fissure vein. It is very conveniently located for advantageous working, as it crops out at a considerable elevation on the mountain side, requiring hut n very short tunnel to tap the ledge at a great depth. Published nssays have appeared, running from $35 as high as $2,500.

An account of the numerous extensions on what is viewed as the main lode of the district, together with some notes from outside districts not visited, are necessarily omitted owing to the already too protracted length of the present communication, so that it will be drawn to a close by a brief mention of a claim known as

The Independence,

A consolidation of two locations, on what is snpposed to be a parallel lode, and situated a thousand or more feet distant from the Two G hoisting works and on the sonth side of the main ledge, the property of Mr. Luse and others of Tybo. A shaft had bsen sunk 65 feet, showing a two and ons-half foot ledge, with about 18 inches of pay ore, mostly milling, with some black sulphurets of silver. Some ore was seen on the dump said to assay from $100 to $150, or even higher figures, with average samples given at $114, which is considersd favorable for the class of ore in this locality.

The mines of Eureka will probably he heard from next. A. C. K.

In the Mountains.

(Written for the PRESS.)

After providing ourselves with the necessaries for a long drive, we left our stopping place upon the South Yuba for a trip to Webber lake and other places of interest. For the first twelve miles we travelled over the graded toll road mentioned in a former letter, which is for the most part exceedingly well built and is kept in good order. This part of the road leads us over the monntains between the valley of the South Yuba and that of Canyon creek, upon which latter the dam of the North Bloomfield gravel mining company is situated. This dam—(known as Bowman's dam, from the original owner of the ranch which now forms the lake)—is very strongly built across a narrow pass through whioh the creek runs, and the lake formed by it covers an extent of abont 1,000 acres. This dam is now heing raised and strengthened, and when finished will give thirty feet more depth of water and a probable area to the lake of about 1,200 or 1,500 acres. A flume leads from this dam along the mountain side, and carries water to the mines of the company. The establishment of the company at this point is a good illustration of moontain hospitality in its hest forms. The traveller is always welcome, and nobody ever need pass the station hungry, hut it is against their rules ever to receive payment for what one may eat.

Soon after leaving Bowman's dam we strike the

Old Henness Pass Road,

Famous before the advent of the railroad as the great road to Virginia City. Little now remains to show tbe immense amount of traffic which formerly passed over this road, except the ruined wayside houses which are scattered along at intervals of two or three miles.

The road, althongh neglected, is in a pretty fair condition for a mountain road, and hns many points of interest. Throngh this pass the late Mr. Judah, formerly engineer of the C. P. R. R., made surveys and reported favorably upon this route for the railroad. It is stated, on good authority, that if the road had been built here the grade from Alta to the summit need not to have exceeded 70 feet to the mile, and from the summit to Truckee it might have been made not to exceed 25 feet, while the difficulties of construction and maintenance would have been considerahly reduced.

Rain commenced falling just before our noon camp, and we made the remaining fifteen miles with alternate rain and sunshine. At Jackson's ranch, one of the former stopping placee, the hotel and most of the other buildings have been crushed hy the snow, and all is now desolate, where, in former times, as many as seventy-five large teams, with a proportionate amount of other travellers, could be seen stopping for the night. This place, for which $30,000 were refnsed at that time, could now be bonght for a few hnndred.

Webber Lake.

Towards night we arrived at "Webber's," glad enoogh to rest from our rough ride, and ready to do justice to the supper awaiting us.

Webber lake is a beautiful sheet of water, nearly round aud about a mile in diameter. It is situated a short distance beyond Henness

Continued on Page 238.

MECHANICAL PROGRESS.

The Care of Machinery no Mystery.

The *Mill Stone*, a monthly journal published at Indianapolis, Ind., one of the many good papers printed in the interest of special trades at the West, gives to its readers the following sound advice on the watchful care necessary in operating machinery:

To correctly plan and devise improvements in machinery involves the exercise of a considerable degree of original genius; and to fully develop such improvements, and to bring them into the most practical shape, requires, in addition to this, the application of acquired knowledge of the construction of the machine or mechanical combination, in such manner that each of the different parts thereof may be properly proportioned and arranged with reference to the particular function which it is designed to fulfill. When this is done, and the work completed, its useful mission has commenced, and inventive talent or skillful instructors need not be employed upon it, unless it should be to modify or add further improvements. Yet, however complete in itself, or however effectually it may perform its work, it is not endowed with the faculty of self-preservation, and, unless it be properly cared for, will be subject to numberless accidents and injuries, involving not only its own immediate or ultimate destruction, but, in many instances, the loss of life or limb to those employed in its operation. This necessary care requires, not the expert mechanic or professional skill, but simply the exercise of common sense. It is by prompt attention to the little things that the maximum efficiency and durability is attained, with properly designed and constructed machinery. When the bearings of shafts and the spindles are not oiled sufficiently, not only does the increased friction require a greater amount of driving power, but the bearings are roughened or destroyed in a proportionate degree. When the caps of journal boxes are left too loose, the journal wabbles, and, if there is gearing attached to the shaft, its teeth are badly worn out of shape; while, if the caps are screwed down too tight, the oil is forced out, the journal heats, and both the shaft and bearing are soon rendered worthless. These matters are of no small moment, and the aggregate loss resulting from inattention to them is very great. It is not confined alone to the machinery of mills and other manufacturing operations, but occurs in a very much greater degree in machinery employed in agriculture. Many a thresher, horse-power, or harvester has been branded of bad construction, and been prematurely disabled, when a few drops of oil, or one or two turns of the wrench, were all that were required to set things to rights. Many other items might be mentioned, in which attention to little details, requiring only an application of ordinary common sense, will guard against great and unnecessary waste of power and damage to machinery; but these are sufficient to illustrate the almost self-evident proposition that, while talent is required to originate, and practical knowledge to construct machinery, its most efficient operation, and the profit in its use resulting therefrom, can only be secured by bringing to bear upon its management the plain, ordinary principles derived from every day observation and experience.

WAVE POWER.—Additional experiments made in England with Mr. Tower's machine for obtaining motive power from the motion of a ship among waves, says the *Iron Age*, have attracted renewed interest in the invention, and also in the general scientific question which it undertakes to solve. The machine has at least the merit of simplicity, consisting in principle of a weight supported on a spring so that it can oscillate on the spring through a considerable range in a vertical line. The scale of the spring, and, consequently, the natural period of oscillation of the weight, can be varied at will. When it is so adjusted that it synchronizes with the waves, the oscillations become very violent, and a large amount of power can be obtained from them. In practice the springs consist of highly compressed air, pressing on the rims of hydro-pneumatic cylinders, and the arrangement is such that the vessel containing the compressed air forms the moving weight. The inventor has designed a machine for working an auxiliary propeller of a sailing ship of 1,800 tons displacement. The moving weight in this case is 200 tons, and it is shown by calculation that it would give about 30 horse power in the long swell met with in the tropical calms, 260 horse-power in the average ocean waves, and more than 600 horse-power in a heavy head sea. The space occupied by the machine is represented as comparing favorably with a steam engine of the same power.

PNEUMATIC RAILWAY.—A pneumatic railway, for the dispatch of messages between Paris and Versailles, just completed, is nearly 13½ miles in length. The tubes, made of brass, are three and a-half inches in diameter, and two-fifths of an inch thick. They are laid at a depth of eight feet from the surface, on a flooring of wood, and are pitched both inside and out.

SHIP SAFE.—A proposed safe for vessels is a buoy with proper compartments for bullion, jewels, etc., and not liable to be sunk or lost for years, as has frequently been the case with ordinary bullion safes when the vessels carrying them have been lost. The idea has been patented by J. L. Goutey, of New Orleans.

LIQUID INDICATOR.—Dr. Simens has designed an instrument by which a stream of alcohol and water mixed in any proportion is measured in such a manner that one train of counter wheels records the volume of mixed liquid, while a second counter gives a true record of the amount of alcohol contained in it. The principle on which this measuring apparatus acts may be shortly described thus: The volume of liquid is passed through a revolving drum, divided into three compartments by radial divisions, and not dissimilar in appearance to an ordinary wet gas meter; the revolutions of this drum produce a record of the total volume of passing liquid. The liquid, on its way to the measuring drum, passes through a receiver containing a float of thin metal filled with proof spirit, which float is partially supported by means of a carefully adjusted spring, and its position determines that of a lever, the angular position of which causes the alcohol counter to rotate more or less for every revolution of the measuring drum. Thus, if water only passes through the apparatus, the lever in question stands at its lowest position, when the rotation motion of the drum will not be communicated to the alcohol counter; but in proportion as the lever ascends, a greater proportion of the motion of the drum will be communicated to the alcohol counter, and this motion is rendered strictly proportionate to the alcohol contained in the liquid, allowance being made in the instrument for the change of volume due to chemical affinity between the two liquids. Several thousand instruments of this description are employed by the Russian government in controlling the production of spirits in that empire, whereby a large staff of officials is saved, and a perfectly just and technically unobjectionable method is established for levying the excise dues.—*Nature.*

METALLIC RAILWAY CARS.—The building of metallic railroad cars has been in course of experiment for some time. Steel freight cars are suggested, as they are far less in weight than those constructed of wood, thus saving wear and tear of the trucks. It is claimed that a steel car can be made weighing no more than seven tons, that will carry twice that weight of freight. If the tracks are of steel, a car of 10 tons weight can be made that will carry 25 tons of freight. The construction of these vehicles is also stronger and more durable than the wooden cars. Already many iron cars are in use, and freight cars of sheet iron have been made at Pittsburg, and the belief is expressed that the new style of freight car can be successfully constructed. But before it can be generally introduced its cheapness in the long run must be made apparent, as that is the element which, after all, will decide whether cars are to be made of wood, iron, or steel. At present wood is much the cheaper and most easily worked material, and it will continue to be used until iron or steel can underbid it either in actual first cost or else in the demonstration of a much greater durability that will compensate for increased original expense.—*Philadelphia Ledger.*

MONSTER MACHINES.—The growth of the guns has necessitated a corresponding increase in the size and power of the machinery by which they are produced, and nearly all the plant of the Royal gun factories is about to undergo a transformation. *Iron* says: "Two very remarkable lathes are being made in the Dial square with the view of being prepared to turn out rapidly a succession of 80-ton guns, and if requisite to set to work upon monsters yet more tremendous. These lathes are to be nearly 80 feet long, and fitted with double saddles and quadruple gearing, and they will be capable of slicing off iron shavings eight inches broad, and thick in proportion, at a cut. A remarkable crane has been planned and is about to be erected in rear of the Royal gun factories, Woolwich. It may be described as a circular traveler. On a strong pedestal about 30 feet high, two arms or branches will radiate horizontally like the hands of a watch, the extremities of which will rest upon a circular platform supported by columns. The branches will be moved by steam power all around the compass, pivoting on the center, and it is estimated that with sufficient tackle they will lift 1,000 tons."

AN IMPROVEMENT NEEDED IN SLEEPING CARS. A writer to the *Railroad Gazette* says: "The recent accident on the St. Louis, Kansas City & Northern railway, at which the treasurer of that road and some other passengers lost their lives by reason of the 'shutting up' upon them of the upper berth in which they were sleeping, should induce the Pullman Palace car company to take at once the necessary steps, by some efficient appliance, to prevent the possibility of such a horrid fate to any passenger. Surely some simple means can be devised to insure the rigidity of the berths, even after the spring gets loose, at some point where the passenger can get out; and every one of the hundreds of the Pullman coaches should have the upper berths secured in that manner without a moment's delay."

LEASING FARM MACHINERY.—A company has been formed in England who propose to furnish machinery to farmers, manufacturers and others, on a purchase-hire system similar to the practice of sewing machine and piano manufacturers in this country, of periodical payments extending over a term of one, two and three years. The English company has a capital of $5,000, divided into shares of $50, and was lately registered as a legally organized corporation.

SCIENTIFIC PROGRESS.

A Chance for Applied Science.

The address at the opening of the British Science Association was made by the President, Dr. Andrews, and was very able. Among many other things he said: In the application of science to the useful purposes of life, chemistry and mechanics have run an honorable race. It was in the valley of the Clyde that the chief industry of this country received, within the memory of many here present, an extraordinary impulse from the application by Neilson of the hot-blast to the smelting of iron. The Bessemer steel process and the regenerative furnace of Siemens are later applications of high scientific principles to the same industry. But there is ample work yet to be done. The fuel consumed in the manufacture of iron, as, indeed, in every furnace where coal is used, is greatly in excess of what theory indicates; and the clouds of smoke which darken the atmosphere of our manufacturing towns, and even of whole districts of country, are a clear indication of the waste, but only a small portion of the waste, arising from imperfect combustion. The depressing effect of this atmosphere upon the working population can scarcely be overrated. Their pale, I had almost said etiolated, faces are a sure indication of the absence of the vivifying influence of the solar rays, so essential to the maintenance of vigorous health. The chemist can furnish a simple test of this state of the atmosphere in the absence of ozone, the active form of oxygen, from the air of our large towns. At some future day the efforts of science to isolate, by a cheap and available process, the oxygen of the air for industrial purposes may be rewarded with success. The effect of such a discovery would be to reduce the consumption of fuel to a fractional part of its present amount; and although the carbonic acid would remain, the smoke and carbonic oxide would disappear. But an abundant supply of pure oxygen is not now within our reach; and in the meantime may I venture to suggest that in many localities the waste products of the furnace might be carried off to a distance from the busy human hive by a few horizontal flues of large dimensions, terminating in lofty chimneys on a hillside or distant plain. A system of this kind has long been employed in the mercurial mines of Idria, and in other smelting works where noxious vapors are disengaged. With a little care in the arrangements, the smoke would be wholly deposited, as flue-dust or soot, in the horizontal galleries, and would be available for the use of the agriculturist.

PHYSIOLOGICAL EFFECT ON CONDENSED AIR.—The *Engineer* says: M. Bert, of Milan, has for a long time been conducting a series of experiments with a view of determining what are the physiological effects of condensed air on the human system. Many engineering works of the day involve the necessity of workmen carrying on their operations under various pressures of air, to say nothing of the fact that the rise and fall of the barometer involve us all in changes differing only in degree from that which the diver experiences when he descends from the surface of the water to a depth of fifteen or twenty fathoms beneath it. M. Bert thinks that the influences of ordinary changes of air as indicated by the barometer are due exclusively to the varying quantities of oxygen contained in the air inhaled. The pressure of oxygen and the consequent amount of it which finds its way into the blood, he shows, depends upon the centesimal proportion of it in the air and upon the barometrical pressure; and he says that the mischief which operatives in air-tight dresses so often experience from the density of the air they are compelled to breathe, might be completely obviated if an atmosphere were composed of air and nitrogen nicely adjusted in proportion to the pressure under which the mixture was passed along the tubes. Although it has been stated on good authority that a man may follow avocations involving the breathing of condensed air in certain cases not only without injury but even with advantage, there are also many cases in which injury is believed to result, and M. Bert's experiments may prove to be of great benefit to them.

LIGHTNING RODS.—Dr. Mann read a paper at the science conference at South Kensington, whose purpose was to show how unimportant is the form of lightning conductors, whether rods, ropes or pipes; and that the real desideratum is that they shall be of sufficient size to afford an unobstructed path for the passage of the electric fluid. He insisted on the necessity of a goodly number of points, and above all upon the indispensability of large earth contact, saying that a lightning discharge passing through a large rod with an ample earth contact is only a gentle stream of low tension; but that, if the size of the rod or the area of its contact with the earth is diminished, the tension is increased, and the fluid has a dangerous tendency to discharge itself laterally by chance outlets.—*Journal of Telegraph.*

SCIENCE TEACHING IN ABERDEEN.—The citizens of Aberdeen are about to form an association to establish a school of chemistry and agriculture, in which botany and physiology will also be taught. Chemistry has hitherto been taught in the Mechanics' Institution in the city, but the school there has not sufficient accommodation, nor the proper appliances for the modern laboratory.

Notes on Blowpipe Analysis.

H. B. Cornwall writes: In a note published in the *American Chemist*, March, 1872, I stated that Van Kobell's iodide of potassium and sulphur test for bismuth gave also a marked reaction with lead compounds. The characteristic yellow sublimate which it affords with lead compounds is nearly as volatile as the real sublimate obtained by it with bismuth compounds, both of them being formed at a greater distance from the assay than the simple yellow coatings of oxidee of lead and bismuth which frequently accompany them. The iodide of potassium and sulphur mixture constitutes a simple and very delicate test for lead, even in presence of a very large amount of bismuth, as experiments will show, and I direct the students to rely chiefly upon it, remembering only that the iodide of lead (?) sublimate is much more volatile than the simple yellow coating of oxide of bismuth or lead, which always lies near the assay. A few precautions are necessary in using the mixture as a test for lead, and also for bismuth to a certain extent.

Mercury compounds will often afford a yellow, sometimes a reddish sublimate with the mixture; sulphide of arsenic in large quantities, a yellow sublimate; sulphide of antimony, an orange, sometimes a reddish sublimate; cadmium compounds the yellowish brown coating of cadmium oxide, which might mislead beginners. All of these can be removed by a preliminary treatment with a moderate oxidizing flame, to such an extent as not to interfere with the lead or bismuth reaction, and they should be so removed when present in large quantities. Finally, some tin compounds yield a yellowish sublimate with the iodide mixture, but it is very near the assay, and quickly becomes white on continuing the blast. These facts have partly been brought to my notice during practice with classes, and therefore will be of interest mainly to beginners, who are most liable to be deceived by the reactions given. The mixture is, however, highly to be recommended in testing for lead, having given indications of that metal in bronze and cadmiferous calamine, when all other blowpipe tests failed; the lead in the bronze was overlooked by an experienced chemist.

Experiments with Preserving Wood.

The *Polytechnic Review* makes a summary of some valuable experiments which have been made with preserving wood with different mineral solutions. The tests were made with railway sleepers. Of pine sleepers impregnated with chloride of zinc, after 21 years of service, the proportion that had been renewed was 31 per cent.; of beech sleepers impregnated with creosote, after 22 years, 46 per cent. had been renewed; of oak sleepers, not impregnated, after 17 years, 49 per cent. had been renewed; of oak sleepers treated with chloride of zinc, at the expiration of 17 years, 20.7 per cent. had been renewed. In all of these cases, the conditions to which the wood had been exposed were very favorable—the road-bed being a very good one, and permitting of excellent drainage.

Test samples taken from sleepers that were allowed to remain at the expiration of the respective periods named, exhibited a perfectly sound cross-section.

The following statement contains the results of a similar set of observations made upon the Kaiser-Ferdinands Nord R. R., viz:

According to these observations, the proportion of renewals was, with oak sleepers (not treated) after 12 years' service, 74.48 per cent.; with oak sleepers, treated with chloride of zinc after seven years, 3.29 per cent.; with oak sleepers, impregnated with creosote oil, after six years, 0.09 per cent.; with pine sleepers, impregnated with chloride of zinc, after seven years of service, 4.46 per cent.

The practice of the Kaiser-Ferdinands-Nord R. R., since the year 1870, has been to employ only oak for sleepers, which are impregnated either with chloride of zinc or with creosote oil.

ON THE GEOLOGICAL AGE OF VEINS OF MERCURY.—Attention has been called, says *Iron*, to the fact of native mercury presenting itself, in various parts of France—the Cevennes, Heranlt and Aveyron—in places but little below the surface of the soil, betraying its presence by its effect on vegetation, and through that on animal life. Virlet d'Aonst recalls the fact that the Abbe Sauvage pointed out the existence of the same metal in the most recent tertiary formations in the neighbourhood of Montpellier, and that Daniel Sharpe mentioned a Portuguese mercury mine, worked at the end of last century, which was situated in the upper tertiary sands. At Guadaloczar (San Luis Potosi) the author of this note has seen cinnabar extracted from the calcareous formations of the chalk period, which the mercury had penetrated; as, however, mercury is frequently met with in the argentiferous veins of the country, it may be concluded that it is of their age. In Spain, whilst the famous mercury mines of Almaden, in Andalusia, are situated in silurian strata, those of Mieres, in the Asturias, lie in the coal strata. In the latter locality the mercurial emanations have penetrated to the alluvial strata, probably old, which rest upon the coal formations, and have impregnated them over considerable surfaces; they form patches in the soil which might serve as indications of the generating veins.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company	1 W'k to Sept. 14.		1 W'k to Sept. 21.		1 W'k to Sept. 28.		1 W'k to Oct. 5.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adame Hill	....	....	....	....	....	....	....	....
Advsnce	....	....	....	....	....	....	....	....
Alpha	49¼	46	47½	45½	46½	42½	47	44¾
Alta	2⅞	....	2½	2¼	3½	2½	2⅝	....
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	1	....	....	....	....	....	....	....
Andes	2½	2¼	2½	2	2	....	2½	2
Alps	75c	....	....	95c	87½c	75c	75c	....
Amazon	....	....	80c	....	80c	75c	....	....
Ballou's Con	2¾	2½	2¾	2¼	2¼	....	3½	2½
Belcher	22¾	21	22¾	2 3/4	21½	21	22¼	21½
Belmont	2¾	2¼	2½	2¼	2½	2	2½	2
Best & Bel	48½	46¾	49¼	45½	47	44	48⅞	46⅝
Buckeye	1 5c	....	....	....	....	....	....	....
Bullion	44½	39	37	35½	35½	31½	38	35
Caladonia	8	7⅝	8¼	9	10	8½	10¾	9⅝
California	61¾	59	63	59¾	61	59	62½	61½
Challange	....	....	....	....	4¾	....	....	....
Challar-P'ki	94	93½	94½	83	83	83	89	87½
Confidence	17¾	....	17	16¾	16	15½	17	16¾
Con Imperial	5½	4½	5⅝	4½	4⅜	4½	4.40	4.60
Con Virginia	59¾	53½	59	52½	55¾	52	57	54⅝
Crown Point	11¾	10	12¾	11¼	12	11¼	12	11¼
Coso Con	16c	15c	15c	12c	25c	15c	60	20
Daney	....	....	....	....	....	....	....	....
Dayton	5	....	4½	5	....	....	....	....
Eclipse	....	....	....	....	....	....	....	....
Empira (Id)	....	....	....	....	....	....	....	....
Eureka (E'y)	....	....	....	....	....	....	....	....
Eureka Con	13	12	16½	13	13⅝	13	15¼	13½
Exchequar	19¾	15½	15	14¼	15	12¾	15½	14¼
Enropa	....	....	....	....	....	....	....	....
Gila	87½c	75c	75c	....	60c	....	70c	....
Globe Con	25c	18c	20c	....	15c	....	....	....
Goldan Char	2¾	1¾	⅞	1½	1¼	1¼	1¾	1¼
Gonld & Cur	16	15	16	15	15¼	14¼	15	14¼
Bala & Nor	12¾	11⅜	11¾	10½	12	10¼	10¾	10¼
Ida Elmore	....	....	....	....	....	....	....	....
Jefferson	1	....	....	....	....	....	....	....
Julia	8	6⅞	7¾	7¼	7	7¼	6⅞	....
Justice	23½	20½	19½	18	18⅜	17½	19¼	18
Jackson	4	3¾	3⅞	3¾	3¾	....	4	....
K K Con	3	....	....	....	....	....	2¾	....
Kentuck	13	12¾	13	11¼	12	10¾	11¾	....
Knickerb'k'r	....	....	50c	....	....	....	....	....
Kossuth	1	87½c	1⅛	1⅛	1¼	1⅜	2	1¾
Lady Bryan	45c	37½c	60c	35c	40c	27½c	30c	25c
Lady Wash	2½	....	3½	3	3	....	3	....
Leo	....	....	....	....	....	....	....	....
Leopard	10	9½	10½	8¾	11¾	9¾	10⅝	8¾
Leviathan	87½c	37½c	81½c	75c	87½c	75c	95c	80c
Mahogany	....	....	....	....	....	....	....	....
Mansfield	25c	....	....	....	....	....	....	....
Meadow V'y	1	75c	75c	60c	75c	....	62½c	50c
Mexican	36	34½	35½	32¾	33⅞	28½	30¼	27½
Midas	....	....	....	....	....	....	....	....
Mint	20c	....	2 c	....	....	....	....	....
Monitor-Bel	....	....	....	....	....	....	....	....
Nawark	....	....	....	....	....	....	....	....
New York	75c	62½c	75c	65c	70c	65c	1½	....
Niagara	25c	....	20c	....	....	....	....	....
Northern Belle	25¾	24¾	24	23¾	24¼	22½	23	18¼
Naw Coso	2¾	1¾	2⅝	2	3	2	3⅜	2⅞
Occidental	....	....	3¼	3	3⅜	3	3	2⅞
Ophir	60	58¾	60½	56½	59	55¾	56¾	51
Or Gold Hill	....	....	....	....	....	....	....	....
Ovaman	72¾	69¾	77	73	82	74⅜	81	77½
Pacific	....	....	....	....	....	....	....	....
Phil Sheridn	1	10c	....	....	....	....	2⅞	1
Plocha	....	....	....	....	....	....	3 c	2c
Poorman	90c	40c	1¼	1	1¼	75c	2	75c
Prospect	3	2	2¾	1⅞	2	1½	....	....
Prnssian	....	....	....	....	....	....	....	....
Ray & Ely	5½	5	6	5½	6	5	6	....
Rock Island	1¾	....	1½	....	1½	1⅜	1⅝	1⅜
Rye Patch	....	....	....	....	....	....	....	....
Savage	21½	20	20½	17¾	19	17½	18¼	17½
Ssg Belcher	16	15	19	16	19	15	....	....
Sierra Nav'da	14¾	14	14½	13¾	14¾	12⅞	14	11¾
Silver Hill	10	9	9¼	8	9	8	8⅞	8½
Sth Chariot	60	50	....	....	....	....	....	....
Succor	75c	60c	50c	....	....	....	20c	....
Union Con	14⅜	14⅛	14½	14¼	14¾	12½	13⅞	12½
Utah	21½	20¼	21⅝	20	20	19	19	18
Wells-Fargo	....	....	20c	....	20c	....	....	....
Woodville	....	....	1⅝	....	1¼	....	....	....
Yel'w Jacket	28½	27½	30¼	24½	26	23¼	26½	25

Sales at S. F. Stock Exchange.

FRIDAY, A. M., SEPT. 29.

110 Andes 2¢
190 Am Flat 2¢
310 Alpha 45@45½
50 Bullion 33½
100 Beach & Paxion 50c
180 Best & Bel 47½@47¾
135 Belcher 21¾@21½
1000 Belmont 25c
755 Caledonia 10@9¾
195 Crown Point 11¼@11½
50 Confidanca 16
1215 Con Imperial 4½@4.45
105 California 61½@61¾
20 Chollar 85½
1090 Con Virginia 55½@55⅝
100 Cosmopolitan 22c
100 Dardanelles 2
220 Exchequer 14¾@14½
185 Gonld & Curry 14⅜@15
285 Hala & Nor 10¾@10⅝
220 Julia 7
310 Justice 15¾@15⅜
50 Kossuth 1½
40 Lady Wash 3
795 Laviathan 95@80c
160 Morning Star 4@3¾
425 Maryland 2
800 Mexican 30¼@30
40 New York 1
285 North Con Vir 1¼
240 Overman 19@18¾
225 Ophir 56½@56
50 Occidental 3
3115 Prospect 87½@75c
75 Phil Sheridan 1@1⅛
50 Rock Island 1¾
270 Savaga 18@18¼
680 Sierra Nevada 14@13⅞
5 Hill 8¾
1600 Trojan 8@7¾
615 Union 13¾@13⅞
10 Utah 19½
100 Woodvilla 1½
745 Yellow Jacket 25½@25¾

AFTERNOON SESSION.

100 Alps 75c
180 Best & Belcher 47¼
50 Belmont 2½
361 Caledonia 10@9⅞
290 California 61¾@62
10 Crown Point 11¼
120 Con Imperial 4½
290 Eureka Con 13½
20 Gonld & Curry 14¾
100 Gen Thomas 1½
50 Goldan Chariot 1¾
100 Hale & Nor 10¾
400 Hussey 80c
450 Leopard 10½@10¾
140 Meadow Valley 62½@60
105 Maxican 29¾
345 Manhattan 15¾@16
140 Northern Belle 22¼@24
105½ New Coco 3¾@3⅝
285 Ophir 56½@56¾
40 Overman 18½
1110 Prospect 1⅞@2
1510 Poorman 85c@81
55 Ray & Ely 5¾
30 Savage 18
230 Yahow Jacket 25¾@25⅞

SATURDAY, A. M., SEPT. 30.

50 American Flat 1
150 Alpha 46@46½
25 Alta 2⅝
275 Belcher 21¾
240 Bullion 38@36
90 Baltimore Con 2¾@3
385 Caledonia 10
745 California 61½@62
60 Confidence 16¾@17
265 Crown Point 11¼@11½
60 Chollar 85c@81
1730 Con Virginia 55⅞@56⅞
2265 Con Imperial 4½@4.6
595 Exchaoger 14¾@15
210 Eureka Con 13½@13¾
105 Gonld & Curry 14¾@14¾
75 Hale & Nor 10¾@10⅝
275 Julia 7¼@7⅛
60 Justice 18¾@19
10 Kantnck 11¾
1035 Maxican 29½@29¾
100 Meadow Valley 50c
65 New York 1
145 Ophir 55½
185 Overman 19@18¾
50 Occidental 3
80 Phil Sheridan 1½@2
50 Ray & Ely 6
360 Rock Island 1¾@1½
616 Savaga 18
890 Sierra Nevada 13½@13⅞
110 Silver Hill 8¾@8⅞
445 Un Con 13¾@13½
50 Utah 19
110 Woodville 1.12@1.05
1360 Yellow Jacket 26@26½

MONDAY, A. M., OCT. 2.

400 Alpha 47@46¾
150 Andes 2@2¼
1835 Baltimore Con 3¼@3⅜
150 Belcher 20¾@22¼
70 Bullion 37@37
50 Best & Belcher 48¾@47¾
475 California 62½@62
1000 Con Point 12@11¾
675 Con Virginia 56¾@56⅞
955 Con Imperial 4¾@4.55
1230 Caledonia 10¾@10
20 Chollar 88½@85
270 Savaga 18@18¼
630 Exchequer 14¾@15¼
100 Gonld & Curry 14⅜@15
110 Hale & Nor 10¾
1050 Just.ca 18¾@19¼
100 Julia 7¼@7⅛
1410 Lady Bryan 30@29c
100 Leviathan 90c
700 Mexican 29¾@29¾
90 Morning Star 4
1510 Maryland 87½c@1
280 New York 1¼@1
60 N Con Vir 1¼
540 Ophir 55¾@56
150 Overman 19@19¾
45 Occidental 2⅞
165 Prospect 1¾
45 Phil Sheridan 2¼
500 Rock Island 1¾@1½
200 Succor 75c
410 Savaga 18
50 Silver Hill 8¾
2050 Sierra Nevada 13¾@13¾
550 Tahoe 15c
2180 Union 13@13½
170 Utah 18¾@19
40 Virginia 2¼
150 Woodville 1½
100 Wem Belcher 2½
1945 Yellow Jacket 26¾@25½

AFTERNOON SESSION.

155 Alpha 45¾@44¾
500 Alps 25c
40 Belchar 22
5 Best & Belcher 47
75 Con Point 11¾
400 Coso Con 20c
215 California 61½@61¾
705 Con Imperial 4½
1315 Con Virginia 55½@55¾
2985 Eureka Con 14@15½
80 Exobequer 14½@14¾
400 Gila 70c
140 Gen Thomas 1¾
50 Gonld & Curry 14¾
1125 Hussey 80@62½c
40 Hale & Nor 10¾
50 Jackson 4
185 Justice 18¾
50 Kantnck 11¾
850 Leopard 10¼@10¾
575 Manhattan 16
430 Mexican 27¼@28
1120 Northern Belle 20¾@22
1420 New Coso 3@ ¼
95 Overman 19@19¾
1045 Ophir 52¾@51½
2300 Pourman 85@80c
100 Panther 50@37½@
50 Raymond & Ely 6
1161 Sierra Nevada 12⅞@12¼
45 Union Con 1½
1645 Yellow Jacket 23¼@25¾

TUESDAY, A. M., OCT. 3.

215 Alpha 46@45¾
60 Andes 2¼
80 Bullion 36@35
5 Belcher 22
395 Best & Belchar 47@46 6@
2025 Baltimore Con 3¼@3⅜
320 Caledonia 10@10¾
970 Con Virginia 55¾@56¾
700 Crown Point 12
10 Chollar 85
170 California 61½@61¾
1010 Con Imparial 4½@4 40
100 Dayton 4¼
35 Exchequer 14¾@14¾
325 Gonld & Curry 14¾@14¾
400 Hale & Nor 10¾@10¾
480 Justice 18¾@18
280 Julia 7@6¾
100 Kossnth 1¼
170 Lady Bryan 30@29c
450 Lady Bryan 25c
405 Maryland 2
50 Morning Star 4
300 New York 1¼
390 North Con Vir 1¼@1.30
90 Overman 18@17¾
540 Ophir 52@51¾
875 Phil Sheridan 2¼@2¾
500 Prospect 1¾
150 Rock Island 1¾@1¾
200 Succor 25c
350 Savage 17¾@17¾
100 Silver Hill 8¾
2210 Sierra Nevada 11¾@12¼
350 Tahoe 15c
700 Trojan 75c
223 Union 12@12¾
40 Utah 18
50 Virginia 21
50 Woodvilla 1
1520 Yellow Jackat 25@25¾

AFTERNOON SESSION.

100 Alpe 75c
15 Belmont 2
70 Belchar 22

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., SEPT. 28.

250 Alpha 42½@43¾
200 Am Flat 1
440 Andes 2
50 Best & Belcher 45½
175 B lchar 21¼@21¾
50 Baltimora 2⅜
100 Bullion 35
275 Belcher 21¾
1776 Con Imperial 4.40@4 45
120 Crown Point 11½@11¾
1100 Con Virginia 55¾@54
70 California 60¾@61
230 Caledonia 10@9¾
90 Challenge 33
150 Cromer 2½
50 Florida 75c
1275 Gould & Curry 14½@14¾
305 Hale & Nor 10⅝@10¾
64 Julia 7@7⅛
555 Justice 17¾@17⅞
270 Kantnck 11½@11
589 Kossuth 1¼
420 Lady B 27½@40c
150 Lady Wash 3
500 Laviathan 85c
575 Mexican 28¾@28¾
670 New York 62½@60c
825 N Con Vir 1¼@1½
500 Niagara 15c
445 Overman 18⅞@18¾
520 Ophir 54½@54¾
100 Occidental 3¼
1210 Prospect 50@75c
400 Rock Island 1¼
180 Silver Hill 8⅞@9
445 Sierra Nevada 13¾@13¾
500 Tahoe 15c
415 Union 12¾@12¾
300 Woodvilla 1@1⅛
60 Yellow Jacket 23¾@24

AFTERNOON SESSION.

95 Alps 75c
180 Belmont 2½
145 Best & Bel 46½@47
100 Coso Con 3c
925 Con Virginia 54¾@54¾
20 Chollar 84@84½
150 Confidance 15¼@15¾
100 Eureka Con 13
50 Gonld & Curry 14¾@14¾
220 Goldan Chariot 1½@1¾
30 Gila 60c
315 Hussey 80@85c
250 Hale & Nor 10⅞@10¾
445 Un Con 13¾@13¾
50 Utah 19
110 Woodville 1.12@1.05
1360 Yellow Jacket 26@26½

THURSDAY A. M., OCT. 5.

190 Alpha 42¾@44¼
260 Andes 2½
2576 Baltimora Con 2@2⅜
150 Best & Bel 47@47¼
115 Belcher 21@21¼
50 Bullion 35
225 Chollar 92@80
530 California 61½@61¾
340 Crown Point 11¾
1030 Con Virginia 55¾@56
50 Challenge 33
1318 Con Imperial 4@4⅛
80 Confidence 16@16¼
200 Cromer 2½
480 Exchequer 14¾@14¾
1750 Gonld & Curry 14¾@14¾
100 Globe 1
735 Hale & Nor 10¾@10¾
180 Julia 6¾@6¾
385 Justice 17¾@18¼
115 Kantnck 11¾
50 Kossuth 1¾
2 5 Lady Bryan 25c
150 Lady Wash 3
250 Laviathan 87½@90c
540 Maxican 26½@26¾
100 Morning Star 4
770 New York 1¼@1⅛
375 North Con Va 1¼@1.30
1236 Ophir 49@48
75 Overman 18¾@17
210 Prospect 1⅝@1.20
175 Phil Sheridan 1½
540 Savage 17
1000 Sierra Nevada 11½@11⅞
110 Silver Hill 8¾
295 Tahoa 15c
700 Trojan 80c
Utah 16¾@17
1135 Union Con 11½@11⅝
115 Woodvilla 1.05
200 Wells-Fargo 15c
2070 Y Jackat 24¼@24½

AFTERNOON SESSION.

75 Alps 70c
65 Best & Belcher 47¼
395 Baltimore Con 2⅝@3
730 Coso Con 2c
310 California 61⅝
475 Con Virginia 56@56⅜
490 Eureka Con 14@14½
1350 Gila 65c
45 Gonld & Curry 14¾@14¾
30 Hale & Nor 10¾
600 Hussey 65@60
495 Jackson 4@4¼
2195 Leopard 10¾@10¾
75 Meadow Valley 50c
495 Manhattan 16¼
50 Modoc 1¼
315 Mexican 27@26⅞
75 Northern Belle 19@20
1818 New Coso 2½@2¾
320 Ophir 49¾@49⅝
285 Overman 18⅜@17
2260 Poorman 25@35c
100 Panther 40c
20 Raymond & Ely 5¾
15 Savage 17
240 Union 11⅝
770 Yellow Jackat 24½@25

AFTERNOON SESSION.

40 Confidence 16¾@17
25 Crown Point 12
40 Con Virginia 57
50 Con Imperial 4.45
200 Coso Con 2c
250 Columbia 20c
15 Dayton 5
50 Exchequer 14¼
300 East Crown Pt 80c@
150 Erie Con 30@2.30
50 Gonld & Curry 14¾
100 Hussey 62½c
35 Hale & Nor 10¾
135 Justice 18¾@18¾
210 Kossuth 1¾@2
50 Lady Wash 3
200 Laviathan 95c
225 Mexican 28¾@28½
500 Monumental 4c
100 Mar-Bes 62½c
50 Mariposa 90c
100 Mansfield 20c
50 New York 1¼
50 New Coso 2⅞
50 Northern Belle 18½
200 N Carson 12½c
60 Ophir 53¾@53¾
520 Prospect 1¾@1¾
400 Poorman 37½@3 3c
52 Savage 17¾@17½
50 Succor 20c
85 Sierra Nevada 12¾@12¾
100 Superior 12c
160 Trenton 8
700 Union Flag 42@45c
195 Woodville 1⅛@1.10
260 Yellow Jackat 26¾@28

AFTERNOON SESSION.

100 Baltimore 2⅞
110 Belcher 21¾@21¾
60 California 61¾@61¾
100 Con Virginia 55½
50 Crown Point 12
550 Coso Con 21@22c
100 E Ophir 1⅜
80 Eureka Con 13¾
300 Goldan Chariot 30c
50 Gonld & Curry 14¾
650 Hussey 60@55c
25 Hale & Nor 10¾
500 Jas Glynn 3½
10 Kossuth 2
300 Lady Bryan 30c
50 Leopard 8¾
200 Mint 22c
500 Monumental 5@6c
150 Modoc 5¼
110 Northern Belle 19¾
400 N Modoc 1⅛@1¼
300 New York 1.47½@1¾
200 Oasis 1⅜@1¾
2 Ophir 51¾@51¼
50 Oregon 1@1⅛
900 Poorman 32½@30c
150 Phil Sheridan 2
25 Prospect 1.75
100 Rising Star 20c
200 Superior 12c
85 Sierra Nevada 11⅞@1 2⅝
200 S Modoc 1⅜
20 Trojan 85c
35 Union 12½@12¾
175 Ward 1¼
45 Woodvilla 1@1⅛

Pacific Board—Latest Sales.

WED'NSDAY, A. M., OCT. 4.

500 Atlantic 3
195 Andes 2¼@2.85
1200 Belmont 21¾@21¾
200 Baltimore 2¾@2⅞
50 Best & Bel 47½
1000 City of Bost 2¾
30 Con Virginia 55¾
115 Crown Point 11¾@11¾
1410 Lady Bryan 30@29c
100 Leviathan 90c
700 Mexican 29¾@29¾
90 Morning Star 4
1510 Maryland 87½c@1
280 New York 1¼@1
60 N Con Vir 1¼
540 Ophir 55¾@56
150 Overman 19@19¾
45 Occidental 2⅞
165 Prospect 1¾
45 Phil Sheridan 2¼
500 Rock Island 1¾@1½
200 Succor 75c
410 Savaga 18
50 Silver Hill 8¾
2050 Sierra Nevada 13¾@13¾
550 Tahoe 15c
2180 Union 13@13½
170 Utah 18¾@19
40 Virginia 2¼
150 Woodville 1½
100 Wem Belcher 2½
1945 Yellow Jacket 26¾@25½

AFTERNOON SESSION.

155 Alpha 45¾@44¾
500 Alps 25c
40 Belchar 22
5 Best & Belcher 47
75 Con Point 11¾
400 Coso Con 20c
215 California 61½@61¾
705 Con Imperial 4½
1315 Con Virginia 55½@55¾
2985 Eureka Con 14@15½
80 Exobequer 14½@14¾
400 Gila 70c
140 Gen Thomas 1¾
50 Gonld & Curry 14¾
1125 Hussey 80@62½c
40 Hale & Nor 10¾
50 Jackson 4
185 Justice 18¾
50 Kantnck 11¾
925 Yellow Jacket 25¾@25¾

AFTERNOON SESSION.

100 Alps 70c
395 Baltimore Con 2⅝@3
730 Coso Con 2c
310 California 61⅝
475 Con Virginia 56@56⅜
490 Eureka Con 14@14½
1350 Gila 65c
45 Gonld & Curry 14¾@14¾
30 Hale & Nor 10¾
600 Hussey 65@60
495 Jackson 4@4¼
2195 Leopard 10¾@10¾
75 Meadow Valley 50c
495 Manhattan 16¼
50 Modoc 1¼
315 Mexican 27@26⅞
75 Northern Belle 19@20
1818 New Coso 2½@2¾
320 Ophir 49¾@49⅝
285 Overman 18⅜@17
2260 Poorman 25@35c
100 Panther 40c
20 Raymond & Ely 5¾
15 Savage 17
240 Union 11⅝
770 Yellow Jackat 24½@25

California Board—Latest Sales.

WEDNESDAY, A. M., OCT. 4.

70 Alpha 46¾
60 Alta 2¾
150 Amazon 70c
480 Andes 2¼@2⅜
80 Beach & Paxton 1¼
225 Baltimore 2¾@3

1000 Baltic 27c
75 Belcher 21¾
110 Best & Bel 47½
30 Bullion 36
125 Caledonia 10¼@10
85 California 62¾@62½
200 Cabinet 37½

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thuraday from Advertisements in the Mining and Scientifio Preas and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt. Sale.	Secretary. Place of Business.
Alta S M Co	Washoe	4	50	Aug 17 Sept 21	Oct 13 W H Watson 302 Montgomery st
Andes S M Co	Washoe	7	25	Sep 15 Oct 21	Nov 8 M Landers 307 Montgomery st
Belmont M Co	Nev	9	50	Sep 18 Oct 24	Nov 21 W H McClintock 419 California st
Bullion M Co	Washoe	1	2 50	Sep 22 Oct 23	Nov 13 J S Kennedy 419 California st
Caledonia S M Co	Washoe	18	1 00	Aug28 Sept 30	Oct 20 R Wegener 414 California st
Cherry Creek M Co	Nev	7	20	Oct 3 N v 10	Dec 6 D S Verdenal 409 California st
Challenge M Co	Cal	2	15	Aug 30 Oct 7	Oct 26 R H Brown 426 California st
Crown Point S M Co	Washoe	27	1 00	Aug 15 Sept 19	Oct 10 J Nawlands 419 California st
Dardanelles M Co	Washoe	4	1 00	Sep 5 Oct 6	Oct 23 W S Duval 402 Montgomery st
Dayton G & S M Co	Nev	5	1 00	Sept 8 Oct 13	Nov 3 W E Dean 419 California st
Equitable Tunnel & M Co	Utah	13	20	Sept 7 Oct 12	Nov 1 C P Healey Merchants' Ex
Exchequar M Co	Washoe	11	*1 00	Sep 23 Oct 25	Nov 15 J S Kennedy 419 California st
Caddes & Bertrand M & M Co	Nev	1	50	July 24 Sept 22	Oct 23 J A Vanoa Stevaneon's Bldg
Golden Crown M Co	Cal	3	5	Sept 12 Oct 20	Nov 10 D Buck 309 Montgomary st
Insurance M Co	Washoa	4	25	Aug 30 Oct 2	Oct 23 M Landers 309 Montgomary st
Julia Cons M Co	Washoe	1	1 00	Sept 11 Oct 16	Nov 6 A Noel 419 California st
Julia G & S M Co	Washoa	23	3 00	Sapt 11 Oct 16	Nov 6 A Noel 419 California st
Justica M Co	Washoe	19	5 00	Sep 14 Oct 18	Nov 7 J S Kennedy 419 California st
Kossnth M Co	Nev	7	57	Aug 15 Sept 19	Oct 12 E F Stona 419 California st
Lady Bryan M Co	Nev	13	50	Sep 15 Oct 17	Nov 7 W H McClintock 419 California st
Mariposa Land & M Co	Cal	7	1 00	Sept 7 Oct 9	Oct 30 L Lavrit 309 Montgomary st
Mariposa M Co	Barcelona, Nev		1	10 Sept 7 Oct 11	Nov 1 J P Moore 426 California st
Meadow Valley M Co	Ely Diet	13	75	Sap 29	Nov 6 T W Colhnrn 418 California st
Mexican G & S M Co	Washoe	2	50	Sep 5 Oct 11	Oct 31 C L McCoy 419 California st
Mitchell G & S M Co	Nev		10	Sept 7 Oct 26	Nov 14 A C Hammond 401 California st
New York M Co	Washoe	10	25	Aug 29 Oct 2	Oct 21 W L Thomas 419 California st
Niagara M Co	Washoa	3	25	Sept 3 Oct 4	Nov 24 W R Townsend 309 Montgomary st
Norih Carson M Co	Nev	5	10	Oct 3 Nov 6	Nov 27 W A Van Bokkalan 320 Sansome st
North Con Virginia	Washoe	5	25	Sap 21 Oct 25	Nov 14 J Maguire 419 California st
Pacific M Co	Washoe	1	20	Sept 11 Oct 14	Nov 3 W Clark 419 California st
Panther M Co	Nev	3	25	Oct 4 Nov 8	Dec 5 F Swift 419 California st
Prospect M Co	Washoe	2	50	Sep 21 Oct 31	Nov 17 J P Moora 426 California st
Senator S M Co	Washoe	14	50	Sap 19 Oct 24	Nov 13 J H Ssyra 330 Pina st
Silver Hill M Co	Washoe	9	1 00	Sep 18 Oct 24	Nov 14 W E Dean 416 California st
Sierra Nevada S M Co	Nev	45	1 00	Sep 22 Oct 22	Nov 13 W W Stanton 309 Montgomary st
South Chariot M Co	Idaho	18	25	Aug 29 Sep 29	Oct 20 W H McClintock 419 California st
St Patrick M Co	Cal	12	50	Sep 18 Oct 23	Nov 15 D F Verdanal 409 California st
Succor M & M Co	Waehoe	16	50	Sep 26 Oct 31	Nov 22 W H Watson 302 Montgomary st

*$12.50 old stock; $1.00 new.

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Accidental Con M Co	Nev	1	10	Aug 21	Oct 2	Oct 20 O Metchke 426 Montgomery st
Alabama M Co	Nev	1	10	Aug 14	Sept 19	Oct 11 W H McClintock 419 California st
Almadan Con Quick M Co		1	30	Aug 15	Sept 25	Oct 16 C C Finkler 628 Montgomery st
Aurora G & S M Co	Nev	1	10	Sep 23	Oct 30	Nov 21 T S Picoh 240 Montgomery st
Barcelona Con M Co		1	1 00	Aug 21	Sept 25	Oct 16 J P Moora 426 California st
Beach & Paxton G & S M Co	Nev	2	25	Aug 30	Oct 3	Oct 24 M Landare 309 Montgomary st
Cabinet M Co	Washoe	1	2	Sep 21	Oct 26	Nov 27 J F Sterling 340 Pine st
Carihno Hydranlio M Co	Cal	3	15	Sep 29	Oct 30	Nov 20 Chas T Bridge 224 California st
Cincinati G & S M Co	Cal	6	10	Sep 29	Oct 30	Nov 20 W Wnite 525 California st
Eagle Quicksilver M Co	Cal	9	250 00	Sep 30	Nov 29	Dec 4 Wm H Wateon 302 Montgomery st
East Branch M Co	Plumas Co	Cal	5	10	Sep 26	Nov 6 Nov 25 E P Sanford 514 Washington st
Emigrant S M Co		Cal	1	1 00	Sep 22	Oct 23 Nov 15 W H Chickering 426 California st
Eolarpriae Con M Co		Cal	9	25	Aug 12	Sept 18 Oct 10 F H Germann 5 Kearny st
Excelsior Quicksilver M Co			5	10	Aug 28	Sept 19 Oct 10 A Halsey 312 Montgomery st
Glencoe Con G M Co		Cal	2	5	Aug 29	Oct 2 Oct 23 L Leavitt 309 Montgomary st
Gold Canyon Con M Co		Nev		10	Sap 15	Nov 13 Dec 20 A A Pardow 636 Clay st
Houston M Co		Nev	1	5	Oct 2	Nov 6 Nov 21 W Stairley 410½ California st
Low Range Ledga S M Co		Washoa	1	2	Sept 11	Oct 16 Nov 7 E E Batty 507 Montgomery st
Mariposa South M Co		Nev	1	10	Aug 8	Sept 19 Oct 17 J W Clark 418 California st
McClellan Con M Co		Nav	1	10	Aug 21	Sept 24 Oct 12 O Metchke 426 Montgomery st
Monumental M Co		Washoe	2	15	Sept 7	Oct 9 Nov 1 W B Townsend Nevada Block
Morgan M Co		Cal	3	1 00	Sep 19	Oct 23 Nov 20 J H Wallace 108 California st
Moora's Flat Bina Graval M Co			Cal	1	10	Sept 23 Sep 14 Nov 6 Wm Donald 535 California st
Natioral Prospecting & M Co			Cal	1	10	Sept 9 Oct 10 Nov 11 T L Wiswall Merchaats' Ex
Nonpareil G M Co			Cal	6	5 00	Sep 15 Oct 23 Nov 9 A DnPrat 508 Jackson st
Oceanio Quicksilvar M Co			Cal	4	50	Aug 26 Oct 9 C G Funk 438 California st
Purdy S M Co		Colorado	1	2 00	Sep 12 Oct 21 Nov 14 A J Bell 331 Montgomary st
San Jose M Co		Nov	13	3a 12	Oct 21 Nov 13 A Carrigan 109 Front st
Sierra Iron Co		Cal		1 00	Aug 18 Sept 30 Oct 26 Caleb T Fay 318 Sansome st
South Barcalona M Co		Nev	1	1 00	Aug 21 Sapt 27 Oct 18 J P Moora 426 California st
Valenciana M Co		Nev	1	10	Sept 11 Oct 13 Nov 11 J P Moora 426 California st
Welch Con Quick M Co		Cal	1	4	Aug 21 Sept 22 Oct 23 E F Forbes 408 California st
West Comstock G & S M Co		Nev	1	25	Sept 12 Oct 16 Nov 3 J D Thompson 401 California st
Young America M Co		Nev	6	20	Sep 29 Oct 31 Nov 18 R H Brown 426 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Balance Con M Co	Nev	W Easton	419 California st	Annual	Oct 24
Cosmopolitan M Co	Nev	M Landers	Nevada Block	Annual	Oct 11
Eureka Con M Co	Nev	W W Traylor	309 Montgomery st	Annual	Oct 16
Exchequer M Co	Washoe	J S Kennady	419 California st	Annual	Oct 16
HoCrackin Con M Co	Arizona	Called by Trustees	419 California st	Special	Oct 16
North Carson S M Co	Nev	W A Van Bokkelen	320 Sansome st	Annual	Oct 16
Silvar Wast Con M Co	Nev	F R Bunker	606 Montgomery st	Annual	Oct 17
South Chariot M Co	Idaho	F Swift	419 Calif rnia st	Annual	Oct 16
Weaverville Ditch & M Co	Cal	F H Rogers	334 Pine st	Annual	Oct 18

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	C D Squire	Stevanson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibba	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	Oct 11
California M Co	Washoe	C P Gordon	Nevada Block	2 00	Aug 15
Consolidated Amador

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior,in proximity to the mines mentioned.

California.

ALPINE.

I X L MILL.—Alpine *Chronicle*, Sept 24: Within tbe next two weeks 70 tons of machinery will be shtpped from the Vulcan iron works, San Francisco, for this mill, 35 tons having been shipped last Monday. A large force of mechanics from San Francisco will be on the ground on Monday next; quite a large amount of timber is on the ground, and grading will be finished on Saturday next.

MORNING STAR.—Last week United States Deputy Mineral Surveyor Erich G. Gaertner surveyed thie mina for a U. S. patent.

OCCIDENT.—This mine was this week surveyed by U. S. Surveyor Gaertner for the purpose of applying for a U. S. patent.

MOUNTAIN.—This week tbis mine was surveyed by Mr. Gaertner for the purpose of reporting to the Directors and stockholders.

STRAIGHTENING.—The curve of tba road at the I X L mill site is being straightened—a much needed improvement.

LADY FRANKLIN.—A contract has been awarded by tbis company to H. C. Ginn for the furnishing of timbers, lagging and cordwood.

AMADOR.

MINING AT AQUEDUCT CITY.—*Dispatch*, Sept. 3: We understand that a company of Italians are now working a gravel claim of 40 acres in Aqueduct City, about 10 miles above this place. They have their derricks and other machinery in full operation, and have already worked down about 30 feet. The mine is said to have paid splendid wages from the top down as deep as they have gone. There are plenty more good mines in the same vicinity, if parties will only work them.

CALAVERAS.

GOOD CLEAN-UP.—Calaveras *Chronicle*, Sept. 30: We have cheering intelligence from the Josephine mine at West Point. A large quantity of rock from it has been put under the stamps since the completion of the mill lately erected in connection with the mine, and a clean-up was made a few days since. The quartz paid an average of $20 per ton—an encouraging yield for unassorted rock. Considerable ore still remains on the dumps, and work in the mine is actively progressing. Scarcity of water for milling purposes retards operations somewhat, a difficulty that the first rains will obviate. The outlook for the Josephine is flattering.

MILL STARTED.—The mill at the Lamphear mine was put in motion last Saturday, and has been running day and night ever since. The machinery works splendidly, and the rattle of the stamps sounds like business. That's the music to which dull times marches out of camp. The battery is crushing rock from the Lamphear and Quaker City mines.

LAMPHEAR MINE.—Work continues energetically at the Lamphear mine. Sinking tbe shaft is progressing rapidly, and the 100-ft north level is also being extended. Good rock is found in both places and the development are altogether favorable.

GOOD YIELD.—Crushing of 40 tons of ore from the mine of Fields & Co., at West Point, paid an average of $21 per ton. The mine has proved very remunerative from the outset and shows no signs of "letting up."

EL DORADO.

A BONANZA.—El Dorado *Republican*, Sept. 30: The St. Lawrence is rapidly developing into a bonanza indeed. Since our report of last week a ledge four feet and a half wide has been discovered in the cross-drift at the 300-ft level, about 80 feet from the main shaft, in a position to be easily worked, and as far as tested is shown to be very fine ore. The parties who previously worked the mine came within two or three feet of making the same discovery, and if they had the works would not, probably, have been closed down to this day. It now seems evident that the main ledge was lost at or near the 500-ft level, and that the small ledge they were following, though rich, would not pay for so expensive a manner of working, though on a smaller scale would have paid handsomely. The present company are exceedingly fortunate in being able to reap the benefits so nearly within the grasp of their predecessors. Upon the fact of this find being made known hotders of stock felt that they were in the biggest kind of luck, while those who had neglected to purchase were quite chagrined, as the stock at once went up 400 to 500 per cent. There can now be no possible doubt about the St. Lawrence being one of the best, if not the best, mine in the State.

NORTH SMA MINES.—*Mountain Democrat*, Sept. 30: "E. L. C." writes us as follows concerning mining operations and interests in the vicinity of Georgetown: The Rosekrans mine is getting fine prospects and have a ledge some three feet in width, with gold well distributed through it. The Taylor mining company are sinking their shaft. Last week they made about six feet. the rock is very hard. They expect to strike the ledge in about 20 feet, when they will get along much faster. The Volcano quartz company (Graves Bros. & Co.) had 17 tons of rock crushed at the Woodside mill last week, which yielded the nice sum of $3,200, nearly $200 per ton. They now have about 100 tons, which they estimate will yield $75 per ton, and having visited the mine and examined the rock I do not think this an over-estimate. They have a cut sluiced in on the ledge about 25 feet, and one can find gold all along the ledge, which is from 15 inches to three feet wide. The shaft is down about 50 feet and the ledge shows gold all the way. Taken all in all, it is one of the best prospects ever found in this section. They contemplate erecting a ten-stamp mill. Having a good water right, they will be able to get all the power they want at a very small expense.

A GRAND STRIKE.—After we had gone to press last week we received notice that an extensive and marvellously rich body of quartz had been developed in the lower level of the St. Lawrence mine. At the 800-ft level, about 80 feet from the shaft, a cross-drift into the foot wall developed a four-and-a-half-foot ledge of richer ore than has ever been seen in that mine. As the St. Lawrence has always been considered the keystone, as it were, of the quartz interest in this county, the news of this development was hardly less gratifying to the general public than the lucky stockholders in the St. Lawrence.

INYO.

MILLS FOR LOOKOUT.—Inyo *Independent*, Sept. 23: We hear that R. C. Jacobs is preparing to remove his five-stamp mill from the Sunrise mine, Panamint, to Lookout district; also that the Minnealta Belle company are getting in a small mill. This mine is said to be turning out grandly.

LAKE.

A TRIUMPH OF SKILL.—Lake *Democrat*, Sept. 23: The Sulphur Banks mine, in this county, is well known as one of the best paying mines in California, and the men who have control of it have thus far shown an ability in its management that has not only proven their skill as quicksilver miners, but developed a source of revenue that Lake county is justly proud of. Furnace after furnace has been erected there, and experiments are being made daily and successfully with the view to further develop the resources of the inexhaustible store of quicksilver and sulphur that lies buried at the extremity of the eastern arm of Clear lake. But of all the work being done there, no portion of it deserves so much notice or holds the attention of the visitor so closely and interestingly as the concentration works of Messrs. Adams & Carter. These works are distinctly separate from the mine, Messrs. Adams & Carter receiving the ore from the company and concentrating it for the company's reports, at so much per ton. The works have been built by the above named gentlemen at an outlay of $26,000. Two steam engines are required to drive the requisite machinery, and 16 Chinamen and eight white men form the working force that keeps the work moving night and day. The ore is fed into vats and ground into powder so fine that some of it floats off in a foam-like jelly. The pulverized ore, finally, after being submitted to a process that almost puts one in mind of a flour mill, is fed slowly on to endless rubber aprons, which revolve against a hundred or more tiny jets of water, the jets driving the sand and dirt down the apron, which is moving imperceptibly towards the jets and carrying the heavy powdered cinnabar in an opposite direction from which the water is washing off the dirt. The cinnabar sticks to the apron until it is washed off underneath; a stream of cinnabar going one way and one of dirt flowing the other, a complete separation taking place on the rubber apron. The cinnabar is then taken in charge by Alonzo Brandt, foreman of the sulphur works and the retorts, and from these retorts the yield of quicksilver is simply enormous.

MARIPOSA.

THE SCANLON MINE.—Mariposa *Gazette*, Sept. 23: This mine is one that has the most flattering prospects of any in the county. The vein can be traced on the surface for a distance of 3,000 feet, and throughout this distance shows a width of from three to ten feet of ribbing rock, the most favorable known to miners. The course of the vein is east and west. The mine lays in a most favorable position for getting the ore to the mill, and in addition to this, has one of the best water privileges in the State. From a lot of 21 tons of ore, we are informed that Mr. Tripp took 60 ounces of amalgam. This is a pretty good showing, and we hope soon to be able to place it on the list of dividend paying mines.

NEVADA.

HOMEWARD BOUND MINE.—Grass Valley *Union*, Sept. 20: We have most excellent reports from the Homeward Bound, and they come from men who have recently been underground there, as well as those who are regularly employed in the mine. The ledge is in the neighborhood of three feet thick, and is showing well in mineral, the gold being visible in much of the rock. It is the opinion of the experienced miners, who have worked for years down among the Wolf creek mines, that the Homeward Bound is giving now a splendid showing for future success. And there are plenty of other ledges in the district that can be turned into mines by having good work done upon them.

CHANGE OF SUPERINTENDENCY. — Mr. Robert M. Fryer, on account of impaired health, has resigned the superintendency of the works of the Fryer Noble Metal mining company, near this place. Mr. Fryer needs rest and recuperation, hence the resignation. Mr. Chas. E. Sherman, who is one of the most experienced metallurgists on the coast, is now superintendent of the works, and will transact all the business in connection with the same.

STRUCK IT RICH.—A prospector, who has for some time been engaged in relocating an old abandoned claim between the New York Hill mine and the North Star schoolhouse, struck a ledge last Monday of such richness that up to last evening the specimen quartz yielded $1,509.75, or an average of nearly $300 per day. He thinks he is "making wages," but is quietly prospecting his prospect.

LONE JACK.—*Foothill Tidings*, Sept. 30: Parties are working "on tribute" near the Homeward Bound mine on Lone Jack ground.

THE Yuba mill is going up with rapidity. The Ingersoll drill will be at work in a few days and the mine in all its parts is looking well.

Goon reports continue to come from the Homeward Bound mine. The ledge is strong and looks well, and all interested seem sure of a splendid mina when properly opened.

PLACER.

MINING ITEMS.—Dutch Flat *Forum*, Sept. 29: The various claims in this vicinity are being fitted up in readiness for the approaching season. Foremost among them is the Baker claim, on which work is being driven with all possible speed. The Baker shaft is about completed; it was sunk 12 feet last week. The Yankee tunnel was driven ahead 40 feet last week. Only a short distance remains to connect with the Baker shaft. The Cedar Creek company is engaged in sluicing out their supply reservoir situated just above town. It had become so filled with sediment that tha above work became a necessity. The South Yuba canal company are hard at work cleaning out their ditches, repairing flumes, building reservoirs, and generally preparing for the approaching winter.

TAILINGS.—Col. Ludlum, of this place, and Mr. Gould, of Gold Run, have just returned from San Francisco, where they have been representing this section of the county in the Association of Hydraulic Miners, and have been elected members of the Board of Directors. They report that the debris suits are in safe hands and will be faithfully attended to, and that the principle involved is one affecting our entire mining interest, nearly all the hydraulic mining companies in the State have joined in the defence.

SLATE QUARRY.—We are informed that some parties are engaged in prospecting a vein of slate, located about five miles below Emigrant Gap. The vein is a large one, and the owners are satisfied that they have a good thing. They have sunk several holes by the side of the ledge, and find it to be a good article, splitting into thin sheets, smooth and even, some of them six feet wide by eight feet in length. One of the proprietors, a gentleman who has had considerable experience in this line, pronounces it the best slate he has ever seen. The ledge is owned by parties in Penryn and San Francisco. We hope that the owners will use every endeavor to have it developed and put in good running order.

FOR some time past the San Francisco *Chronicle* and Nevada *Transcript* have been publishing articles in relation to the sale of the South Yuba ditch, it being asserted that Alvinza Hayward, the proprietor, was trying to dispose of the ditches and water rights to the city of San Francisco. We are informed by a reliable party that there is no truth in the statement; that the property is not for sale. The South Yuba ditch was bought by Mr. Hayward to furnish a continuous supply of water to his claims in Dutch Flat, and not for the purpose of speculation, asserted by the *Chronicle* and *Transcript*. The sale of the property to the city of San Francisco would result in great injury to the different mines in and about Dutch Flat, who depend upon the South Yuba ditch for their supply of water.

PLUMAS.

MINING ITEMS.—Plumas *National*, Sept. 29: The Bald Mountain company, of Forest City, of which Mr. G. G. Clough is President, will soon put in a steam engine to haul the gravel care to the dump-sheds, the first enterprise of the kind on the coast. The Bald Mountain is probably the most extensive tunnel claim in the State, and the dirt is wonderfully rich. The Gold Stripe mine, on Wolf creek, is paying big—$5,000 or $6,000 a month. The workmen in the Bell company's tunnel have crossed a large vein of quartz this week, which prospects splendidly, and the managers are highly elated with the prospects of the mine. A new town has been laid off up at the Wolf Creek mine, and promises to be a lively place. Mr. Jos. Halsted, of the East Branch company, was in town on Wednesday, and reports everything favorable and prospects first rate at the mine.

SANTA CRUZ.

NEW COMPANY.—Santa Cruz *Courier*, Sept. 28: Articles of incorporation of the new mining company were signed and filed yesterday in the County Clerk's office. The trustees of the company are: W. N. Cummings, George Treat, Amasa Pray, Sr., W. D. Storey and S. T Jones. The capital stock is $300,000, divided into 30,000 shares of $10 each. Their mine is located at the upper end of Gold gulch, six miles north of Santa Cruz. The value of this rock was shown by a statement of a prominent San Francisco assayer in the *Courier* last week. It contains $39.78 gold and silver per ton. It is the purpose of the company to begin work immediately on their mine.

TRINITY.

FROM CINNABAR.—*Journal*, Sept. 30: Mr. Lawrence, in charge at the Altoona quicksilver mine, was in town this week. From him we learn that the brick necessary for the erection of two furnaces have been molded, and that the furnaces will be erected early next spring. Four hundred flasks of quicksilver have been produced at the Altoona this month.

TUOLUMNE.

GRAVEL.—Tuolumne *Independent*, Sept. 30: The Remington gravel claim, near Yankee Hill, looks encouraging. They have just cut through into the gravel, and is cleaning up to put in a couple of boxes got a good prospect. The flume will get into the pay dirt about 102 feet from the surface, but this is not expected to reach the bottom of the deposit, which prospects satisfactorily. The only question is as to the extent of the gravel bed in width, to establish it as a lasting claim. Whether this particular claim may prove as extensive as desired is, perhaps, yet to be tested; but we are perfectly satisfied that deep gravel claims, extensive and numerous, will be opened in that section of the county at an early day, and the success of this pioneer enterprise is most earnestly hoped for by every one who is looking for the good time coming.

AT the Riverside mine, in American Camp district, they are still pushing on their tunnel, which is now in about 300 feet, and the indications are that they will strike a shute this week. They are running on the vein all the way. The present tunnel runs in from the river, and will meet a point on the vein over 2,000 feet in depth from the surface. The vein is from five to seven feet in width. They have a fine mill of 20 stamps, which is run by free water. As soon as they get to a shute, more force will be put on to get out rock and start up the mill, while the tunnel will still go piercing the mountain. The advantage of draining the mine at a depth of 2,000 feet is a great feature, and saves an expense of thousands of dollars in pumping, besides the great economy in getting out ore by means of the tunnel.

THE five stamp mill now being erected on the Jones & Woodman mine is designed more especially as an aid to thoroughly prospect and test this vein as well as others they own. As we have said before, the mine is rich and extensive enough to justify a mill of 10 times this number of stamps, but the owners very wisely, we think, prefer to feel their way and not swamp their property, as too many have done in the past, by putting up machinery beyond their present means of payment. Slow and sure is better than going so fast that others may come in and take the cream. An assay of sulphurets was made last week from rock selected as showing no trace of free gold, with a result of $666 per ton. Some of their ore assays into the thousands.

MR. ROBERT SLOAN crushed 15 tons of rock from his mine in the American Camp district, last week, at the Riverside mill, which paid him at the rate of $60.

Nevada.

JERSEY DISTRICT.

SLUICING ORE.—*Silver State*, Sept. 25: S. J. Chambers informs us that J. B. Meder, lessee of the Jersey mine, has a new whim almost completed at the shaft. He has also built sluices at the Hot Springs, about a mile from the mine, for the purpose of concentrating the second-class ore. This new arrangement works admirably and the argentiferous galena, separated from the barren rock, is more than sufficient to pay all the expensee of running the mine.

BOB SCHMITT, owner of the Virginia mine, situated about two miles from the Jersey, has commenced work on the same, and at a depth of four feet from the surface has a vein six feet wide. The ore is argentiferous galena, like that of the Jersey, which it resembles in every particular. The district never looked more prosperous than at present, and there is no doubt of the richness and permanency of the mines.

SAN JACINTO DISTRICT.

ANTELOPE.—*Silver State*, Sept. 25: R. M. Howland, Superintendent of the Antelope mine, in San Jacinto, was in town last Saturday. He informed us that he is now drifting with all possible speed to the ledge, and that they expect to strike it big in a few weeks.

RAILROAD DISTRICT.

PROGRESSING.—Eureka *Sentinel*, Sept. 24: From Louis Loschenkohl, who lately paid a visit to Railroad district, we learn that everything in that section is progressing satisfactorily. The new ten-stamp mill is in successful operation and the mines are looking and yielding well. The mill is in charge of Professor Knisell, one of the oldest and most competent manipulators of ores on this coast. He has faith that he will yet be able to treat the ores of Railroad district without the aid of a roaster. The district seems to be on the high road to prosperity and its prospects are daily brightening.

SECRET CANYON DISTRICT.

NOT MUCH DOING.—Eureka *Sentinel*, Sept. 30: There is at present but little being done in the mines of Secret Canyon. It is believed that operations on a comprehensive scale will be resumed in the Geddes & Bertrand as soon as negotiations for the transfer of the control of the property to Gashwiler & Co. shall have been consummated.

TUSCARORA DISTRICT.

RICH ORE.—*Silver State*, Sept. 28: J. Arrowroot, of San Francisco, one of the big mining men of that city, passed here yesterday on his return from Tuscarora. He says that the Grand Prize mine in that district contains the richest ore he ever saw near the surface of the ground, and he is of the opinion that the district is one of the best in the State.

STAR DISTRICT.

SHEBA MINE.—*Silver State*, Sept. 28: Wm. Woolcock, who left Star City yesterday morning, informs us that a streak of exceedingly rich ore has been struck in the lower works of the Sheba mine. This ore is being assorted for shipment to San Francisco.

ELY DISTRICT.

ALONG THE LINE.—Pioche *Record*, Sept. 24: Mining matters in Pioche have brightened up considerably during the past week, and the present indications presage a change for the better. In the Meadow Valley everything is booming along towards completion. Men are busy excavating for the pumping machinery, which will, in all probability, be shipped from San Francisco this week. Everything around the mine presents an active appearance, and when the machinery is in place and in operation, it is pretty certain that this old favorite will give a good account of itself. A chloriding party, who have been prospecting in the Deedmons, report a daily extraction of six tons, with plenty more of the same kind in sight. The Huhn & Hunt mine has been bonded in the sum of $50,000 to Chicago parties, who, it is believed, will consummate the bargain and commence active operations in a few weeks. The general report from the other mines is "about the same." The Alpe mill starts up this morning, and the Newark mill starts up to-morrow morning.

MEADOW VALLEY.—Yesterday the Meadow Valley mine was again shut down, this time good and strong. What for is not known. What the little game of the trustees is is also kept well in the background. That they are playing a game of some sort is evident. They induced miners and workmen to accept an unheard of, one-sided proposition—all on the side of the company—and even from that they have seen fit to withdraw. If the mine starts up again within six months it is more than any one expects. The machinery that was to have been shipped on or about the first of October, we are now informed, will arrive sometime in December. It is a fact well known that the Meadow Valley has a promising future before it, and it is no part of the purpose of the management to let the small fry in on it.

WARD DISTRICT.

A VISIT TO WARD.—White Pine *News*, Sept. 30: Like many others, we had a curiosity to see the new and flourishing town of Ward, and to satisfy that curiosity we made a flying visit there the latter part of last week, and were well repaid for so doing. We will not undertake a description of the location of the town or of the mines, for the reason that Gen. Cadwallader, in our last issue, exhausted those subjects, and we could only corroborate what he so truthfully wrote. However, we can say this, that as development is made upon the mines of that district, large bodies of rich ore are being discovered, not only by the Martin White company, but by other parties who are prospecting in that locality. The Martin White company were running one water-jacket furnace very successfully, and it was producing bullion that is valued at $400 to $600 per ton. The company have received an abundance of charcoal, and will start up their other furnace the first of the coming week. The company have a large force of men employed in grading for the new mill site and making roads. Most of the machinery for the new mill has arrived, and it will be set up at the earliest possible moment. Everything about the company's works looks like business, and suggests the idea that it is a permanent institution.

WASHOE DISTRICT.

CALIFONNIA.—Gold Hill *News*, Sept. 28: Daily yield 600 tons, from the ore breasts and stopes of the 1500, 1550 and 1600-ft levels, all of which continue looking and yielding as finely as could reasonably be wished. Three hundred tons of this ore is hoisted through the C. & C. shaft, and the balance through the Con. Virginia shaft. The east cross-cut from the main south drift at the 1600-ft level has been connected with the winze from cross-cut No. 5 from the level above. The main south drift at this same level has been extended 26 feet during the past week, and is now 122 feet south of cross-cut No. 5, the face still continuing in rich ore. The direction of this drift was changed yesterday to a course south 38 degrees east, in order to connect with the California deep winze. The C. & C. shaft is now down 125 feet below the 1500-ft station. Rock working fine and favorable.

JUSTICE.—Daily yield, 155 to 160 tons, from the 600-ft level and other ore producing levels above, with a few tons from the 800-ft level, extracted in running the main drift. The ore stopes and breasts are all looking and promising very well, with considerable improvement both in quality and quantity as farther opened and developed. The north portion of the mine shows the best. At the 800-ft level a fine body of good milling ore is developing at the north end, adding very materially to the resources of the mine. Cross-cuts Nos. 1, 2 and 3 east, at this level, are looking about the same as at last report. Work is resumed at the 1000-ft level south, and the drift is advancing at a good rate in soft vein matter. In the north drift and northeast crosscut, at the same level, work is temporarily suspended by reason of a heavy flow of water being tapped. This also has caused work to be temporarily suspended at the bottom of the main incline. The water is decreasing and will soon be drained so that work can be resumed again. Of course this strong flow of water does not affect the ore production of the mine in the least.

CON. VIRGINIA.—Daily yield 350 tons to 400 tons per day, from the 1400 and 1550-ft levels, keeping the Brunswick, Trench and Bacon mills steadily running. All the ore breasts and stopes are looking splendidly, and the east portion of the 1550-ft level particularly so. The ore breasts at the north portion of the 1400-ft level show improvement, and are yielding unusually well. The main drift at the 1550-ft level is being enlarged and retimbered, consequently no ore is hoisted through the Gould & Curry shaft at present, but all the ore is hoisted through the Con. shaft. Work at the 1700-ft level will not be resumed until the retimbering of the double winze above that level is completed. The C. & C. shaft is now down 125 feet below the 1500-ft level and has all the water the pumps can manage, rendering sinking progress rather slow—about two feet per day. Rock hard but blasting well.

HALE AND NORCROSS.—The pumps have been working admirably for the last few days, and the water is reduced 210 feet. The water is thrown up to the tank of the main line of pumps a distance of 250 feet by two lively working force pumps—a No. 7 Cameron and a No. 5 Knowles. A large No. 8 Cameron has been sent for, which will arrive in a few days to take the place of either of those now in such arduous use, which may happen to give out. When the water is lowered 50 feet more the 1900-ft station will be reached and an extension of the main line of pumps will be made in that point. The balance bob pit at the 400-ft station for the pump is not yet completed.

SUPERIOR.—Drifting west at the 150-ft level, ten feet above the bottom of the shaft, goes ahead prosperously as usual, and the increased amount of fine looking quartz stringers coming in at the face indicates a near proximity to the main ledge. Water does not trouble.

CROWN POINT.—Daily yield as usual 60 tons, keeping the company's mill, the Rhode Island, steadily running. The main incline is steadily being sunk, and is now down some 30 feet below the 1800-ft station, with the bottom in favorable working rock. North drift at the 1700-ft level pushing steadily ahead toward connecting with the Yellow Jacket mine. Two cross-cuts have been started from this drift, 100 feet from the south line, going east and west in hopes of striking ore, but without any success as yet.

TWIN PEAKS.—The road to the mine is successfully completed, and sinking the new three-compartment working shaft is resumed under the most favorable auspices. This mine is very eligibly situated in the heart of the great, broad Comstock ore belt, a short distance east of Gold Hill, and showing a fine ledge of white Comstock ore from the surface down to a depth of 80 feet, the depth of the old workings. The main body of quartz developed is about 10 feet wide, and gave assays of nearly $100 to the ton, two-thirds of which was silver. This, however, is merely a surface feeder belonging to the main ore vein which this new shaft is expected to develop.

SUTRO TUNNEL.—Total length from month to face of header this morning, 14,444 feet. Very fair average progress is being made at present, the face being in favorable working material, composed of hard porphyry, with quartz and clay streaks. A heavy stream of water flows from the tunnel, sufficient to supply several mills in case they were needed. And the chances are that the mills will be needed sooner or later, for very excellent ore prospects and assays have been met with at various points thus far already, and the tunnel has penetrated the regular broad Comstock ore belt for over 2,000 feet. A bonanza may be run into by the Sutro tunnel at any time.

BULLION.—The north drift at the 1400-ft level, and the drifts east at the 1600 and 1500-ft levels are being driven ahead as usual, with good prospects. The main drift north, at the 1700-ft level, is being cleared of waste rock, etc., preparatory to reopening active work in a few days. At the 2000-ft level connection was made with the Imperial drift last Sunday, which is of great benefit to both mines in the way of ventilation. Work is resumed in the main northeast drift at this level. The face is in very promising material, showing near proximity to the ore vein.

DAYTON.—Sinking the shaft is resumed and proceeding steadily along, with the bottom in favorable ground. The cross-cuts at the 800-ft level are being

pnehed steadily ahead, and at the 500-ft level the crosscuts are showing improvement, showing more quartz which gives better assays.

Gould & Curry.—Good work is being done sinking the joint winze below the 1600-ft level at the Savage line. There is a strong force of men hurrying up work on the massive stone foundatione for the large and powerful new pumping engine.

Baltio Con.—Main west drift has cut through to what is considered to he the west wall. The vein matter passed through has heen of a highly favorable character, and next to the west wall a vein of splendid quartz of the white Comstock character ie found, carrying heavy mineral indications. Thie is now being drifted npon to the northward to ascertain its real value in that direction.

Yellow Jacket.—At the 2040-ft level the south drift is in dry, soft ground, principally quartz, and is now heing timbered. The east crose cut drift at the same level during the past week hae passed through eeveral clay seams running to the southeast, with some seepage of water.

Cosmopolitan.—The stopes continue their excellent yield of good milling ore, and the ore vein developed by the winze below the main adit level is showing finely. At the depth of 60 feet it ie over four feet in width, and a drift from the winze at that point is heing run north, taking out the ore. The Hope mill will commence running on ore from this mine next week.

Tecoan.—Shaft down 270 feet. Material at bottom hard porphyry with tough clay seame and occaeional stringers of ore, dipping to the southeast in the direction of the good ore body passed through by the shaft.

Baltimore ann American Flat.—The drifte north and south at the 1050-ft level are eteadily advanclng, the south drift showing more and better quartz in its face.

Utah.—Very good progress is heing made in the cutting out and construction of the pump tank and bob pit, further sinking of the shaft being suspended for the purpose.

Alabama.—Shaft 167 feet dcep, and sinking at present in fine looking streaks of ledge porhyry, clay and quartz. Some of this gives very fair assaye, and is in fact low grade ore.

Alpha.—Connection being made witb the Imperial at the 2000-ft level, giving valuable and much needed ventilation, work is resumed in the main northeast drift towarde the ore vein.

Aureola.—Shaft down 55 feet to-day. Heavy veins of solid quartz are coming in from the weet side, with layers of clay hetween; evidently the outskirts of the main ledge.

North Con. Viroinia.—The new machinery operates as smoothly and efficiently ae could be desired, and no trouhle is experienced in keeping the sbaft free from water.

Julia.—Drift east from the shaft at the 1800-ft level is in 247 feet; face in favorable working veiu matter. South drift at the same level is in 388 feet; face in low grade ore, showing constant improvement and giving good promise of running into a paying ore body. The south drift at the 1600-ft level is also showing well and very promising, passing through fine looking vein material, with occasional small bunches and streaks of pretty fair ore.

Lady Bryan.—The new joint shaft is getting along finely. The hottom ie in good working ground. According to the developed workings of the mine heretofore, thie new shaft should soon cut into a ledge of a dozen feet in width of low grade ore.

Imperial Con.—Ore extraction going ahead as usual at the 2000-ft level, and everything running all right again throughout the mine. The water is drained from the shaft and work going ahead ae hefore in the drift from the south winze, also in the north drift. Tbe connection made with the Alpha drift at the 2000-ft level is of great importance, giving an excellent and much needed circulation of air and cooling both mines considerably.

Florida.—The northwest drift at the 400-ft level is 500 feet in length, and the face ie in eoft and very favorable vein matter, with considerable quartz, heavily charged with iron pyrites.

Ward.—Total depth of shaft to-day, 633 feet. Hard blasting rock at bottom, with plenty of water, but the rock hlasts well and the water is easily handled. Two and three feet per day is the regular progress made.

Cholilas Potosi.—Daily yield, about 100 tons of ore, assaying $27 per ton from average car samples. No change to report of the old ore sections, the varione stopes and breasts holding out and looking ahout ae well ae usual.

Resumption.—The exploration of the ledge by means of the old tunnel and eide drifts continues with excellent success. Large quantitiee of fair grade ore are met with.

Prospect.—Drifting west at the 400-ft level toward the ledge. A hoisting tank ie used now to raiee the wster from the sump of the shaft, that heing much cheaper than running the pump and fully as efficient.

Silver Hill.—Face of the north drift at 444-ft level continues in fine looking vein matter, and at the 650-ft level the east drift shows no special change.

North Careon.—Sinking the shaft progresses at a very eatisfactory rate. It is cutting into the ore vein developed at the 300-ft level, judging from the seams and bunchee of ore met with.

Tahoe.—Very good progress continues to he made in sinking the shaft, the bottom being in very favorable ledge matter, with stringere of quartz and low grade ore coming in.

Sierra Nevada.—Owing to the great amonnt of water met witb at the 1700-ft level sinking the shaft is not yet reeumed. Prospecting operations at the upper levele go ahead as usual.

Buckeye.—Drifts north and south steadily advancing, with good prospecte, especially in the north drift. The Hope mill is engaged to run on ore from tbis mine shortly.

Mint.—Total depth of shaft 1,255 feet. Material at hottom easy working porphyry, quartz and clay, with very good ore body indications coming in.

Caloutta.—The diamond drill hae penetrated to the depth of 280 feet, passing through considerahle quartz, giving good aseays. Work driving ahead.

West Belcher.—The extraction of ore from the upraise and the main drift at the 300-ft level continues with plenty in sight.

Belcher.—Daily yield, 300 tons. The old ore hreasts hold out excellently well, although showing no particular improvement in any direction. South drift at tbe 1500-ft level driving shead as usual and looking well.

Ophir.—Daily yield continues to be about 300 tons. The varioue ore stopes and hreasts show no signs of giving out, more particularly at the 1600-ft level, where in the eastern portion especially, considerahle improvement is noticeable. The north drift at the 1200-ft level is also showing finely.

Lady Washington.—Shaft down 850 feet. It le now proposed to start an incline from the hottom of the shaft, or the 850-ft level, to follow the dip of the ledge.

Amazon & Glasgow.—The balir g tanks are doing good service keeping the water redneed in the shaft till this new pump can be put in.

Phil. Sheridan.—Shaft down 337 feet. Rock at hottom very hard hut hlasts well. Owing to the arrangement to catch the water flowing from the 200-ft level no trouble is found in sinking from tbat source. Crosscutting will be commenced soon.

Globe Con.—North and south drifts at the 300-ft level are showing well, the faces of hoth heing in fine looking vein matter, with streaks and hunches of low grade ore.

Herald.—The good bonanza indications developed in the incline still continue and will be furthor sought for by a drift to the northward.

Savage.—The reduction of the water and repalre of the incline proceed actively ae usual.

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psss and about 100 feet helow it, heving sn sltitude of 6,500 feet above the sea-level. Dr. Webber, the proprietor, hss heen here about twenty-one yesrs, snd, after many trials, has succeeded in stocking the lske with what he calls silver trout, a kind which thrive and keep fat in these waters. There is a good hotel here, sccessible hy stage from Truckee, which is the railroad station for this place. The fishing here is excellent; there are plenty of boats on the lake, und the guest is kindly furnished with trolling lines and spoons, or with lines snd hait for still fishing, or, if preferred, he csn use the fly.

We went out one morning and csptured seven or eight before breakfast, weighing from a pound to two and one-bslf pounds, and st night a party, torch fishing, brought in twenty-two in a short time.

The air was keen enough in the early morning to make one think of winter, and s little snow fell during the night. Large bodies of snow which fell last winter csn he seen upon the mountains all sround, in some places still 30 or 40 feet deep although exposed to the sun on the southern sides of the mountains.

About a mile from the hotel is a small lake csiled Lake of the Woods, snd near this is

The "Observatory,"

At an altitude between 7,000 snd 8,000 feet. From this observatory the view is very extensive and wide, embrscing Sierrs vslley, with the towns of Sierra and Loyalton, the divide between Goose snd Honey lskes, Surprise valley, distsnt 164 miles, Pyrsmid lake, Humboldt desert, Reno, the Geiger grade, Mount Davidson, Wsshoe valley, etc. This point seems to be a sort of an electrical center for storms which come sweeping up the valley, ss the trees at one particular point are very much scarred by lightning.

Leaving Webber's, we took the road to Meadow lake and Fordyce valley, visiting st the lstter place the great reservoir snd

Dam of the South Yuba Canal Company.

The dam is sbont 600 fest long and 57 feet high, 190 feet base and at present 60 feet broad on top. It is the intention to continue it up until it is 30 feet higher, giving the lake an area of about 1,200 scres and sn average depth of about 75 to 80 feet. The dam is superbly huilt, every stone being carefully lsid, and it seems as possible to overturn the mountains themselves aa this dam.

From here we went to Meadow lake, another reservoir of this company, with s beautifully laid dam 800 or 900 feet in length.

Upon the shore of this lake is the

Town of Meadow Lake,

Formerly called Summit City. This town sprung up during sn excitement caused by the discovery of rich gold qnsrtz mines st this point, and in a short time hecame a flourishing city with a business in its streets so large that a traveler would often have to pick his way tbrough the crowd of teams as carefully as now in San Francisco. Three large, finely furnished hotels were built, and stone warehouses that would be a credit to any place; quartz mills were erected and completely furnished with the hest machinery, with steam or water power to drive them; sawmills furnished lumber for building and the mushroom town presented as thriving an appesrance as if it had existed a quarter of a century. But soon csme the discouraging discovery that the ores could not be worked to a profit. Failures and sheriff's seizures took place, and the town was deserted slmost as soon as it had grown. Hotels, houses and stores were abandoned with their furniture and fixtures intact; mills stopped; new mortars, stamps, shoes and stems, pans for smalgamating, gearing, pulleys and all the machinery necessary for first-class milla have heen absndoned and still lie there with the scale upon them as they left the foundry. Year by year the abandoned buildings are crushed by the weight of eaoh succeeding winter's snows, and gradually the town goes to ruin. A large stone warehouse which had been filled with furniture from the hotels und houses for security, had its iron doors forced last summer by some miscreant, and it was hurned, together with two hotels and all the buildings in one of the principal hlocks. At present there are only three families left of all the once populous town.

One man, Mr. H. H. Hartley, has always be lieved in the mines and has proved his helief by sticking to them through all the vicissitudes of 13 years. He has finally discovered a process by which he is ahle to work the ores profitahly on a small scale, and he helieves that with money enough to put up suitable machinery, the ores can be successfully worked. Should this ever take place, Meadow Lake may again become a flourishing town. Our road home from Mesdow Lake lay through forests of pine, tamarack, fir and cedar, crossing patches of snow occasionally, and passing the "English dam," which is 96 feet in hight. For a pleasant summer trip, a visit to the Sierras is more satisfactory than any we have yet taken. S.

Ward District.

Editors Press:—On September 1st the furnace of the Martin White company started up again on its second run. Arrsngements have been made to keep a steady supply of charcoal. Mr. Thomas, the superintendent, has proved himself to he a first-class smelter. Three shipments of fine bullion have been made, and the slag has never contained one per cent. of lead, hut much less. Extensive preparations are heing made to house large quantities of coal, ore, etc., for the severe winter anticipsted.

The suit between the Shark and Paymaster still drsgs its weary length, having been postponed till November.

The 20-stamp mill (lixiviation process) now being erected from designs of and under the direction of Csptsin Dahlgren progresses rapidly. The freight (mschinery snd huildings of the Troy mill) is expected every dsy. When this shall have been landed, 30 days will see the mill moving. The Psymsster still develops as well ss heretofore, snd an unusual amonnt of activity in erecting houses for the winter prevsils.

Still the csmp is overdone, and people should keep away, as one csn hire plenty of men at $3 per dsy, who are glad to get it.

The Paymaster South is still pegging away, but as yet does not show anything. The Juno company, recently incorporated in Ssn Francisco, is pegging awsy; results unknown.

The Defiance opens np splendidly, snd furnishes the carbonate ores for mixing with the ores of the Puymaster. Work will hegin shortly on the Bangor miniug company's claims. Next spring there will be msny locations prospected. "Fax."

Pacific Coast Railroad Items.

The track lsyers are at work on the Galt & Ione railroad, and have more than a third of the track laid now. They are lsying it at the rate of ahout half a mile a day and will have the joh completed by Octoher 15th, if not sooner.

Grading wss commenced on the 26th on the Portland, Dalles & Sslt Lske railroad, st Corrinne, Utsh. The work will he pushed ahead ss rspidly ss possible. Surveys sre heing made with satisfactory results, and Marsh vslley will be resched this week.

The highest trestle bridge on the Pacific cosst is the one in course of coustruction across Brown's canyon, two miles northwest of Freestone, in Sonoma county, on the line of the North Pacific Coast rsilroad. It will be 135 feet in hight from the bed of the oanyon, snd 600 feet in length.

A *Call* correspondent from San Jose ssys tbe long-promised narrow-gauge rsilroad is now completed from Dumbarton point to Alviso, where the construction train is huisy building culverts, etc., while the grsding forces are throwing up the road hed toward this place. Several hundred men are employed, and the grade is rspidly sdvancing in this direction, nearly two miles being ready for the track. The iron horse is expected here in less than 90 days. The main road will continue hence to Santa Cruz, via Los Gstos, snd s branch will run to San Jose almost parallel with the Southern Pacific, but the San Jose depot will he on the Alamaden, near Guadalupe creek. Flood & O'Brien are understood to be the owners of the road, and their immense timher tracts in the Santa Cruz mountains will he made available when the road is completed. There is no doubt that this enterprise will be profitable, as the resonces of the Southern Pscific railroad are heavily taxed transferring freight to San Francisco.

Heavy Mining Suits.—Six separate suits have been commenced in the District Court against the Santa Clara mining association of Baltimore, Maurice Dore, Ben. B. Thayer, *et als.*, known as the Guadalupe quicksilver mining company, all of wbich involve the land and hereditaments of the company, and prsy damages for the digging up and carrying away of minerals and ore, as mentioned in the separate complaints. A correspondent of the *Call* writing from San Jose says that three of the suits are commenced hy the Almaden quicksilver company, in the first of which they ask $1,000,000 damsges for the detention of the possession, and $1,000,000 for the ore extracted. The other two suits hy the same plaintiff involve large sums, and are based on similar grounds. A fourth suit has been commenced by the Sunol heirs for the possession of the property and $1,000,000 damages a year since the opening of the mine. Another suit against the same ssociation is brought by M. S. Jeffers for detention, damages, etc., the same aggregating $450,000. D. M. Delma, of this city, is attorney for plaintiffs.

Fish for the Sandwiches.—Commissioner Stone, from the U. S. Fishery at McCloud, has selected 20,000 salmon spawn for shipment to Honolulu. It has heretofore been supposed that the temperature of the inland streams of the Hawaiian islands was too warm to admit of the propagation of salmon. Careful observation, however, taken during many months past, shows a temperature in them about the same as in California during the summer, and it is believed the experiment about to be made will be a successful one.

Mining Decision.—The following is a late decision of the Department of the Interior: Philadelphia lode claimants, vs. Pride of the West claimants. Consideration of a mining location, alleged to be void for uncertainty. The end lines of a mining survey must he parallel courses, and distances must give way when in conflict with fixed objects.

In Peabody's model hnildings, London, the death rate is only 12 annually in 1,000, wbile the parish rate is 24½.

The Engineer.

How to Measure Flowing Water.

The measurement of flowing water has been the subject of protracted snd careful experiments under the auspices of both the French and English governments. We find in the "Transactions of the Royal Society of London" the following conclusions drawn from these experiments:

1. Thst the quantities, dischsrged in equal times, are as the areas orifices. 2. That the quantities, discharged in equal times under different hights, are to esch other nearly in the compound ratio of the areas of the apertures snd of the square roots of hights. The hights are measured from the centers of the apertures. The mean result, slso, of several experiments, all the openings being formed in hrass plates 1-20 of an inch thick, showed tbat for round, triangular and rectangulsr holes, the average of the numhers showing the proportion hetween theoretic discharge of water, calculsted as a falling body, and the actual discharge, aa messured, was 6.1 and, for rectangular holes, it was 6. It has also been found that the effeot of gruvity may be represented by 64 feet 4 inches, or 64.3—that is, the hight in feet through which the hody falls being multiplied hy 64.3 will give the square of its velocity in feet per second. For the actual discharge per second in cubic feet, multiply the product of the altitude or head of water in feet, and tbe area of the orifice in square feet, snd the time in seconds, hy 64 3, then extract the square root, snd multiply hy 6. It is found, also, that with small orifices the effect of a high head is to contract the vein and to diminish the discharge, so that the nearer the orifice can be brought to the surface, and yet the water be kept running with a full stresm and without causing any eddy or depression of the surface, the greater will he the discharge. But, with larger apertures, as for instance one with 3 1-4 feet in length by 1 5-8 feet in width or ahout 5 3-8 square feet of area, the dischsrge incresses with the increase of head.

As to the discharge of wsler from notches in dams, it is found to be equal to two-thirds of the dischsrge from an orifice of the same size with a full stream under the same head. The proportion between the theoretic and the actual discharge from opsn notches varies with the depths, the factors heing used less with the greater depths. An English hand-book of tables gives 214 cubic feet per minute as the quantity which would run over every foot in width of a regular notch, one foot in depth from the water's surfsce. The amount discharged depends very much on the form of the notch or aperture. A plain, rectsngular notch, cut with square edges in a three-inch plank, will discharge very much less than one which has its inner edges beveled or rounded off in the parbolio form of the contracted stream or vein of water. If the aperture he small the difference may amount to a fourth of the whole quantity. Care should also be taken to form the wing-walls to sluices with curved or trumpet-shaped approaches, conformed to the natural contraction which may be produced hy the overflow or sluice-way.

To Obtain the Quantity

Which passes through a parallel channel in a given time, the sectional areas should he multiplied by the mesn velocity, the latter element heing obtained by adding the velocity of the water at the surface and that at the hottom of the current and dividing the sum by two. As it may not be convenient, in every case, to ascertain the velocity at the bottom, the mean velocity may be determined with accuracy sufficient for practical purposes, by ascertaining the surface velocity in inches per seoond in the middle of the stream, and the mean velocity will he equal to this velocity less the square root of this velocity minus five. If, for example, the surface velocity in the stream is equal to 36 inches per second—the mean velocity will he found hy subtracting 5 from 36, leaving 31, then extracting the square root of 31, which is 5.5, and subtracting this last figure from 36, giving 30.5 inches per second for the mean velocity. Multiplying this number by 60 and dividing by 12, or, which is the same thing, multiplying it hy 5, will give the velocity in feet per minute. In the case, just supposed, the velocity per minute will he 152 5 feet. If, then, the water course he 4 feet wide and 2 feet deep, the amount of water discharged per minute would be 152.5x8 or 1,220 cubic feet.

When the overfall is a thin plate, it will discharge a greater proportionate quantity when the stresm is only one inch deep than with greater depths. When the overfall is of two-inch plank, the flow of water is more retarded, a greater head is requisite, and the maximum discharge is given by a head of seven inches. When the length of the overflow plank is ten feet, the co-efficient is greatest with a depth of five inches, and when wingboards are added, causing the stream to converge toward the overfall at an angle of 64 degrees, the coefficient is greater even when the head is less, showing the utility of proper wingwalls ou sluices.

To determine the

Hight of the Waterfall

In a running stresm, a small temporary dam, unless one exists, must be made so as to secure a still surface. Take two poles, sufficiently long to reach from the bottom of the water to

the required line level. Make a plain mark or notch on both aticks, at a distance from the upper ends equal to the distance of the intended line level above the water, marking that distance in feet and inches. Push the poles dnwn through the water into the earth at the bottom nntil the notches aro both at the level snrface of the water, care being taken to have the poles plumb and at a convenient distance apart. Sight aoross the tops of these two, and sot as many more as may be desired to ran the line of level to the desired point, and the tops, being ranged accnrately hy the first two, will show a water level ao many feet above that of the water. It is estimated that this is a more accurate way than the use of the ordinary apirit level.

American Inventions Aiding English Engineering.

The English correspondent of the *American Manufacturer* says: My engineering readers well know that there is a bit nf railway line in this country which is really the pioneer of the two-foot gnage eo far as this country is concerned. It is that bit of line which rnus from those mountains in Caernarvonshire, where, at Festniog, the splendid slates are qnarried which find their way to the rest of the world via a small port, a few miles from the quarries, known as Portmadoo. So stsep is the gradient that, in returning from the qnarries to the port, the engines are wanted only to act as brakes. With suoh faoilities it is possible to convey immense quantities nf slates even upon so tiny a road. So considerable has, however, been the progress in recent times in England, and so excellent are still the prospects in this direction, that the bnilders find it difficult to get all the slates they want with promptitude, and for those they get they have to pay enormous prices. Hence the London & North Western railway company have determined to make a line of some 12¼ miles in length, mainly to distribute the slates of the Festiniog qnarries by railway over most of the kingdom. Thia 12¼-mile line they are now making from Festiniog to that beautiful little spot in North Wales, known to nearly all American tourists in Europe as Bettwseyooed. In the doing of this work they have to drive a tnnnel twn and a half miles. The work is varied and difficult, but the engineers are going ahead well, becanse they have had sense enough to select good tools. These tools have been wholly provided for them by American inventora. All the work is being done by the Burleigh, the McKean and the Ingersoll drills. These all, as you know, are American inventions. The first is being fed by hand power and the latter by Fowler's air compressors. So splendid is the work these engines are doing that the tunnel is being made a place for visits of eagineers' associations who desire to keep themselves abreast of the smartest thing in their line now doing.

The Hudson River Tunnel.

Active preparationa are now in progress for the construction of the Hudson river tunnel on the Jersey shore. The entrsnce to the tunnel is located on Jersey avenue, near Fifteenth street, and the excavation will be carried in a northeasterly direction, terminating in Washington sqnare, New York. The tunnel will be two miles in length, and it is calcnlated the cars will pass through it in three minutes. The road-bed will be 23 feet in width. The shaft at the foot of Fifteenth street, Jersey City, is 100 feet in circnmference, and the brick wall is three feet and four inches thick. The shaft has been sunk to the depth of 20 feet, and will be further excavated to the depth of 62 feet, when the excavation beneath the river will he commenced. The machinery for the work is now in position, and the excavation of the shaft is nearly completed. The eastern grade of the tunnel is twn in a hundred feet, descending from Jersey City, then ascending on the New York side two in a hundred feet.

Aa soon as the shaft ia sunk to the required depth, a few feet will be excavated in the tunnel, when an iron cylinder with hinged doors will be inserted so that the laborers can proceed with the work. Compressed air will be forced from the surface into the cavity. Very little blast will be necessary, tbe first vein of rock being 1,100 feet from the New York side, and the rook is soft. The depth of earth over the masonry will not be less in any part than 35 feet, so that no injury can occur from the anohorage of vessels. The cost of this stupendous enterprise will be $15,000,000, of which $10,000,000 has been already subscribed.

A Monolithio Aqueduct.—The aqueduct from La Vanne to Paris, 135 milss long, is nearly entirely of *beton coignet*, or artificial atone. The Fontainebleau aection of 37 milea, over dry quicksand, is composed of a seriea of arches, some of them 50 feet high. Eight or ten bridges, of span from 75 to 90 feet, are also of *beton*. The composition for foundation and gravel walls ia: aand, 2½; gravel, 2½; hydraulic lime, 1; Portland cement, one-quarter. For pillara, abutmenta, etc.: sand, 4; hydraulic lime, 1. The other portiona, sand, 4; hydraulic lime, 1; Portland cement, one-quarter to one-half.

The Seaboard Oil Pipe Line.—Active operations in connection with thia enterpriae have been ateadily continued. On Angust 31st a party engaged in surveying the ronte arrived at Colnmbia, Pa., in the prosecution of their labors, and continued the survey toward Lancaster, Pa.

Useful Information.

Calculating the Power of Belting.

A writer in the *Textile Manufacturer* gives tbe following, which will interest mechanics: As the pnwer of a steam engine is expressed in three different ways—nominal, indicated and actnal—so the ability for a belt to transmit power may be expressed in three corresponding methods. We may denote, first, the poasible power; that is, the power which it is possible for the belt to transmit nnder the very bsst conditions. The power which it is possible for a belt to transmit is simply on the strength of the belt and the peripheral velocity of the driving pulley. In taking power from any source of motion, these are the two points which control us; all the others we can control and modify to a certain extent. Moreover, we can determine these data with a considerable approach to accnrscy; while all the others demand very difficult and carefal special experiment. Seeing, then, that ordinary belts will, as we have stated in a previous article, sustain safely a working tension of 45 pounds per inch in width, the rnle to determine the width of belt and size of pulley required to transmit a given horse-power is easily found. Since a horse-power is 33,000 pounds raised one foot high per minute, we mnst adjust the width and velocity of belt an as to effect the required result. Thus, if the belt moves with a velocity of 733 feet per miaute, a belt five inches wide will transmit five-horse power, provided the effective tension is 45 pounds per inch. If the velocity be increased to 1,466 feet per minute, the same bslt, with the same tension, will transmit ten-horse power. So that a five-inch belt, applied to a pnlley four feet in diameter, makiug 120 revolntions per minnte, wonld transmit ten-horse power when the effective tension is 225 pounds. We say effective tension, meaning thereby the tension actually applied to produce the revolution of the receiving pulley.

A belt may be subjected to great tension, and yet a very little of this tension may be applied to the transmission of power. But this circumstance can only arise when very little resistance is offered by the receiving pulley. If the latter offers an adequate resistance, the power will be transmitted. Consequently, the rnle that we have indicated corresponds to the rule for determining the nominal horse-power of a steam engine; the engine may work up to the power assigned to it, and indeed may in general far exceed this power; just as the belt may transmit the power for which it is calculated, though there is no certainty that it does so. By taking tbe actual effective tension of the belt, and multiplying it by the actual velocity, we get what may be oalled the indicated power of the belt, which corresponds to the indicated power of the steam engine. And, finally, by measuring the actual power transmitted—which may be done by means of a dynamometer—we can get the actual power transmitted. Rules based upon the amount of belt surfaced in contact with the pulley, and on similar data, cannot be made to give reliable results. For practical purposes velocity and power to resist tension are the only available elements of the calculation. Actual tension, adhesion, friction, etc., can all be varied at will, and consequently form no certain dependence for the calculations of the machinist and engineer.

Home-Made Colonists.—A novel feature in technical education consists in the special training of intending colonists which is being introdnced into certain educational establishments. At the Crystal Palace school of practical engineering, for instance, there is a colonial department devoted to the manufacture, if we may be allowed the word, of explorers and settlers. The conrse of instruction, which is as far as possible practical in its details, includes everything in the shape of scientific and mechanical expedients which a man thrown entirely on his own resources wonld be likely to find useful. Among the subjects tanght, for instance, are the damming of streams, the making of reservoirs, filter-beds, water wheels, pumps, wells and windmills, sanitary arrangements, rope-making, modes of clearing, the felling, barking and seasoning of timber, the prinoiple and construction of worka in timber, rough oarpentry, joining, fencing, cart-wheel making, glazing, roofing, painting, brick and tile making, the getting and working of stone, the preparation of mortar, cements, and concretes, road-making, tent-making, temporary shelters, and "shifts and expedients of camp life." With educational facilities such as these, the future race of coloaists should be able to compass great things.—*British Trade Journal.*

Bending Wrought-iron Tubing.—Ziegler, in the *Maschinen Constructeur*, recommends tubes, up to 20 centimetera diameter, to be chalked in the part which it is desired to bend, and laid on a fire with a small blast, on the part opposite to the curve which it is desired to make. The lower part of the tube only is to be heated; if the fire ia insufficient to heat the whole length, the tube must be paased backwards and forwarda till enough ia heated. The tube is then placed in a cloae-fitting hole up to near the warmed surface, and then carefully twisted around, not backwards. As the tube crushes, the bending is atopped, and operations begun again. The walls on both aides of the tnbe being at first of equal length, but the outer side getting longer during the bending, an equal heating wonld lead to buckling. Frequent heating is tn be avoided.

What is Steel?

The *American Manufacturer* says that it will give its readers the decision in full, as soon as rendered, oancerning the harassing qnestion, What is steel?

Whether it be cast, malleable or homogeneons material of definite physical strncture.

Whether it be malleable iron with sufficient carbon to temper.

Whether the whole iron family shonld be classified in the three divisions: (1) Containing bnt little carbon and not tempering. (2) Containing enough carbon to temper. (3) Containing much carbon and not malleable.

Whether it be homogeneous iron which mnst be specified as being "ten-carbon homogeneons irnn" up to "fifty-carbon homogeneous iron."

Whether it be iron cast direct from a state of fnsion into an ingot.

Whether it be iron of certain molecular condition rather than of atomio charaoteristics.

Whether it be iron defining itself by definite mechanical strncture, more than by its chemical elements.

Whether there bs distinct species of steel produced by tho separate processes, prohibiting a positive general line that would be applicable to all, on account of the differing chemical proportions of eaob.

Until a decision is arrived at, we must urge our readers to cling to the opinion and maintaiu it with religious zeal, tbat steel is steel.

Silicated Carbon Filters. — Professor Wanklyn has, it would appear, been conducting a series of exhaustive experiments, which have, off and on, extended over some years, with the object of ascertaining the peculiar action of "silicated oarbon" as a filtering medium. The results of his investigations we find detailed in a paper on filtration lately read by him at the Sheffield meeting of the British medical association. The one broad fact arrived at is that silicated carbon possesses in a high degree the property of decomposing nitrogenous and organic matters, and this though they be contained in very dilnte or comparatively strong solutions. Water containiag nitrogenous matter, animal secretions and excreta, as milk and urine greatly diluted, with solutions of quinine, morphia and stryohnine, were, among other liquids, made to pass through the filtering material and with striking results. In the case of the quinine and strychnine experiments eight and one-fourth aud eight and three-fourths grains respectively of these intensely bitter alkaloids were dissolved each in one gallon of water, and after filtration of the solutions they were found to be devoid of bitterness, a striking proof of the thorough decomposing or eliminating action of the material. The careful investigations of Professor Wanklyn establish the reputation of the silicated carbon filters on a yet surer basis, and point to their complete trustworthiness among much that is untrustworthy in the way of filters.

What is an Ingrain Carpet.—The two-ply ingrain known to the trade is a fabric composed of two webs or plies of cloth made with different colored yarns—say one ply green, the other red—of equal consistence or texture, united at the edges of selvages of each by the selvage threads, and ingrained or united at different parts of the cloth, wherever called for by the desiga or pattern. If the red ply represents the ground color of the design, then the green will be the figure color; and whenever the green figuring ply appears over the red ground ply, that is ingraining. The more general this ingraining or mixing up of the two webs or plies, the better the fabric is ingrained and the longer it will wear. The three-ply ingrain is made and iagrained after the same manner. A two-ply carpet, woven on the same loom and "mounted" in the same manner as a two-ply ingrain, if woven plain, without any design or pattern, would be a seamless bag, or two bags joined together by one side of each.

Good Health.

Method of Restoring Suffocated Persons.

A new instrnment for the purpose of resuscitating asphyxiated persons, and particularly those who have been in danger of death by drowning, has been invented by a French doctor, M. Woillez, and may be applied to similar uses in other casea of a like nature. The *Colliery Guardian* gives the following description: It is called the "spirophore," and consists of a sheet iron cylinder, large enough to receive the body nf an adult person. This cylinder ia closed at one end, and the body of the person to be operated upon is inserted, feet foremost, at the open end, up to the neck, round which a diaphragm ia placed in such a manner as to prevent air from entering the cylinder. An air pump is then set to work; the air is drawn off from the cylinder, with the resnlt of causing a partial vacunm, when the outer air by its weight forces itself into the lnngs through the mouth and nostrils, which are exposed to the external air; by an opposite action of the pump the air is allowed to re-enter the cylinder, and respiration is thereby imitated. A glasa plate inserted in the cylinder enablea the operator to watch the movements of the chest, which rises and falls, as in life, with the alternate working of the pump; these may be repeated abont 18 timea a minute, and an exact imitation of natural breathing is thereby effected. The maohine promiaes to supersede what is known as the "Silvester" method of resuscitating the apparently drowned, from the nsme nf its inventnr, a London surgeon. This is the mnde adopted by the Royal humane society, and consists of causing respiratory movements of the walls nf the chest by alternate raising and lowering of the arms of tbe patient as he lies on his back. In this method the lungs are nnly partially filled at eaob moment, while by means of the "spirophore" twice as much air enters the lungs at eaoh inspiration as in ordinary breathing, and more than 100 liters of air may be passed through the lungs of the patient in ten minntes, while a healthy person wnnld not breathe more than half that amount. There is no fear of rupturing the lungs, as no force is used in the ingress of the air beyond that exerted by its own weight, in endeavoring to overcome the vacunm created by the exhaustion of the air from tbe interior of the cylinder.

Antidotes for Poisons.

Mothers and nurses not unfreqnently give those under their charge poisonons doses of acids, laudanum, etc., or administer them in haste, in mistake; or children, ever restless, prying into cupboards, and finding some bottles or vials, have, ont of curiosity, hastily swallowed landannm, the mineral acids and the like, whilst younger children have been known, again and again, to get hold nf saucers placed on floors and windows, containing a solution of cobalt, "fly-stone," or fly-paper.

Opium is the most common poisonous agent, taken or administered in the form of laudanum, Bateman's drops, Elixir paregoric, Godfrey's cordial, and, I fear, some soothiag syrups, as well as most diarrhea and cholera mixtures. Any of these articles, administered to young children with unsparing hand, are liable to produce the dull, heavy stupor of opium poisoning. When the qnantity taken is snpposed to be sufficiently large to produce death, the first and great object is to remove the poison from the stomach by an active emetio dose; and the most convenient and safest for a mother to give, is finely ground mustard, suspended in warm water. This, or ipecac, may he given freely, till copious vomiting is excited.

The patient must be kept constantly roused and in motion, by walking; cold water being occasionally dashed over his head and face. After vomiting has been effected, strong ooffee and aqua ammonia may be administered with good results.

When sulphuric acid, or oil of vitriol, nitric acid, or aquafortis, and oxalic acid, have been swallowed, or poisonous aoids of any kind, the mother should administer as speedily as possible, an alkali to neutralize it, such as chalk, baking soda, lime-water, magnesia, saleratus nr strong soap-suds. For prussio aoid give dilute ammonia, and resort to the cold donche and electricity. If there should be any delay in getting any of these antidotes ready, mustard and warm water may be given with dilntents till vomiting occurs.

If arsenio or any of its preparations has been unwarily taken, magnesia or charcoal may be administered freely, stirrsd in milk, which will hold or arrest poisonous action, at least till the physician arrives with hydrated protoxide of iron, stomach-pump, etc.; though there is ample evideace in medical records to prove that patients have been saved by the free use of charcoal, suspended in milk; so also has an infusion of tobacco given freely, been successful, in those unused to the noxions weed. One of these agents are almost always at hand in every household, and hence no serions alarm need be manifested in slight accidents of this kind.

As mothers are apt to have in the house solutions of corrosive sublimate, or "bng-poison," children may tamper with the bottle; and, in such cases, prompt action is salvation to the child. She must not wait to summon a physician, but give immediately the whites of eggs, beaten up in water, without measure. The gluten of wheat flour is also useful, which can readily be employed by throwing a handful of flour into two or three pints of water, and administer it as fast as possible.

Poisoning in families by other agents are so rare that it is unnecessary to mention them. To recapitnlate: In all cases where poisonous substances have been taken into the stomach, the first step is to cause their ejection by vomiting, by simple means, if possible, or by neutralizing thom by the proper antidotes. —*Peterson's Magazine.*

Be Agreeable at Meals.—You tell us to make ourselves agreeable and entertaining daring our meals. Some of us have not the faculty of ready speech. What'a to be done in such a case? Ans.—Every one oan do something to add to the aocial life at the table. If one cannot talk, he can listen or ask questions, and draw out othera who can talk. Good listenera are aa necessary as good talkers. Never argue at the table; bnt tell plessant atories, relate or read anecdotes and look out for the good of all. Sometimea a single anecdote from a paper starts a conversation that lasts during the meal time. A family table ought to be bright and cheerful, a sort of domestic altar, before which every one casts down his or her offering, great or small, of pleasantness and peace; where, for at least a brief space in the day, all annoyancea are laid aside, all stormy tempera hnshed, all quarrels healed; every one being glad and content to sit down at the same board and eat the aame bread and salt, making it, whether it were a rich repast or a dinner of herbs, equally a joyfnl, almost a sacramental meal.—*Dr. Holbrook.*

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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Our latest forms go to press on Thursday evening.

San Francisco:
Saturday Morning, Oct. 7, 1876.

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BULLION SHIPMENTS.—Since our last report the following bullion shipments have been made: Northern Belle, Oct. 1st, $14,956; Arizona, Oct 1st, $3,681; Consolidated Virginia, Sept. 26th, $152,433; New Coso, Sept. 25th, $2,000; Leopard, Sept. 24th, $7,685; Consolidated Virginia, Sept. 27th, $840 741; California, same date, $20,637; Ophir, Sept. 28th, $12,875; Rye Patch, Sept. 27th, $3,100; Humboldt, September, $1,471; New Coso, Sept. 27th, $4,500, Sept. 29th, $2,400; Con. Imperial, Sept. 28th, $5,934; Tybo Con., Sept. 26th, $12,771; Comanche, Sept. 26th, $7,901; Consolidated Virginia, Sept. 30th, $154,460; California, Sept. 30th, $122,381; Manhattan, Sept. 29th, $13,806; Calaveras, Oct. 2d, $3,100; Ophir, Sept. 30th, $59,751; New Coso, Oct. 1st, $2,500.

JACOB HUNTSINGER, late president of the Miners' Trust bank, at Pottsville, Pennsylvania, was re arrested on five distinct charges, covering alleged embezzlements to the extent of $200,000. He was sent to prison in default of $238,000 bail.

THE large sum of $19,058,250 in silver coin has been paid out by the Treasury Department in Washington for the redemption of fractional currency since April 19th. A balance of $2,000,000 in such coin is still left.

IT is stated that Don Carlos informed the French government that he would not re-enter Spain at the cost of another civil war, and will quit Paris for Belgium or Switzerland in a few weeks.

ON FILE.—Lixiviation of Silver Ores; Tybo District and its Mines; Comstock Papers, No. 7; Alpine County Mines.

Micro-Lithology.

In a country like this, where riches are a title to high esteem and power, any new branch of science that has no direct influence upon money making is likely to be held in low estimation. Although micro-lithology may be said to rank amongst some of the newest branches of science, yet if we are to judge of it by the short paper on this subject read at the last meeting of the San Francisco microscopical society, which we append, it appears to us to have an eminently practical tendency (we mean money making) which ought to render it attractive, even to those who are not scientists.

Surely it is of importance, particularly to the Comstock miners, to acquire some sort of knowledge of the rocks amongst which they are daily working, and a way by which the structure and individual mineral particles can be readily distinguished or read like the letters in a book (such being micro-lithology) ought, we should think, to be sufficient to provoke a desire to acquire that knowledge. Some of the rock sections, when viewed under the microscope, present a most beautiful appearance, and it is difficult to believe that they are only portions of what appeared to the unassisted eye to be a dirty opaque rock.

Very little in English has been published on this subject, though all our leading geologists are, we understand, hard at work upon it, and no collection, particularly of what are called eruptive rocks, is now considered complete unless each specimen is represented by a slide, with the section of the rock mounted upon it. The thickness to which the sections are required to be reduced is, of course, entirely dependent upon the transparency of the rock constituents, and is commonly from one-hundredth to one-thousandth of an inch.

It is impossible to do justice to the subject without more space, so that we will try and acquire all the information we can, and give to our readers in a condensed form in another issue, but in the meantime we desire to call it to the attention of our numerous readers, some of whom are and have been conducting trials of mining ground on which have been expended millions of dollars and years of time. It is reasonable to suppose that without such knowledge as we refer to, great mistakes must have been made and no end of money and time wasted, which might have been saved had they been able to distinguish the rocks which formed the boundary of the different metaliferous deposits.

The following is the paper referred to above, which was read by Mr. Melville Attwood at meeting of the San Francisco microscopical society:

The slides marked Nos. 1, 2 and 3, are sections of rock from what, at the Gold Hill portion of the Comstock, is known as the black dyke. The specimens from which they are cut were taken from the dyke at different depths below the surface, at 1,100, 1,400 and 1,740 feet. I have made a careful examination of them, and think they are from a basaltic rock, belonging to the class called dolerites, in conformation of which these sections will be seen to consist of crystals of labradorite and augite, imbedded in a grayish paste or matrix, in which are also numerous minute particles of magnetic iron—presenting that mottled appearance so characteristic of that class of volcanic rocks. The matrix is a compound of the same ingredients Specific gravity, 2.7; contains silica, 50 per cent.

Slide No. 4 is a section of dolerite and anamesite, from Bolvershahn, in Siebengebirge. It resembles the black dyke so much that I can hardly distinguish any difference between them.

This black dyke, except in some places where it is separarated from the fissure by small masses of diorite and an altered trachytic greenstone, may be said to form the *foot-wall*, or western boundary, of the greater portion of the Comstock lode—though the term lode can hardly be applied to the Comstock, as, according to the generally accepted meaning of that word, "a true lode" should have well-defined foot and hanging walls. Now, in the case of the Comstock there is no well-defined hanging wall. Indeed the indistinct character of the eastern boundary renders the determination of the width of the main fissure a difficult matter.

The main fissure, with the dyke for a foot-wall, dips easterly at an angle varying from 45 to 55 degrees to a depth of upward of 1,000 feet; but the inclination after that appears to gradually diminish, and in some of the lower workings it is said to be less than 35 degrees.

The main fissure does not carry much ore. The bonanzas or rich ore bodies are found in separate fissures, which branch off and rise nearly vertically from the foot-wall. They are from 200 to many hundred feet apart.

The old plans (cross-sections) of the Ophir, Mexican, Savage, etc., show that these branch fissures rise in a waving line to the surface, giving that Y-like appearance to the workings at the croppings. They do not in their course, however, follow the irregularities of the foot-wall, so that at different points they run into it again. As depth is attained they do not reach the surface, but only rise to a limited hight above the foot-wall, rendering cross-cutting from it the best and safest trial to make for proving the value of the ground. The rock occupying the space between these fissures is an altered trachytic greenstone, but as the difference between it and the unaltered overlaying rock is not easily recognized by the naked eye, the importance of a microscopic examination of these rocks, as the trial of cross-cutting progresses, cannot be over-estimated. I need not add that to cross-cut in the unaltered rock would be a fearful waste of time and money. From all appearances these branch fissures may continue to be met with at much greater depths than even the most sanguine have been led to suppose.

Argentiferous gold has lately been found mixed with the silver ore in some of the deepest workings (2,000 feet) in fully as large a proportion as when the mines were only a few hundred feet deep.

Slides Nos. 5 and 6 are sections from the unaltered trachytic greenstone. Specific gravity, 2.7; contains silica, 52 per cent.

Slides Nos. 7 and 8 are sections of the altered trachytic greenstone; specific gravity, 2.658; contains silica, 62 per cent. The green mineral so conspicuous in these altered rocks is smaragdite. Slides Nos. 9 and 10 are sections from what may be called "True Horse," found in the ore bodies. Specific gravity, 2.5; contains silica, 85 per cent.

I have often felt greatly humiliated when asked the name of the rock in some of the Comstock mines which I was examining, and, like many others, had to cover my ignorance by telling them that it was "porphyry."

Slides Nos. 11 and 12 are sections from the Comstock ore, showing how the argentiferous gold is mechanically mixed with the silver ore.

Slides Nos. 13 and 14 are sections cut from rock taken from different points on Mt. Davidson and sent to me as specimens of the Mt. Davidson syenite. On examination it will be seen that the feldspar is not *orthoclase*, so that it is a diorite, instead of a syenite. I will try and procure some more specimens and submit them to the society at some future meeting.

I am greatly indebted to my friend Mr. Hanks for having kindly assisted me in determining the amount of silica in the different specimens, and also for helping me in taking the specific gravity of them.

Re-opening Mines in California.

We are glad to notice in our interior exchanges that in a great many instances work is being resumed on many mines in this State which have been abandoned in times gone by. There are, without doubt, thousands of mines now lying idle in California which could be made to pay if properly worked. Mines were abandoned 10 or 12 years ago which will pay now when managed in the right way. In those days we were comparatively ignorant of quartz mining, or rather of quartz milling, and many meritorious enterprises were abandoned which failed from ignorance, extravagance or careless ness of their managers.

The prevailing impression used to be that all a man had to do was to find a mine and it would make him rich. Then people began to think after a few years that he must find a *good* mine and it would make him rich. In these days finding the mine is the least part of the battle. There are plenty of mines, but not so plenty are those which make men rich. There is more in the exercise of prudence, judgment and economy in making a mine pay than in getting the mine. Of course, every ledge found will not pay, but many of them will that do not now, if the owners go to work in the right way.

Economy and the exercise of common sense in mining are, we are sorry to say, not practiced as often as they should be. It is absurd for a man to select half-a-dozen specimens of the best ore, have it assayed, and base all his calculations of profit on that assay. It is equally absurd for him to go into extravagant machinery and reduction works before he finds out something definite about the mine. Why cannot a company of from five to ten men go to work at a mine like an equal number would go to work on a ranch, and all of them pitch in and work, and at the same time make every cent tell? But, unfortunately, people imagine when they get hold of a mine that it must pay, whether or no, and they will run into all sorts of useless debt and trust to the mine to bring them out. As a general thing it is as hard for a mine to get out of debt as for an individual; in fact, it is harder for the mine than the individual, as it is not its own master.

The mining and metallurgical experience gained by our miners since the days of Washoe, Reese River, White Pine, Pioche and others, has been of great benefit. Mines were opened in California before those camps were known, which were abandoned for silver mines in Nevada, and which have since laid idle. Now, however, come men with more experience than the miners of 1855 and 1860 had in quartz. They are going about California, occasionally starting up a mine which they knew in early days and which they think will pay now with increased knowledge and experience.

It is a good thing for California and the mining interests at large that these mines are being re-opened. They furnish employment to miners and help sustain the smaller interior towns. Those which are successful are examples to incite others to take hold also. Scarcely a week passes but we hear of half a dozen instances of these old mines being started up again, sometimes by the old owners and sometimes by new ones. There are a great many left, however, which might be worked to advantage by the right men with proper experience.

Remarks on Quicksilver.

[Written for the PRESS by SAMUEL PURNELL.—No. 1.]

At many points in the Coast range of California are found deposits of cinnabar of greater or lesser extent. It has, however, been mined successfully in but few places. The reasons are that the metal is seldom found sufficiently concentrated in the rocks to make mining possible; while in the remaining cases the extracted ores are of such low grade that they cannot be profitably smelted. Occasionally small deposits are found that yield very rich ores—60 to 70 per cent.—but it is well known that those deposits which are large and easily mined, are almost invariably composed of ores so poor—one to three per cent.—that they can barely be operated with profit when quicksilvar is at a less price than 50 cents per pound. The price at present being some 40 cents only, we accordingly see the greater part of our cinnabar mines closed, the furnaces cold, and large concerns—that alone remain at work—making little or no money. Perhaps not more than four or five important mines are now in operation in California; and, though the public constantly hears of new and great deposits of cinnabar, they are, as yet, practically undeveloped and valueless, and cannot affect the market price of mercury. This article is written from the standpoint of the producing mines.

That quicksilver will soon rise in value does not seem probable, unless one should look for the still more improbable occurrence of a combination to limit production; and, consequently, the writer thinks that mercury will still farther decline in price, till only those works which can make a profit when it sells below 30 cents per pound can afford to remain in operation.

It would appear to be the rule that quicksilver mines grow constantly

Poorer From the Surface Down.

Taking the New Almaden, the largest and foremost mine on this coast, as an example, we find that in 1850 the ores worked yielded, on the average, 36 per cent.; in 1862, 19 per cent.; in 1865, 11 per cent.; in 1870, 5.23 per cent.; in 1873, 4.87 per cent.—constantly growing poorer, while, at this date, the yield is said to be not over three and a half per cent., and which is considered as low a percentage yield as can be made profitable with the present apparatus, and with quicksilver below 50 cents per pound. The same is substantially true of the balance of the prominent mines of the coast, and the effect of the anticipated decline will be disastrous to their interests. Then only the small deposits of rich ores could be worked, which would not half supply the home demand, and quicksilver would have to be imported from Europe. In short, the quicksilver interests of this coast, so far as the developed and well known mines are concerned, to the ordinary observer appear to be not only on the decline, but in process of extinction; and the object of this communication is to examine the whole ground, to show wherein lies the difficulty in effecting a cheaper production, and to endeavor to point out a proper remedy.

Production.

The celebrated mines of the world are Almaden, in Spain; Idria, in Austria; and New Almaden, New Idria and Redington, in California. The Almaden has been worked more or less since the time of the ancient Romans, and is, without doubt, the most extensive deposit of cinnabar in the world. The mine is now under lease to the Rothschilds of Europe. In 1872 the workings were over 1,200 feet deep, and the mine was reported to be in such bad condition that it was thought it could not much increase its then production. The ores are poor—about 5 per cent.—but their abundance and the cheap labor of the country for their extraction and smelting enables the Almaden quicksilver to control the Eastern trade.

The Idria mine has been worked over 400 years. In 1872 its deepest workings were 750 feet. For many years it has been in charge of the Austrian government, and all the operations of mining and smelting are carried on with the best talent available and the best known apparatus. Hence, the operations at Idria have long been considered as models of completeness, and works elsewhere have imitated their processes. The ores average about 3 per cent.

The New Almaden mine, in California, has been worked, more or less, since May, 1846 to date. From tables furnished by Mr. J. B. Randol, the general manager, we learn that the production from 1850 to close of 1875 was 595,882 flasks, obtained from ores yielding from 36 per cent. in 1850 to 3.35 per cent. in 1875. The average of about four tons of ore is raised from the mine to each ton smelted, which are hand sorted.

Statistics of the New Idria and Redington mines are not at hand; but in general it may be said that the ores of the leading mines of California are so poor that they do not now yield, on the average, over one or two per cent. as they come from the mine. The concentration that is done by hand must necessarily be expensive.

IN the California mine the water coming in is all the pumps can manage, running at the rate of ten strokes per minute steadily, each blast of rock at the bottom of the shaft opening a fresh source of water supply for the pumps to reduce. In fact, it is about an even thing between the pumps and the water at present.

Death of James Lick.

James Lick, ths great phllanthropist, whose nams ie famous for his gifte to science and cbnrity, dled in thle city at one o'clock Sunday morning, at ths ripe age of 80 years. His dlesolution wne painlese and peaceful. The body was free from dieease, and death was eimply the result of the complete wearing out of ths syetem. He had been gradually einking for the previous ten dnys, and he was fully conscious that hie earthly career was rapidly drawing to a close. He conversed cheerfully of his approaching death, and manifested a spirit of thorough resignation. His thoughts were chiefly centered on ths execution of his will, as expressed in ths deed of trust, and his conversations related principally to the consummation of hie public benefactions. The only regret with which he surrendered his life was that he was not permitted to see hie various projects carried out. Mr. Lick had been in ill health for several years past and although hie demise has been several times expected, he has rallied so often that it was expected he would live to see a realization of his plans.

Although Mr. Lick, whose portrait ie seen on thia page, hae been a resident of California for many years, he was very little known even in San Francisco, being a man of eccentric and peculiar habits and averse to mixing with hie fellows. When, however, a few years since, he suddenly announced bis intention of giving his immense fortune to scientific and charitable objects, his name and fame was spread abroad through ths land, and no Californian was better known abroad than James Lick. The money which he had accumulated during hie long life was given to a board of trustees, who were to carry out ths plans devised by the donor on broad and generous principles. Ths philanthropist has taken occasion to change the board of trustees several times, which led some persons to believe that he had repented of his resolution, but in each instance the property was turned over to a new board in the same manner as to the first. He also changed ths trust deed once, by modifying certain bequests, increasing others, and leaving a certain amount of money to hie relatives.

Whatever may have been bis reasons for making ths change, the fact remains that the bulk of his immense wealth is to be distributed in various practical ways to ths people, who should surely allow ths giver to choose where to bestow his fortune without so close a criticism as to all the objects. He was considered an eccentric man, but surely ths eccentricity which leads a millionaire to divest himself of property valued at $5,000,000, and give it, during hie lifetime, to the people among whom he lived, is to be commended, not censured. Thie he did, and whatever may have been his idiosyncrasies, his varying moods or temper, the crowning act of his life shows that ths heart was in the right place, and that hie fortune was bestowed in accordance with long cherished convictions and matured plans. Mr. Lick was a man whom even those nearest to him did not understand or appreciate. He never had credit for ths sterling qualities he possessed. His greatness of wisdom and generosity will be better recognized in ths future.

For presenting a biographical sketch of James Lick the materials are meagre. He lived in seclusion, and even when engaged actively in business private was little known, even to those with whom he was brought in contact. He was born August 25th, 1796, in Fredericksburg, Penn. He was a descendant of one of ths Revolutionary fathers, William Lick, who emigrated from Germany to America previous to ths war of Independence, in which he took an active part. James Lick was taught the trade of a cabinet maker and carpenter, and served for a while in a pianoforte manufactory in Baltimore, Maryland.

His restive spirit, however, attracted him in 1820 to Buenos Ayres, and there he remained for 12 years, accumulating by industry and his speculative insight the good round capital of $40,000. For a season Mr. Lick returned to Pennsylvania, and seriously bent himself toward establishing a manufactory of pianofortes in Philadelphia, but after leaving ground and erecting buildings he gave up the project and returned to Buenos Ayres. Matters were there not to his liking, and he is heard of next at Valparaiso, in Chile, where commerce and pianos gave him occupation for a few years. From Chile he went to Peru, and there devoted himself to his business in cabinet work and pianofortes for 10 or 11 years.

Mr. Lick arrived in San Francisco in 1847, having with him his entire wealth, amounting to the sum of $30,000. He invested all his capital and all earnings in real estate. The most promising portion of the city in those days was then what is known as North Beach. Most of Mr. Lick's investments were made in that locality, and owing to the subsequent abandonment of that section as a business center, advanced but little in value. He extended his investments, however, to other parts of the peninsula which have since become the very heart of the great city. Then, the lots he purchased were more cheap than cost him but a trifle. The lot on which the Lick house now stands is said to have been bought by him for an ounce of gold. All the city property, outside of North Beach, in which Mr. Lick invested, multiplied in value rapidly and built up the immense fortune which he in later years enjoyed. He also invested money in Santa Clara and Los Angeles counties, purchasing in the latter county a portion of the Rancho de Los Felis and the island of Santa Catalina. With the exception of the Lick House lot and the property in Santa Clara, Mr. Lick was rather conservative in the matter of improvements. The structure which bears his name is, however, one of the most notable edifices in the city, and at the period of its erection was far in advance of the times. The property at Santa Clara he improved for his own residence, and, on a piece of land near San Jose, erected a flour mill, on which he lavished about $200,000, almost all the woodwork in the same being of mahogany.

After a lifetime spent in the pursuit of riches, on the 2d of June, 1874, Mr. Lick executed a deed of trust in which he divided nearly all his vast fortune for public benefaction, and appointed a board of trustees. Estimates of the estate at that time placed its value at $5,000,000. We gave at that time the full text of the deed, but as it has since been nullified we append a list of the donations of the last trust deed as it now stands. The present Trustees, appointed about a week before Mr. Lick's death, are: C. M. Plum, E. B. Mastick, Wm. Sherman, Geo. Schoenewald and R. S. Floyd. We omit any account of the schedule of property, and, in speaking of the gifts, summarize them from the deed:

To his son, John Henry Lick, he gives $150,000. To John H. Lick, of Fredericksburg, Pa., $3,000; to Henry Lick, of same place, (his half-

THE LATE JAMES LICK.

brother,) $5,000; To his sister, Sarah Hepler, $5,000; to his niece, $2,000; to another niece, $2,000; to his nephew, Jemee W. Lick, of Santa Clara, $2,000; to Thos. E. Fraser, of San Jose, $2,000.

The Trustees are required "to expend the sum of $700,000 for the purpoes of purchasing land, and constructing and putting up on such land, as shall be designated by the party of the first part, a powerful telescope, superior to and more powerful than any telescope ever yet made, with all the machinery appertaining thereto and appropriately connected therewith, or that is necessary and convenient to the most powerful telescope now in use, or suited to one more powerful than any yet constructed; and also a suitable observatory connected therewith. This is in charge of the Regents of the University of California, and the telescope and observatory are to be known as the Lick Astronomical Department of the University of California."

The Protestant orphan asylum of San Francisco receives $25,000.

The sum of $25,000 is given to the city of San Jose to erect a free orphan asylum, without regard to creed or religion of parents.

The Ladies' Protection and Relief Society of San Francisco receives $25,000.

The Mechanics' Institute of San Francisco receives $10,000 for the purchase of scientific and mechanical works.

The Society for the Prevention of Cruelty to Animals of San Francisco receives $10,000, with a hope that similar societies will be organized in other towns of California.

The sum of $5,000 is to be expended in a monument to his mother, Sarah Lick; $5,000 for a monument to his father; $5,000 for a monument to his grandfather William Lick, who died near Morristown, Pennsylvania, at the age of 104 years, to commemorate the services rendered by him in the American struggle for independence, and the hardships he suffered at Valley Forge and other places during the struggle; all of said monuments to be erected at Fredericksburg; and the further sum of $5,000 in the erection of a granite monument to the memory of the sister of the party of the first part, named Catherine, to be placed at her burial place, Pennsylvania.

Out of the proceeds of the estate the sum of $100,000 is set aside to found an institution to be called the "Old Ladies' Home," as a retreat for women who are unable to support themselves and who have no means of their own. The trustees of this are A. B. Forbes, J. B. Roberts, Ira P. Rankin, Robert McElroy, and Henry M. Newhall.

The sum of $150,000 is to be expended for free baths in the city of San Francisco. H. M Newhall, Ira P. Rankin, J. D. B. Stillman, and John O. Earl are the trustees.

The sum of $60,000 is to be expended for a monument to Francis Scott Key, author of the "Star Spangled Banner." This is to be erected in Golden Gate park.

The sum of $100,000 is to be expended in a group of bronze statuary at the City Hall, which shall represent by appropriate designs and figures the history of California; first, from the early settlement of the Missions to the acquisition of California by the United States; second, from such acquisition by the United States to the time when agriculture became the leading interest of the State; third, from the last named period to the first of January, 1874.

The Trustees are to found and endow, at a cost of $540,000, an institution to be called "the California School of Mechanical Arts," the object and purpose of which shall be to educate males and females in the practical arts of life, such as working in wood, iron and stone, or any of the metals, and in whatever industry intelligent mechanical skill now is or can hereafter be applied; such institution to be open to all youths born in California. The institution shall be founded and endowed under the direction of said Dr. J. D. B. Stillman, Horace Davis, A. S. Hallidie, John Oscar Eldridge, John O. Earl and Hon. Lorenzo Sawyer, and the survivors of them.

After making these payments, the residue and proceeds of the estate is to be conveyed in equal portions to ths California Academy of Sciences and the Society of California Pioneers, to be expended in ths purchase of a library holding natural specimens, chemical and philosophical apparatus, rare and curious things useful in the advancement of science, and generally in carrying out the objects of the societies.

Mr. Lick reserved to himself his homestead in San Jose, during his life, but this now goes to the Pioneers and Academy of Sciences. He had previously given to these societies each a lot 80x275, on Market and Fourth streets, the lots being valued at about $250,000 each. These lots are aside from the deed of trust and the societies now have possession of them.

The Society of California Pioneers, of which Mr. Lick was President, took charge of the obsequies. The remains lay in state at the Pioneers' hall on Monday and Tuesday. On Wednesday the funeral services were held. The body was escorted to the grave by the Pioneers, Academy of Sciences, students of the University, Mechanics' Institute and city officials, etc. The funeral services were held at the Mechanics' Institute pavilion, and the remains temporarily placed in a vault in the Masonic cemetery, until their final removal to Mount Hamilton—the site of the Lick Observatory. To one who has visited Mount Hamilton it is no mystery that Mr. Lick should choose it as his final resting place. We believe that this dead of his with reference to Mount Hamilton will be the greatest monument of his life.

Book Notices.

POPULAR HISTORY OF THE UNITED STATES.—William Cullen Bryant and Sydney Howard Gay have succeeded in compiling the most attractive history of the United States yet published. It covers a period of time from the first discovery of the Western hemisphere by Northmen to the end of the first century of the Union, and is preceded by a sketch of the pre-historic period and the age of the mound builders. The work is by no means a hackneyed reproduction or piecing out of previous histories, but is fresh, sparkling and interesting, written in excellent style and effectually covers all the ground. It forms a complete and compact history of the United States, adapted to popular perusal through its attractive narratives, and may be accepted as an authority through its full and accurate presentations of all the facts of our career as a nation. Among previously existing works upon the subject, that which is most attractive in style is too voluminous for popular use, and that which is most complete ends at the year 1820, leaving untouched the record of the last half century, into which the most important events in the history of the nation are crowded. Bryant's history is entirely free from any sectional bias. It is not composed of dry facts, but chronicles the intellectual growth of the people, the ameliorations of manners, the changes in habits and costumes, the advance in science and art, the progress of invention, the relation of classes, the increase or want of prosperity, the moral condition of society, and the every-day life of the people. It will be complete and at the same time popular; that is to say, without detracting in the least from the dignity of the work as a history, its authors present the narratives in such a form that it must attract even younger readers. The history will be an authority as a work of reference. The first volume only has been published so far, but there are to be four large royal octavo volumes in all. The first volume is profusely illustrated. The drawings have been executed upon wood and steel by the first engravers in this country and Europe, and probably no original work equalling this in the variety and excellence of its illustrations has ever before been offered to the American public. The first volume has a steel engraving of William Cullen Bryant, four full-page engravings on steel, 12 full-page woodcuts and about 300 illustrations in the text. The work is sold exclusively by subscription. A. Roman & Co., No. 11 Montgomery street, are the general agents.

FATIGUE OF METALS UNDER REPEATED STRAINS. "The fatigue of metals" is the name which has been given to the effect produced by oft-repeated strains or impacts. Spangenberg's experiments, an account of which, translated for *Van Nostrand's Magazine*, is given in the treatise under consideration, were in continuation of Woehler's. The results of these very important experiments have been before the profession for some years, but, strange to say, have attracted no attention; and tests of iron and steel still go on for the purpose of determining their elasticity, their elongation under strain, their ultimate strength and other qualities, while Woehler and Spangenberg's experiments show that it is very doubtful that these bear any proportion to the durability of metals. These experiments prove that there is a limit of strain within which iron is practically indestructible, and that that limit is but little over 30,000 pounds per square inch for the best iron. It is to be hoped that the translation of Spangenberg's book will excite sufficient interest to lead to a continuation of the experiments in this country. This little work, one of Van Nostrand's Science Series, (No. 23), is for sale by Payot, Upham & Co.

TEETH OF WHEELS.—This is another of Van Nostrand's Science Series, and is a practical treatise on the teeth of wheels, with the theory and use of Robinson's odontograph. It was written by S. W. Robinson, professor of mechanical engineering in the Illinois Industrial University. The volume has resulted from an effort to bring before the mechanical public improved facilities for obtaining correct gearing. Correct gear teeth are essential for the economic transmission of power, as well as extremely desirable for avoiding needless rattling. Many of the cast gears introduced into mills and factories may properly be termed rattling machines, and simply because the designer had too vague a conception of the theory of gearing, or because he sought to avoid the trouble of laying them out. This little manual and the odontograph are intended to contribute toward relieving these inconveniences. This book is really useful for machinists and foundrymen.

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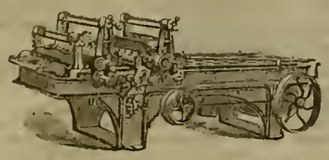
Is gotten up from new patterns specially for this Coast. It has Cast Steel Slotted Cylinder Head, running in patent self-oiling boxes; will plane 24 inch wide and *six inch thick*, and tongue and groove 14 inch wide. Will make rustic and stick gutters, or heavy mouldings, etc., and is the best job machine ever built. ☞ We have always on hand these machines with or without under cutter head, also, a large assortment of Planing Mill Machinery.



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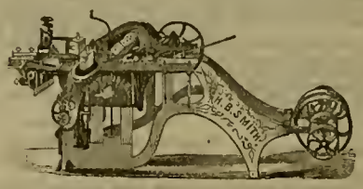

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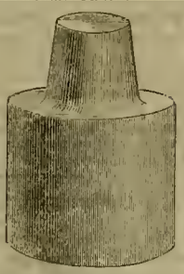

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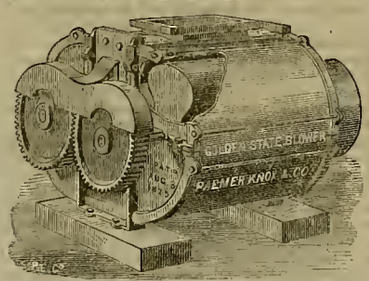

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They have no superior. The casing is made in sections, so as to be easily accessible. They run easily, not rapidly, and the perfect contact of wings gives a uniform and powerful blast.

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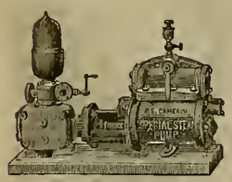

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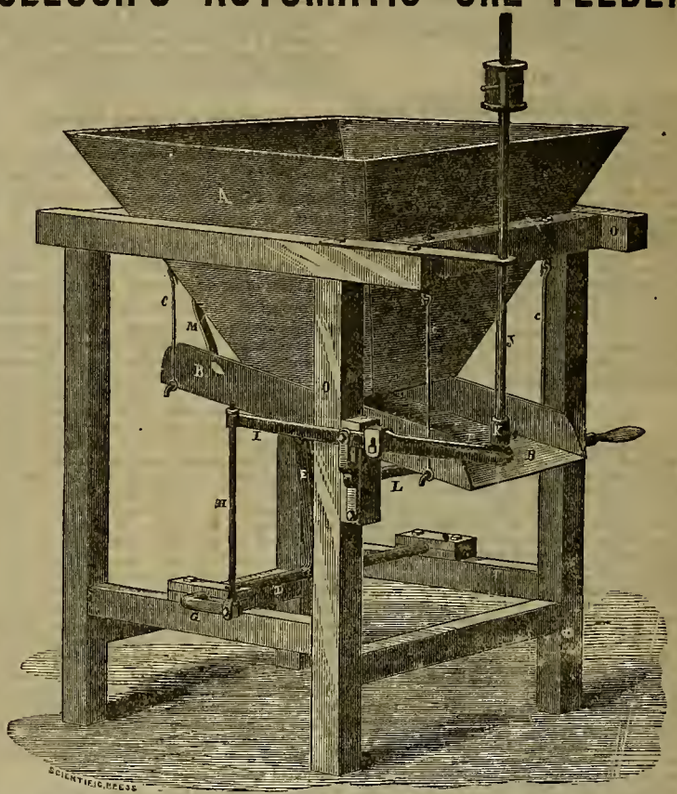

The TULLOCH AUTOMATIC ORE FEEDERS have been practically tested during the last year and a half in 40 mills, of from five to 80 stamps each, and have, in every case, given perfect satisfaction. The Tulloch machine is so constructed that the drop of the stamp feeds the ore in just such quantities as the stamps require. Each drop regulates the supply required for the next drop, whether it be more or less, and this is the true principle of an automatic feeder. The tray moves longitudinally, and a stationary scraper forces the material forward at each backward movement of the tray, thus insuring the perfect feeding of all classes of ore, whether it be dry or wet.

We appeud a few extracts from the many testimonials which we have received from mill men and practical mining men, of the effectiveness and positive action of the Tulloch Feeder. We do not depend solely upon these testimonials, as we are aware that testimouials are easily secured for almost any machine, but the high character of the parties certifying to those herewith given, will establish their value and genuineness:

Mr. Jas. G. Fair has 28 in use; says: I regard them superior to any Feeder with which I am acquainted; I consider no mill perfect without them. Mr. E. R. Burke, Sumner mine, Kern county, has 16: They never get tired; no man living can feed a battery as well; they save us in labor alone $48 a day. Mr. Green, of the Phœnix mill (12), Amador, writes: The first machine we had is working away; is as good as ever; have not spent a dime on it; in nse 14 mouths; you need fear no competitiou on wet ores. Mr. W. H. Armstrong, of Consolidated Virginia mill: We are running 60 stamps with your Feeders; they give unhounded satisfaction; they have not cost the company one dollar since atartiug up. Mr. H. C. Bidwell, Supt. Green Mountain and Gold Stripe companies, Plumas county, writes: From the start they have done splendidly; no tronble whatever; requiring but little atteution; a boy can manage them; the saving in both labor and castings is fully one-half over the old style of feediug by hand. Mr. Presto . writes: I have four of your Automatic Self Feeders, and my mill men each and all say they are the best they have ever used. They are an improvement on all I have ever seen, being simple in construction, and good for either wet or dry crushing; refer to over 40 mills using them; they are guaranteed to give perfect satisfaction. Send for circulars.

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Dewey & Co. {224 SANSOME ST.} **Patent Agt's.**

Continued from Page 238.

Idaho.

THE MINES.—Idaho *Avalanche*, Sept. 23: The prospects of Owyhee look better to-day than they have for the past eight or nine months.

Captain Bledsoe paid off at the Poorman on last Wednesday. He says the mine is looking remarkably well and is yielding ore of an excellent quality from a good sized vein.

Ore is now being hauled by Pooey's teame to the Elimore mill to be crushed shortly. Some samples brought down from the mine the other day will run, from appearances, fifty per cent. silver, others literally filled with gold. An item concerning the yield of this mine in early days is somewhat interesting. Out of one stope, just above the present works, $680,000 were taken from a space of 100 feet in depth by 135 feet in length. This mine yielded, in the short time it was worked, $1,490 000.

John Mineer, Esq., paid off the Empire mine's creditors last Thursday. A small force has been engaged stoping from between the fifth and sixth levels where the ledge is three feet thick of good looking ore, carrying gold mainly. A limited quantity of this ore is being hauled to the Elmore mill to be reduced as soon as some repairs now being made on the mill are completed.

The Belle Peck is being vigorously worked with a full crew of men and is looking splendidly, the tunnel being in nearly 700 feet along the ledge.

The Potosi's tunnel is 400 feet in length on the ledge. A fine lot of ore is already out and stoping going on daily. The ledge is of good size and rich all the way.

Bahcox has had two and three-quarter tons of ore from the Crown Prince mine, worked by Mr. Trask's arastra, that yields about $80 per ton. This proves that to be a rich mine.

These encouragements, together with the fact that operations have been resumed on the Golden Chariot; South Mountain to be started up again; T. W. Jones & Co.'s mill in process of erection to reduce the abundant supply of valuable ores at Wagontown; and the probability of the Maggie mining company, at Frauconi, resuming; all combine to make the outlook more cheering than it has been for a long time.

There are various other mines, not enumerated here for want of time to visit them, whose prospects will appear in our next issue.

Montana.

MINING PRODUCTS.—Helena *Independent*, Sept. 24: It is pretty certain that the mining products of Montana this year are greatly in excess of last. It is true that in almost every locality in the Territory the want of proper milling facilities has been felt. In some of the mining districts unusual exertions have been made to supply the deficiency; or at least to put enterprises on foot that will in time grow into undertakings commensurate with the wants of the Territory. But in spite of all the drawbacks which our mining industry has encountered, the increase in the gold and silver product of Montana has been steady and rapid. From the best attainable sources of information these conditions are largely shared by those other States and Territories whose chief industry is similar to our own. Notwithstanding the great discouragement which the late fall in the price of silver occasioned, it in no wise diminished production; nor has the recent rise in the price of bullion lent to it any unusual activity. The fact indeed is plain that the production is steady and is rapidly assuming the condition of those other industries which help to develop communities and build up prosperous States and Territories.

Wyoming.

BLACK HILLS ITEMS.—Black Hills *Pioneer*, Sept. 9: While visiting some of the claims on Deadwood yesterday, we called on Messrs. E. B. Buckley, Smith Engher and our old-time friend George Stokes. These gentlemen own No. 10, and from its present appearance we should like to have a finger in that pie. The gulch at this point is very narrow, and it was supposed that the claim was nearly worked out. But these gentlemen conceived the idea of tunneling in on the southern side, on which there is a neck—or perhaps a better expression might be, bench. The creek rim was found when about three feet in, and from that on for 30 feet, the distance now reached, the dirt has yielded from 25 cents to $1.50 to the pan. It is believed by many old miners that this old channel on Deadwood has not yet been struck, and that the gold that has been taken out this summer is a second deposit. Should this be the case, this gulch will prove to be the richest ever discovered. Messrs. Chisem & Son sold out their claims, Nos. 4 and 5 below discovery, last Thursday to Robert Neale for $2,200. Like most of the adjoining claims, the creek had on 4 and 5 is about worked out. But the past week's experience proves that this is no evidence that all or nearly all of the "yellow dross" has been captured. For instance, Jack McCleary, on No. 9, after finding good pay above bedrock, sunk a hole four feet through it, near his upper line, and found $2.50 to the pan. No. 10 (Buckley, Enghar & Co.) drifted into their bar and found the identical body of gravel that has made Noe. 1 and 2 so famous. The streak is at least 14 feet in width and seven feet deep, and prospects from 50 cents to $1.50 to the pan. A very few weeks will demonstrate that, as to the richness of Deadwood, the half has not been told us. Many of the miners on Whitewood and Deadwood have made their little pile in three short months, and are now selling their claims, and going back to their homes to spend the winter.

THE CITY'S CENTENNIAL.—Arrangements are being made to celebrate the Centennial of San Francisco and the Mission Dolores. "On the ninth of October, 1776, having blessed the place and erected the cross, the Fathers took formal possession of the mission and began the work of conversion." The eighth of October has been selected for the demonstration, as it occurs on a Sunday, and as there is some doubt as to whether the eighth or ninth is the correct date. The proceedings will commence at 10 A. M., when Grand Pontifical High Mass will be celebrated in the Mission grounds.' At the conclusion, Archbishop Alemany will address the audience in Spanish, Bishop Grace, of Minnesota, will preach in English; then the assemblage will repair by the shortest route to the Mechanics' pavilion, where the commemorative exercises will be held. Hon. John W. Dwinelle will deliver an address in English, and General Vallejo will do the same in Spanish. Immediately afterwards the Archbishop, the clergy, and as many of the audience as wish, will return to the Mission for the purpose of laying the foundation stone of the new Mission church. The old building will not be removed, but care will be taken to preserve it as long as possible, as a memorial, of the fittest kind, of the planting of Catholicity on this spot, and of the origin of San Francisco.

STEPS are being taken at Carihoo to test the numerous quartz ledges abounding in that locality.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING SEPTEMBER 19TH, 1876.

BUTTONS.—Samuel Adame, Antioch, Cal.
HOSE COUPLINGS.—Orrin Collier, Sacramento, Cal.
TRACE HOOKS.—Thomas J. Hubbell, Napa City, Cal.
BELLOWS VALVES.—James Campbell, S. F.
PROCESS AND APPARATUS FOR REFINING AND PACKING SULPHUR.—Edwin J. Fresser, S. F.
HINGE JOINTS.—Menzo Spring, S. F.
STEAM GOVERNORS.—John K. Trne, S. F.
STEM WINDING DEVICE FOR WATCHES.—Albert Troller, S. F.
FLUMES.—Sem'l C. Dike and Sidney M. Brown, Yon Bet, Cal.

REISSUE.

HYDRAULIC NOZZLES.—Henry C. Perkins, North Bloomfield, Cal.

FOR WEEK ENDING SEPTEMBER 26TH, 1876.

DENTAL PLUGGERS.—Cassius M. Richmond, S. F.
AXE SETS AND GAUGES.—William C. Carleton, Boise City, Idaho Ter.
SAWMILL HEAD BLOCKS.—William Phillips, Colfax, Cal.
RAILWAYS.—Andrew S. Hallidie, S. F.
WATER MOTORS.—John B. Morrow, S. F.
TRUCKS.—William L. L. Pierce, S. F.

REISSUE.

VAULT COVERS.—Thomas Thompson and Thornton Thompson, S. F.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

WIRE ROPE STREET RAILWAYS.—A. S. Hallidie, San Francisco. This invention relates to that class of street railways in which the cars are propelled along the track by means of an endless wire rope or chain, which is arranged to travel in an underground tube or tunnel, and in which a gripping device is used to connect the cars with the rope through a slot in the tube. This system of propelling railway cars has long been used upon uniform planes. Sometimes these planes were inclined and sometimes horizontal, but previous to Mr. Hallidie's invention it was never made available for long lines of railway which pass over changing levels, or for propelling cars over steep inclines in the length of a road which was operated by horse or other power at either end of the line, so that the same car could proceed from one system of propulsion to the other without trouble or delay. The invention is intended to accomplish this object by providing a separate truck or car, which is called a dummy, for supporting the gripping device and which is a permanent part of the road, while the car to be propelled is simply connected by a coupling with this car or dummy so that it can be disconnected and run upon another track without disarranging any of the mechanisms connected with the gripper. This particular patent of Mr. Hallidie's covers the truck or dummy having the permanently attached gripping device.

HINGE JOINT.—Menzo Spring, San Francisco. This invention, while susceptible of a wide range of applications, is more especially adapted to the needs of that class of hinge joints which are employed in artificial legs at the knee joint or articulation, where the combined qualities of lightness and strength to resist the usual strain on such parts and a distribution of bearing and wearing are essential to obviate and overcome the constant wear by friction, are a great desideratum; or, if in case the difficulty be not entirely overcome, a means is afforded whereby a repair may be readily effected without injury to the artificial leg or joint. As joints of this class are apt to become worn by the constant use to which they are subjected, a split is formed on the hub through which one end of a thin flat wire (equal in thickness to the portion worn away), may be inserted, and such wire is then bent half way around the opposite end of wire inserted in the opposite split, thus effectually rendering the joint tight.

BELLOWS VALVE.—James Campbell, San Francisco. The object of this invention is to provide a combined valve and valve seat, which can be manufactured independent of the pipe or tuyere of a blacksmith's bellows, and which can be slipped into the pipe or tuyere so as to fit in it and form a partition across it, the valve being a portion of the partition. The object of this valve is to prevent the gas from passing or being drawn from the fire into the bellows when it is not in action. By the method of construction referred to, the invention avoids the expense of constructing the valve a permanent part of the pipe and avoids the unsightly square enlargement heretofore employed to contain this valve. The independent valve can be constructed quite cheaply and applied to the nozzles now in use.

OPERATING SAW-MILL HEAD BLOCKS.—William Phillips, Colfax, Placer county. Mr. Phillips' patent covers certain improvements in operating saw-mill head blocks, and consists, first, in a novel connection with the pawl lever (which turns the ratchet and pinion to operate the rack on the head block) so that all lost motion of the pawl between the teeth is taken up before the lever begins to move, and consequently the log will be moved exactly as much as is indicated upon the rule over which the lever passes, and all the cuts will be made of the same size. The invention further consists in the use of a curved rack having subdivisions and an adjustable stop, by which the exact thickness of the lumber will be insured at each cut.

STEM WINDING DEVICE FOR WATCHES.—Albert Troller, San Francisco. The invention relates to a cheap and simple device for winding watches by the turning of the stem, and it consists of a spirally slotted barrel which is turned alternately in one direction and the other by the stem, and the slot acts upon one end of a knee lever. The opposite end of this knee lever actuates a pawl so as to turn the winding ratchet. The mechanism is simple and can be easily repaired by any watch-maker, and in its operation does not necessitate the releasing of the crown until the watch is wound up.

COMBINED FERRULE AND TRACE FASTENER FOR WHIFFLETREES.—Thomas J. Hubbel, Napa. The object of the invention is to combine a trace fastener of superior construction with the ferrule that fits over the ends of the singletrees. The device can also be applied on the ends of neck yokes, so as to provide a convenient fastening for the breast-straps. The same device can be used on the ends of neck yokes for providing a fastening for the breast-straps.

California at the Centennial.

We gave last week the awards of Centennial exposition premiums to Pacific coast exhibitors so far as they are announced. It seems to be the general opinion that the coast has fared very well at the hands of the juries. The final judgment will of course depend upon the full list when it shall be made up. There was felt considerable anticipation of ill treatment among the exhibitors of California wines, and fears were expressed that other regions which were represented on the wine jury would obtain the benefit of partiality. There arose a better feeling from the fact that a Californian, Mr. J. H. Johnson, of Santa Barbara, was added to the official wine tasters, and justice was expected through his efforts. The awards for wine, show that this expectation was well founded.

The best deeds of our State at the exposition were done at the fruit display, September 9th There seems to be some difference of opinion concerning the excellence of the exhibit. It is however, pleasing to note in the correspondence from Philadelphia that the popular verdict was loud in glory of our fruit, although for reason of early picking and transportation it must have been very inferior to the fully matured and luscious profusion under which our home tables bend. A correspondent of the *Chronicle* writes: "Prof. Bsird, of the Smithsonian Institute at Washington, who is here in charge of the Government display, came around one day and made a careful examination of our fruit exhibit, expressing great satisfaction with what he saw; and the next day he brought Professor Huxley and wife, of England, and found a rare pleasure in showing the productions of California to such lovers of nature and of the good and beautiful. They seemed familiar with the fruits, as grown under glass, but expressed great surprise that such delicate fruits could be brought to perfection in the open air in California. As Professor Huxley gave his hand in parting he said, 'I had a desire to visit California, but now I deeply regret that I must return to England without seeing your beautiful country.' Although this letter is taken up with a report of the fruit display, and only half the story is told, it is due to the exhibit made, on account of its immense importance to California. Indeed, the State is under very great obligations to the venturesome gentlemen who had the courage to gather up this fruit, pay the heavy freight bills and send on a capable gentleman to place it on exhibition. The sad mistake made by the Legislature in refusing to appropriate a single dollar in aid of an exhibit of the resources of California at this grand gathering of the nations of the earth and of our own people, can only be realized by a visit to the Centennial grounds."

A dispatch from Philadelphia, Oct. 3d, says: "The party now in charge of what purports to be California fruit in pomological hall sells Florida shaddock for California oranges, and is reported to be mixing Eastern fruit with that of California, and so vending it. The fruit judges refuse to enter the California fruit for competitive exhibition because it was sold in the hall. The interest and standing of the California exhibits have been lowered by this method of procedure." This matter should be inquired into and justice meted to the fraud.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

GLENN'S SULPHUR SOAP cures skin diseases by its specific action on the capillary vessels which have been morbidly impressed by their impure contents, and which are restored to a healthy condition by the counter-irritant influence of the sulphur. Sold everywhere.

ENCROACHMENT OF THE SEA.—Since the commencement of the Madras harbor works the sea, says *Engineering*, has been gradually but steadily encroaching on the beach at Royalpooram, and a groyne to the north of the railway shears, around which one could pass dryshod a few months since, has now some six feet of water at the end of it. One result of the continuous scour which is going on is that a large number of iron rails, the property of the Madras railway company, have been disembedded. These rails must have been dropped where they are now being found about the time of the commencement of railway operations in Madras presidency.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

CHAMPION M. Co.—Sept. 30th. Location: Pacific Coast. Capital stock, $10,000,000. Directors—H. H. Lawrence, Samuel Locke, John D. Wilson, W. H. Duryea and J. E. Wilson.

CARELESS TOM G. & S. M. Co.—Sept. 29th. Location: Mono Co., Cal. Capital stock, $5,000,000. Directors—John M. Moore, A. O. Bradford, Jas. Tobin, C. C. Marsh and J. L. Trask.

EL PASO S. M. Co.—Sept. 30th. Location: California. Capital stock, $10,000,000. Directors—R. J. Trumbull, R. Guy McClellan, W. H. Knepp, T. L. Bibbins and A. D. Hatch.

KNIGHT'S American Mechanical Dictionary is a book for all persons who make, buy, sell, use, or want to know anything about tools for machines, or are curious as to the history and development of mechanic art. It is a descriptive word-book of tools, instruments, machines, chemical and mechanical processes; civil, mechanical, railway, hydranlic and military engineering; a history of inventions; general technological vocabulary; and digest of mechanical appliances in science and the industrial and fine arts, etc. For circulars or price address or apply to A. Roman & Co., wholesale and retail booksellers, 11 Montgomery street, San Francisco.

ISSUED OCT. 1st, 1876.

Testing and Working Silver Ores.

The above is the title of an illustrated work of 114 pages, for miners and prospectors by Chas. H. Aaron, which has just been issued by Dewey & Co. Mr. Aaron has managed to give many useful hints and suggestions, free from all technicalities, and in such a style as to be easily comprehended. It is written for the miner, with no chemical symbols or metallurgical technicalities to confuse those who are not chemists or metallurgists. The following summary of the contents of the work will give an idea of its scope:

Under the heading of the first chapter, "Testing Ores for Silver," we find paragraphs on ore formation, test for silver, with heat and water, acid or blow pipe. In speaking of testing for a process, the extent and richness of ores is considered, smelting ores, selecting and working sample, appliances for testing, roasting, etc. Under the head of "Working Ores" the author describes Aaron's process, has something to say of superheated steam, preparation of dichloride of copper and protochloride of copper, use of copper and iron, quantity of chemicals, carbonate of lime, chloride ores, amalgam, Patchen's process, etc. He also describes this method of working roasted ores, treatment of base metals, stirring, heat of furnace, want of sulphur, etc. Under the head of "Leaching Processes" are the titles, Smelting, Mexican process, Kroencke's process, Chilean process, etc. Under "Pulverizing Machines" are described the arastra and its construction and operation, stamp batteries, screens, Crocker's trip-hammer battery, Paul's pulverizing barrel, Kendall's battery, Noice's pulverizer, a cheap rock breaker, etc.

In speaking of amalgamators the author describes a cheap amalgamator, grinding the ore, directions for making a barrel, preventing mechanical wear, use of quicksilver, copper in bars, Freiberg barrel, cheap barrel, trough, barrel on rollers, Aaron's amalgamator, separator, etc.

He describes an improved retort, roasting furnace, furnace tools and furnace building. Among the miscellaneous mention may be found Aaron's leaching apparatus, with two or three different arrangements, a small mill, sampling tellings and settling tanks, dichloride of copper, etc.

The book is a serviceable one for miner's and prospector's use. Price, post free, (in leather,) $2.00. Address Dewey & Co., MINING AND SCIENTIFIC PRESS, 224 Sansome street, San Francisco.

HOW TO STOP YOUR PAPER.—If a subscriber wishes to stop his paper, do not direct the postmaster to return your paper. That will not stop it. Do not write upon it and return it yourself. That lays you liable to a fine. There are three ways to stop it: 1st. When you subscribe, state that you wish the paper to stop at the expiration of the time paid for. 2d. If you did not so expressly order, send a postal card, to reach us any time before the expiration. 3d. If you have neglected these two simple methods, and the time to which you have paid is past, send a letter enclosing pay for each paper issued since your subscription expired, at the rate of eight cents a copy or 33½ cents a month. If your paper does not stop promptly thereupon, you may be assured your letter has been miscarried; and, to test the fact, send a "postal" at once, that measures may be instituted for finding it or recovering the money.—*N. Y. Independent.*

SAN BERNARDINO, Cal., Sept. 29th, 1876.

MESSRS. DEWEY & CO., S. F.—

Gentlemen:—I was very much pleased a few days ago to receive my patent in the "Pastry Bureau" case, and I take great pleasure in recommending your agency to those who may have business in that line, particularly the first time. The courteous, prompt and efficient manner in which you act as patent solicitors is certainly the highest recommendation an inventor could ask; and to this fact I am pleased to attest. Hoping that our mutual interests have not ended with this successful issue, for I shall need your services in future, I remain truly yours, J. R. FELTER.

METALS.

WHOLESALE.

THURSDAY, M., Oct. 5, 1876.

American Pig Iron, ₩ ton	32 00	@	— —
Scotch Pig Iron, ₩ ton	31 50	@	32 00
White Pig, ₩ ton	40 00	@	50 00
Oregon Pig, ₩ ton	31 50	@	32 50
Refined Bar	— —	@	4¼
Bollar, No. 1 to 4	— —	@	8½
Plate, No. 5 to 9	— —	@	8¾
Sheet, No. 10 to 14	— —	@	5¾
Sheat, No. 16 to 20	— 5½	@	— —
Sheat, No. 22 to 24	— 5	@	— —
Shaat, No. 26 to 28	— 5½	@	— —
Horse Shoes, per kag	7 00	@	8 50
Nail Rod	— 10	@	— —
Norway Iron	— 8½	@	— 9½
Rolled Iron	— 4	@	— 8
Other forms for Blacksmiths, Miners, etc.	— —	@	— 4¼
COPPER.			
Copper Tin'd	— 37	@	— 40
Sheathing, ₩ lb	— 24	@	— 40
Sheathing, Yallow	— 21	@	— 12½
Sheathing, Old Yallow	— 10	@	— 11
Composition Nalls	— 21	@	— —
Composition Bolts	— 24	@	— —
STEEL.—Eoglish Cast, ₩ lb	— 20	@	— 25
Andareon & Woode' ordinary sizes	— —	@	— 15
Drill	— —	@	— 16½
Fist Bar	— 15	@	— 20
Plow Steal	— 8½	@	— 9
TIN PLATES.—			
10x14 I C Charcoal	11 00	@	— —
10x14 I X Charcoal	13 00	@	— —
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	— 24	@	— —
Australian	— 25	@	— —
ZINC.—By the Cask	— —	@	— 11
Zinc, Shaat 7x3 ft, No 7 to 10 ₩ lb	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 12½
do do 8x4 ft, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	3 50	@	3 75
QUICKSILVER, per ₩	— 40	@	45 —

LUMBER.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE Retail Price.	
		Rough, ₩ M	22 50
Rough, ₩ M	$18 00	Fencing, ₩ M	22 50
Rough refuse, ₩ M	14 00	Flooring and Step, ₩ M	32 50
Rough clear, ₩ M	30 00	Flooring, narrow, ₩ M	35 00
Rough clear refuse, M	20 00	Flooring, 2d quality, M	25
Ruatic, ₩ M	32 50	Laths, ₩ M	3 50
Rustic, refuse, ₩ M	22 50	Furring, ₩ lineal ft	—¾
Surfaced, ₩ M	30 00	**REDWOOD—Retail.**	
Surfaced refuse, ₩ M	20 00	Rough, ₩ M	22 50
Flooring, ₩ M	28 00	Rough refuse, ₩ M	18 00
Flooring, refuse, ₩ M	18 00	Rough Pickets, ₩ M	18 00
Beaded flooring, ₩ M	30 00	Rough Pickets, p'd, M	20
Beadad floor, refuse, M	20 00	Fancy Pickets, ₩ M	30
Half-inch Siding, M	20 00	Siding, 10½ ₩ M	25 00
Half-inch siding, ref, M	16 00	Surfaced and Long Beaded	37 50
Half-inch, Surfaced, M	25 00	Flooring	35 00
Hulf-inch Surf. ref., M	20 00	Do do refuse, ₩ M	25 00
Half-inch Buttens, M	20 50	Half-inch surfaced, M	22 50
Pickats, rough, ₩ M	1 00	Rustic, No. 1, ₩ M	40 00
Piokats, rough, p'ntd	13 00	Battens, ₩ linal foot	—¾
Piokats, fancy, p'ntd	28 00	Shingles ₩ M	2c
Shingles, ₩ M	35 00		

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, Oct. 4, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 91 to 91¼. Silver 88@86½.

GOLD in N. Y., 109⅞

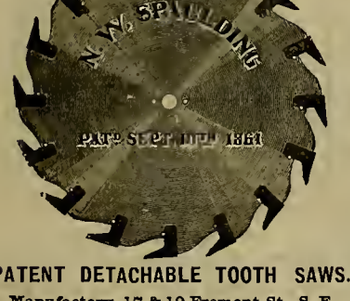
GOLD BARS, 880 to 890. SILVER BARS, 12@20 par cent. discount.

EXCHANGE on N.Y., 50@55-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Parie, five francs per dollar; Mexican dollars, 6 per cent. discount.

LONDON :—Consols, 94⅛; Bonds, 102¾; Parie, five francs per dollar; Mexican dollars, 6 per cent. discount.

QUICKSILVER in S. F., by the flask, per ₩ 44@45

N. W. SPAULDING'S



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Manufactory, 17 & 19 Fremont St., S. F.

PAUL'S DRY PROCESS.

I am now prepared to test gold and silver milling ores in any quantity from FIVE POUNDS to FIFTY TONS and assert my ability to prove, by machinery NOW UP, and open to public inspection, and by practical testing of its merits, that I can increase the yield of gold mills, working wet batteries and copper plates, from FIFTY to ONE HUNDRED PER CENT., and on silver ores a much larger percentage than by pan amalgamation, and at less expense than any known method of working quartz will; and from some "gold" ores of California can extract more silver extra with the gold, which is now lost, than all the expenses of mining and milling. Having had 25 years' practical experience in milling gold and silver ores, I presume to know where of I speak, and AM PREPARED TO PROVE ALL I ASSERT. These mills, for simplicity, cheapness, practicability and perfection in working, challenge the skill of the age to surpass. Quartz miners who desire to investigate and have their ore tested, are invited to a critical examination of the machinery and process, and can receive permits for examination, particulars and pamphlets explaining process by calling at my office. ALMARIN B. PAUL.

Room 20, Safe Deposit Building, 328 Montgomery St

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J. J. Phillips M.E.
EXAMINER OF MINES, MINERAL ASSAYER &C.
640 CLAY ST. S.F.

Author of
Explorers', Miners', & Metallurgists' Companion, 672 pages, 83 illustrations. Price 2d edition, $10.50.
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BRASS CASTINGS of all kinds,
WATER GATES, GAS GATES,
FIRE HYDRANTS,
DOCK HYDRANTS.
GARDEN HYDRANTS.

A General Assortment of Engineers' Finding.

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For Mining and Farming Purposes.

ROOT'S BLAST BLOWERS,
For Ventilating Mines and for Smelting Works.
HYDRAULIC PIPES AND NOZZLES,
For Mining Purposes.
Garratt's Improved Journal Metal
IMPORTED OF
IRON PIPE AND MALLEABLE IRON FITTINGS.
ALL KINDS OF
WORK AND COMPOSITION NAILS,
15-tf AT LOWEST RATES.

San Francisco Pioneer Screen Works,

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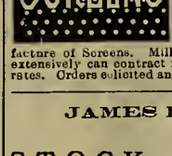
32 Fremont Street, San Francisco.



Several first premiums received for quartz mill Screens, and perforated sheet metals of every description. I would call special attention to my SLOT CUT and SLOT PUNCHED SCREENS, which are attracting much attention and giving universal satisfaction. This is the only establishment on the coast devoted exclusively to the manufacture of Screens. Mill owners using battery Screens extensively can contract for large supplies at favorable rates. Orders solicited and promptly attended to.

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(Member of the S. F. Stock and Exchange Board),

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Marine, Stationary and Portable Boilers, Smoke Stacks, Hydraulic Pipe, Oil or Water Tanks, Ore and Water Buckets, Gasometers, Girders, Bridges and Iron Ship Building.

ALL KINDS OF SHEET IRON WORK.

Repairing promptly attended to at the lowest possible terms.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Eagle Quicksilver Mining Co.—Location

of works, Santa Barbara county, Cal. Principal place of business, San Francisco, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 30th day of September, 1876, an assessment (No. 9) of two hundred and fifty ($250) dollars per share was levied upon all the issued stock of said company, payable immediately, in gold coin of the United States, to the Secretary, at his office, rooms 5 & 6, No. 302 Montgomery street, San Francisco, Cal.

Any shares upon which said assessment shall remain unpaid on Wednesday, the 28th day of November, 1876, shall be deemed delinquent, and will be duly advertised on Saturday, the second day of December, 1876, for sale at public auction, and unless payment shall be made before, will be sold on Monday, the fourth day of December, 1876, as provided by the articles of agreement of said company, to pay the delinquent assessment, together with cost of advertising and expense of sale. By order of Board of Trustees. WM. H. WATSON, Secretary.

Cincinnati Gold and Silver Mining Co.

Location of principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, levied on the 29th day of August, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Boynton, A A W	117	1500	$ 150 00
Boynton, A A W	118	500	50 00
Gates, G A	86	100	10 00
Gates, G A	not issued	68	5 80
Kennedy, Frank	40	150	15 00
Kennedy, Frank	110	50	5 00
McIntosh, J, Trustee	161	500	50 00
McIntosh, J, Trustee	162	500	50 00
McIntosh, J, Trustee	163	500	50 00
McIntosh, J, Trustee	164	500	50 00
McIntosh, J, Trustee	165	37	3 70
McIntosh, J, Trustee	156	1000	100 00
Mellias, R M, Trustee	132	500	50 00
Mellias, R M, Trustee	139	500	50 00
Peck, E T	122	600	60 00
Tenney, John, Trustee	141	100	10 00
Tenney, John, Trustee	142	100	10 00
Tenney, John, Trustee	143	100	10 00
Tenney, John, Trustee	144	100	10 00
Tennay, John, Trustee	145	100	10 00
Tennay, John, Trustee	146	100	10 00
Tennay, John, Trustee	147	100	10 00
Tenney, John, Trustee	148	100	10 00
Tenney, John, Trustee	149	100	10 00
Tenney, John, Trustee	150	100	10 00
Tenney, John, Trustee	151	100	10 00
Tenney, John, Trustee	152	100	10 00
Tenney, John, Trustee	153	100	10 00
Tenney, John, Trustee	154	100	10 00
Tenney, John, Trustee	155	100	10 00
Tenney, John, Trustee	156	100	10 00
Tennay, John, Trustee	157	100	10 00
Tenney, John, Trustee	158	100	10 00
Tenney, John, Trustee	159	100	10 00
Tenney, John, Trustee	160	138	13 80

In accordance with law, and an order of the Board of Directors, made on the 29th day of August, 1876, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, No. 535 California street, San Francisco, Cal., on the 15th day of October, 1876, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. WM. SMALL, Secretary.

Office, room 2½, No. 535 California street, San Francisco, Cal.

Mariposa Land and Mining Company

of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa county, Cal. Notice is hereby given, that at a meeting of the Board of Directors, held on the seventh day of September, 1876, an assessment, No. 7, of one dollar ($1) per share was levied upon the capital stock of the Corporation, payable immediately in United States currency, to the Secretary, at the office of the Company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary at the office, No. 9 Nassau street, New York, N. Y.

Any stock upon which this assessment shall remain unpaid on the ninth day of October, 1876, will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Monday the thirtieth (30th) day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

LEANDER LEAVITT, Secretary.

Office, Room No. 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal.

Mariposa South Mining Company—Location

of principal place of business, San Francisco, Cal. Location of works, Spanish Bait Mining District, Nye county, Nev.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 1), levied on the eighth day of August, A. D., 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount
Buckley, Thos	143	500	$ 50 00
Buckley, Thos	144	500	50 00
Buckley, Thos	148	200	20 00
Caldwell, J A	113	500	50 00
Caldwell, J A	114	500	50 00
Caldwell, J A	115	500	50 00
Caldwell, J A	116	500	50 00
Caldwell, J A	117	500	50 00
Caldwell, J A	118	500	50 00
Caldwell, J A	119	500	50 00
Caldwell, J A	120	500	50 00
Caldwell, J A	121	250	25 00
Caldwell, J A	122	250	25 00
Caldwell, J A	123	250	25 00
Caldwell, J A	124	250	25 00
Caldwell, J A	125	250	25 00
Caldwell, J A	126	250	25 00
Caldwell, J A	127	250	25 00
Caldwell, J A	128	250	25 00
Caldwell, J A	129	100	10 00
Caldwell, J A	130	100	10 00
Caldwell, J A	131	100	10 00
Caldwell, J A	132	100	10 00
Caldwell, J A	133	50	5 00
Caldwell, J A	134	50	5 00
Caldwell, J A	135	50	5 00
Caldwell, J A	136	50	5 00
Cooper, A B	183	100	10 00
Cooper, A B	184	50	5 00
Cooper, A B	185	20	2 00
Cooper, A B	188	20	2 00
Flint, Benj	157	1000	100 00
Flint, Benj	158	500	50 00
Flint, Benj	159	500	50 00
Lewis, L J	159	500	50 00
Lewis, L J	163	100	10 00
Moore, S Grant	55	500	50 00
Moore, S Grant	56	500	50 00
Moore, S Grant	57	500	50 00
Moore, S Grant	58	500	50 00
Moore, S Grant	59	500	50 00
Moore, S Grant	70	500	50 00
Moore, S Grant	71	500	50 00
Moore, S Grant	72	500	50 00
Moore, S Grant	73	250	25 00
Moore, S Grant	74	250	25 00
Moore, S Grant	75	250	25 00
Moore, S Grant	76	250	25 00
Moore, S Grant	77	250	25 00
Moore, S Grant	78	250	25 00
Moore, S Grant	79	250	25 00
Moore, S Grant	80	250	25 00
Moore, S Grant	81	100	10 00
Moore, S Grant	82	100	10 00
Moore, S Grant	83	100	10 00
Moore, S Grant	84	100	10 00
Moore, S Grant	85	50	5 00
Moore, S Grant	86	50	5 00
Moore, S Grant	87	50	5 00
Moore, S Grant	88	50	5 00
Nicholl, Geo, Trustee	8	500	50 00
Nicholl, Geo, Trustee	9	500	50 00
Nicholl, Geo, Trustees	10	500	50 00
Nicholl, Geo, Trustee	11	500	50 00
Nicholl, Geo, Trustee	12	500	50 00
Nicholl, Geo, Trustee	13	500	50 00
Nicholl, Geo, Trustee	14	500	50 00
Nicholl, Geo, Trustee	15	500	50 00
Nicholl, Geo, Trustee	16	500	50 00
Nicholl, Geo, Trustee	17	500	50 00
Nicholl, Geo, Trustee	18	500	50 00
Nicholl, Geo, Trustee	19	500	50 00
Nicholl, Geo, Trustee	20	500	50 00
Nicholl, Geo, Trustee	21	500	50 00
Nicholl, Geo, Trustee	22	500	50 00
Nicholl, Geo, Trustee	23	500	50 00
Nicholl, Geo, Trustee	24	500	50 00
Nicholl, Geo, Trustee	25	500	50 00
Nicholl, Geo, Trustee	26	500	50 00
Nicholl, Geo, Trustee	27	500	50 00
Nicholl, Geo, Trustee	28	500	50 00
Nicholl, Geo, Trustee	29	500	50 00
Nicholl, Geo, Trustee	30	500	50 00
Nicholl, Geo, Trustee	31	500	50 00
Nicholl, Geo, Trustee	32	500	50 00
Nicholl, Geo, Trustee	33	500	50 00
Nicholl, Geo, Trustee	34	500	50 00
Nicholl, Geo, Trustee	35	500	50 00
Nicholl, Geo, Trustee	36	500	50 00
Nicholl, Geo, Trustee	37	500	50 00
Nicholl, Geo, Trustee	38	500	50 00
Nicholl, Geo, Trustee	39	250	25 00
Nicholl, Geo, Trustee	40	250	25 00
Nicholl, Geo, Trustee	41	250	25 00
Nicholl, Geo, Trustee	42	250	25 00
Nicholl, Geo, Trustee	43	250	25 00
Nicholl, Geo, Trustee	44	250	25 00
Nicholl, Geo, Trustee	45	250	25 00
Nicholl, Geo, Trustee	47	250	25 00
Nicholl, Geo, Trustee	48	250	25 00
Nicholl, Geo, Trustee	49	250	25 00
Nicholl, Geo, Trustee	50	250	25 00
Nicholl, Geo, Trustee	51	100	10 00
Nicholl, Geo, Trustee	52	100	10 00
Nicholl, Geo, Trustee	53	100	10 00
Nicholl, Geo, Trustee	54	100	10 00
Nicholl, Geo, Trustee	55	100	10 00
Nicholl, Geo, Trustee	56	100	10 00
Nicholl, Geo, Trustee	57	100	10 00
Nicholl, Geo, Trustee	58	100	10 00
Nicholl, Geo, Trustee	59	100	10 00
Nicholl, Geo, Trustee	60	100	10 00
Nicholl, Geo, Trustee	61	50	5 00
Nicholl, Geo, Trustee	62	50	5 00
Nicholl, Geo, Trustee	63	50	5 00
Nicholl, Geo, Trustee	64	50	5 00
Nicholl, Geo, Trustee	167	250	25 00
Plumb, W J	89	500	50 00
Plumb, W J	90	500	50 00
Plumb, W J	91	500	50 00
Plumb, W J	92	500	50 00
Plumb, W J	93	500	50 00
Plumb, W J	94	500	50 00
Plumb, W J	95	500	50 00
Plumb, W J	96	500	50 00
Plumb, W J	97	250	25 00
Plumb, W J	98	250	25 00
Plumb, W J	99	250	25 00
Plumb, W J	100	250	25 00
Plumb, W J	101	250	25 00
Plumb, W J	102	250	25 00
Plumb, W J	103	250	25 00
Plumb, W J	104	250	25 00
Plumb, W J	105	100	10 00
Plumb, W J	106	100	10 00
Plumb, W J	107	100	10 00
Plumb, W J	108	100	10 00
Plumb, W J	109	50	5 00
Plumb, W J	110	50	5 00
Plumb, W J	111	50	5 00
Plumb, W J	112	50	5 00
San Pedro M	158	500	50 00

And in accordance with law, and an order of the Board of Directors, made on the eighth (8th) day of August, A.D., 1876, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, on Tuesday, the seventeenth (17th) day of October, 1876, at the hour of two (2) o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Secretary.

Office, 418 California street, San Francisco.

Sierra Iron Company—Location of principal

place of business, San Francisco, Cal. Location of works, Sierra and Plumas counties, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, levied on the 18th day of August, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Wm Reed	24	50	$ 50 00
Sophia Day	28	100	100 00
Wm S Day	38	50	50 00
P N Lilienthal	101	100	100 00
Chas D Haven, Trustee	54	500	500 00
Geo S Ladd, Trustee	55	500	500 00
G Hilton Scribner	58	50	50 00
L E Pratt	62	300	300 00
Wm Reed	63	50	50 00
Wm Reed	64	50	50 00
G Hilton Scribner	65	145	145 00
Wm Reed	67	100	100 00
Ben Hurxthal	81	50	50 00
Ben Hurxthal	82	50	50 00
G Hilton Scribner	85	55	55 00
P N Lilienthal	100	1800	1800 00
Ben Hurxthal	86	50	50 00
H F Cuttar, Trustee	91	100	100 00
H F Cutter, Trustee	103	50	50 00
H F Cutter, Trustee	104	50	50 00
P N Lilienthal	142	3713	3713 00
James D Hague	143	1	1 00
Edward Bosqui, Trustee	121	250	250 00
Edward Bosqui, Trustee	122	250	250 00
Edward Bosqui, Trustee	127	250	250 00
Edward Boequi, Trustee	130	250	250 00
P N Lilienthal, Trustee	144	300	300 00
Helbing & Strans	151	250	250 00
Chas Kohler	148	500	500 00
Jacob Benjamin	146	50	50 00
F S Spring, Trustee	154	300	300 00
P N Lilienthal, Trustee	140	50	50 00
F Weissnhorn	153	700	700 00

And in accordance with law, and an order of the Board of Directors, made on the 18th day of August, 1876, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at room No. 9, Halleck Block, 318 Sansome street, San Francisco, Cal., on the 25th day of October, 1876, at the hour of 12 o'clock M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

CALEB T. FAY, Secretary.

Office, Room No. 9, Halleck Block, San Francisco, Cal.

Union Stone Company of California—

Location of works and principal place of business, the city and county of San Francisco.

NOTICE.—There is delinquent upon the following described stock on account of assessment (No. 4) levied on the 22d day of August, 1875, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Miller, Wm J	5	50	$ 10 00
Miller, Wm J	8	300	60 00
Miller, Wm J	7	500	100 00
Miller, Wm J	8	500	100 00
Miller, Wm J	9	500	100 00
Miller, Wm J	10	500	100 00
Peter Dean	3	250	50 00
Dougins, J T	101	100	20 00
Dougins, J T	201	100	20 00
Dougine, J T	301	100	20 00
Dougine, J T	501	100	20 00
Dongine, J T	601	100	20 00
Dougine, J T	701	100	20 00
Dougins, J T	1301	100	20 00
Dougine, J T	1401	50	10 00
Edward Commins	1051	50	10 00

And in accordance with law, and an order of the Board of Directors made on the 22d day of August, 1876, so many shares of each parcel of said stock as may be necessary will be sold at public auction at the office of the company, No. 19 First street, San Francisco, California, on Tuesday, the 17th day of October, at the hour of three o'clock P. M., of that day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

R. F. KNOX, Secretary.

Office, No. 19 First street, San Francisco, Cal.

Amusements.

GRAND OPERA HOUSE, Mission Street, near Third. Open every evening with first-class Dramatic Company. Box Office open from 9 A. M. to 10 P. M. Doors open at half past seven. Commence at eight o'clock. TONY DENIER.

CALIFORNIA THEATER, Bush Street, above Kearny. Open every evening with the best Dramatic Company in the United States. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance. Doors open at half past seven. Monday, September 4th, EDWIN BOOTH.

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HAWKINS & CANTRELL,

MACHINE WORKS,

210 & 212 Beale St.,

Near Howard, - - - SAN FRANCISCO.

MANUFACTURERS OF

Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horse Power.

N. B.—Jobbing and Repairing done with Dispatch.

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Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,

SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors:

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WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary

24v17-qy

THOS. PENDERGAST. HENRY S. SMITH.

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IRON CASTINGS

and MACHINERY,

OF ALL KINDS.

Fremont Street, bet. Howard and Folsom.

SAN FRANCISCO.

SHEET IRON PIPE.

THE

Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,

Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

☞ All kinds of Machinery made and repaired.

24v22-3m JOSEPH MOORE, Superintendent.

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EUREKA FOUNDRY,

Light and Heavy Castings of Every Description Manufactured.

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LYNCH'S

Ventilating and Illuminating Tile,

The Only Illuminating Tile Manufactured for Lighting Cellars, Basements and Dark Rooms which provides proper ventilation for such places.

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Established for the Manufacture of

RAILROAD AND OTHER IRON

—AND—

Every Variety of Shafting,

Embracing ALL SIZES of

Steamboat Shafts, Cranks, Piston and Connecting Rods Car and Locomotive Axles and Frames,

—ALSO—

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Of every description and size.

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☞ The highest price paid for Scrap Iron.

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Manufacturing Company,

MANUFACTURERS OF ALL KINDS OF

Wharf and Bridge Bolts, Railroad Trestle Work, Car Frames and Bolts, Machine Bolts. Set Screws and Tap Bolts, Lag or Coach Screws.

ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGON AND SQUARE NUTS, WASHERS, BOLT ENDS, TURN-BUCKLES, ETC., ETC.

13, 15 & 17 Drumm St., near California,

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IRON FOUNDERS.

Quicksilver Condensers and Furnace Castings.

Sole manufacturers of the **Hepburn Roller Pan** and **Callahan Grate Bars,** suitable for Burning Screenings.

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CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston

PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

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Sole Proprietor and Manufacturer of the

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☞ Special attention paid to Brewers', Distillers', Beer and Hot Liquor Pumps and Wine Pumps. Particular attention paid to AIR PUMPS, also to

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All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells, and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch

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Machinery and Castings of all kinds.

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The Ingersoll Rock-Drill

Is Extensively Used in the East and

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Wherever introduced, because it can be run with less power, labor and repairs, and do more work than any other Drill in the market. It has but few parts, is easily handled, being light, and HAS AUTOMATIC FEED, which saves labor. WE ASK FOR TRIAL AGAINST ANY COMPETITOR. For particular information regarding Drills or Air Compressors, send for circular to

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The Gardner Automatic Safety-Stop Governor.

MORE THAN TEN THOUSAND NOW IN USE. EVERY ONE WARRANTED.

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☞ When all others fail, buy a "Gardner." We have all sizes of these celebrated Steam Governors on hand at all times.

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Guaranteed to Chloridize from 85 to 95 per cent. of any gold or silver ores that are not more profitable for smelting. Will also desulphurize ores and put them in proper shape for working in cupola furnaces.

Cost of Roasting and Chloridizing by this Process:

Two cords of wood at $6	$12.00
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Wear of shoes and power	1.50
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In a furnace of three or four times this capacity the cost is decreased by 20 per cent.

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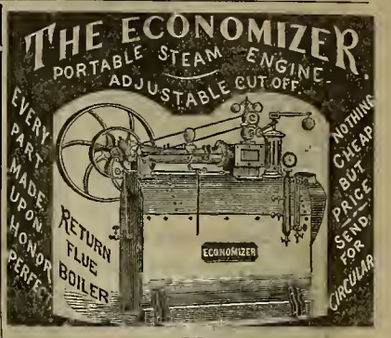
ADJUSTABLE CUT OFF.



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During my absence in Oregon, and till further notice, all orders for the above Saws or Saw Teeth addressed to D. L. EMERSON, No. 1 Spear street, will receive prompt attention by my agent, Wm. L. Jones.

We have a large number of Saw Teeth and Saw Bits—about 15,000—now on hand, and are receiving new invoices to supply the demand.

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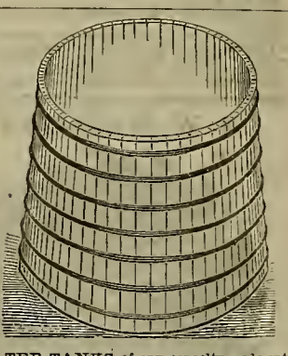

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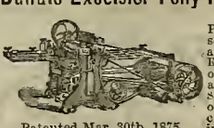
Buffalo Excelsior Pony Planer & Matcher



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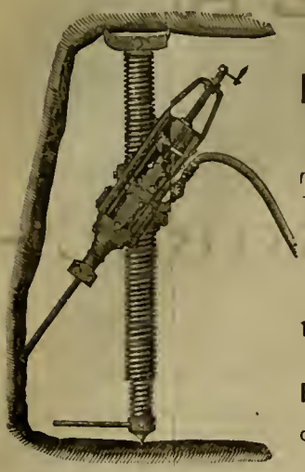

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Bucket-Plunger Steam Pump.

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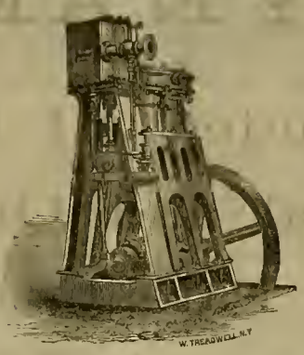

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We are prepared to furish PUMPS UNDER CONTRACT, gnaranteing their ability to perform any specil work for which steam pumps are aaptable, such as

RAISING WATER FROM MINES

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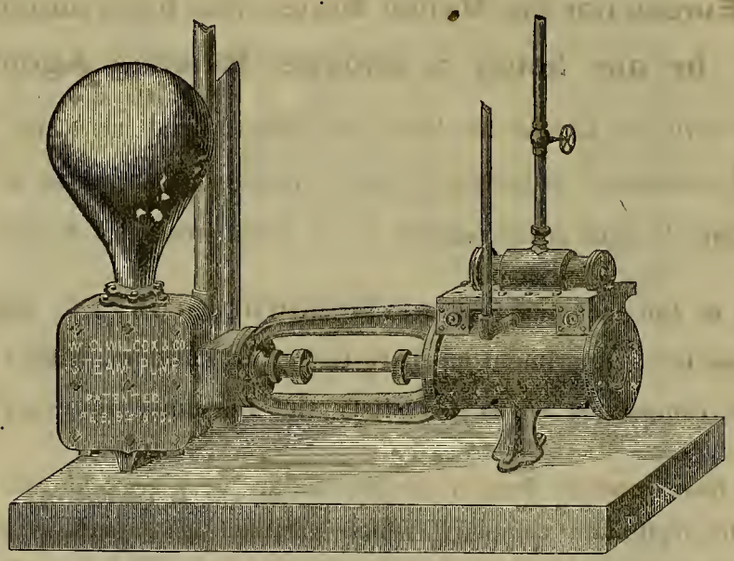

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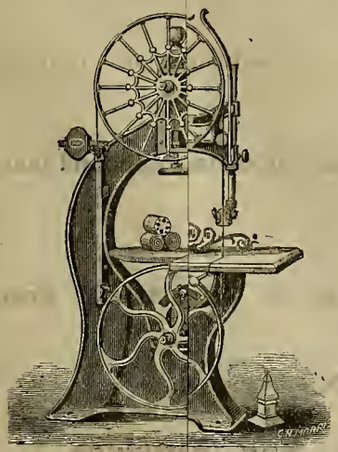

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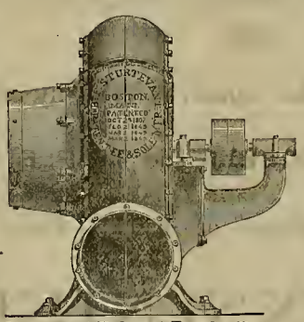

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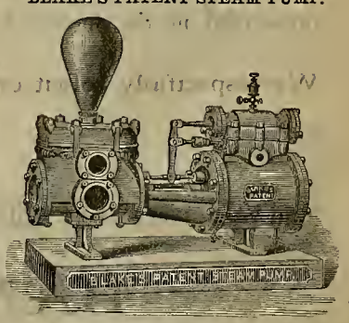

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Both grades of Powder are now almost entirely free from fumes, and those which are yet evolved by a blast are not at all injurious to the health.

☞ We beg leave to assure the public that our suits against the Hercules Powder Manufacturers are vigorously prosecuted in the higher United States Courts. ☜

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, OCTOBER 14, 1876.

VOLUME XXXIII. Number 16.

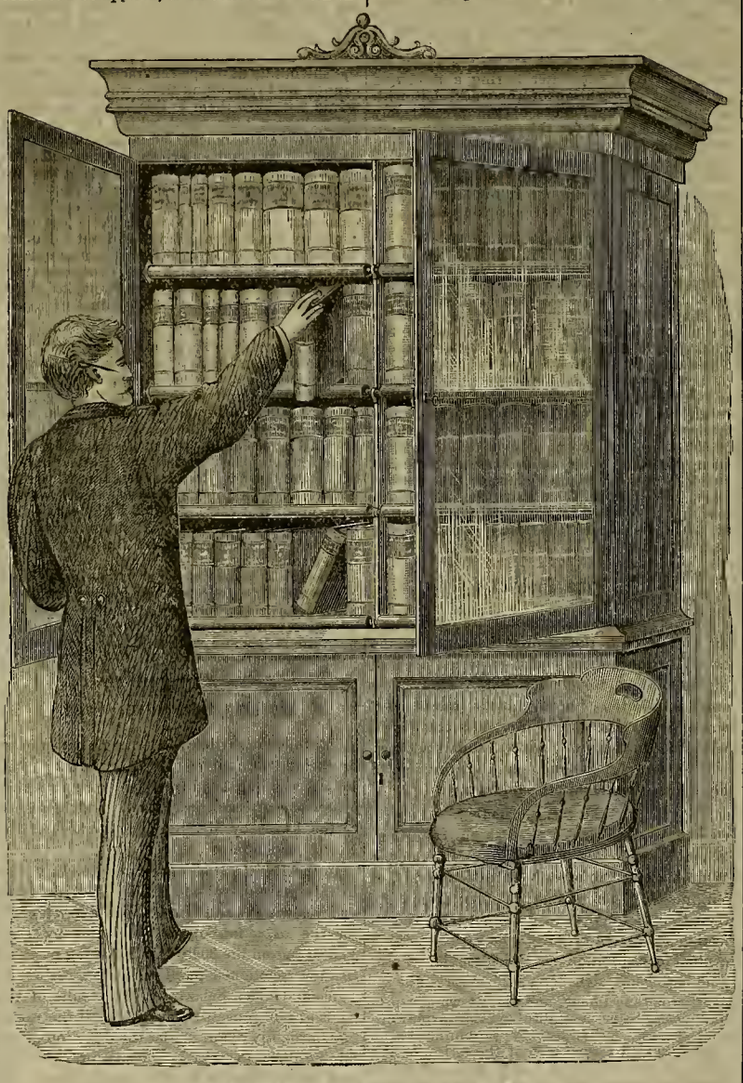
Roller Shelf Edge.

Judge a rich man by his looks,
Judge a wise man by his books.

After exsmining a man's library closely, a good judge of hnman nature can nenally give its proprietor a chart of his tastes and traits of character almost as well as a phrenologist who makes an examination of his cranial bumps, and possibly quite as correct a one as an ordinary person wonld make after becoming thoronghly and intimately acqnainted with the individnal. If we were to call upon a person with whom we were not acquaintsd, and the servant shonld nsher ns into the library, and leave us to our thonghts while ths gentle man made his toilet, we would first examine *the extent* of his library. If it was a small, cramped affair, and the honse was pretentious in style, we should at once set the proprietor down as an ignorsmus, and devoid of literary taste. We wonld next examine the *general character* of the books npon the shelves. If the library contained a nnmber of books relating to the treatment of horses, and horee celebrities, snch as, "The Life of Flora Temple," "Daring Achievements of American Girl on the American Tnrf," "Occident on a Spree," "Smnggler as a Flyer," and "Dan Voorhees, the Champion Strider," we should conclude at once that our host was a sporting man, and we would prepare onrselves accordingly. If, on the other hand, we fonnd it nnmerously sprinkled with books of a religious character, we would conclnde that the proprietor was a pious gentleman, and we wonld be careful that our greeting should be correspondingly appropriate. Having satisfied ourselves concerniug the mental caliber and general character of the fellow, we would then procesd to iuvestigate the matter of good breeding and neatness, and to do this we wonld examine the order and arrangement of the books npon the shelves, and we would open a few of them to discover the state of preservation in which they were kept. A well worn book is an evidence that it has been consulted; that it is not merely kept for show, and we always like to see the ordinary marks of nse npon a nseful book. The evidence of nse, however, should show more upon tbe leaves inside of the book than upon the back and edges, bnt the manner in which our cabinet makers have heretoforo been in the habit of constnoting book shelvee renders it almost impossible to preserve the backs and edges of books that are mnch handled, in a decent condition. The sharp edges of book shelves havo destroyed more books than all the handling to which the hooks themselves are snbjected for legitimate nses; and this is especially the case with reference to large and heavy books, which are nsnally the most valnable and most costly. When tbe shelf is higher than the level of an ontstretched arm, it is almost impossible to take down a large volnme, or replace it upon the shelf, withont dragging it over the edge of the shelf, and in this way the edges of the cover are mutilated and injnred. We can therefore excnse the gentleman if the covers of his books are ragged, worn and draggled, if his book shelves are of the ordinary old style pattern.

We present herewith, however, the illnstration of an improvement in book shelves which is intended to obviate the difficnlty. It consists, as the reader will perceive, of a roller, mounted in front of the edge of each shelf, so that the edge of the hooke will bear npon and roll over the roller when they are being taken down or replaced. The rollers are covered with a thin film of India rnbber or other elastic material, which gives softness and friction, eo that they will be sure to rotate, and the book will roll easily off or npon the shelf. The rollers also add to the beauty and finish of the shelf, and they can be colored in any desired tint. A person who hae not tried to take down or replace a hook over tbis attachment can realize the satisfaction, and in fact tbe real plessure, which it gives. One of the book cases in our Patent Agency department, on wbich we keep tbe monthly volumes of patents, ie supplied with these rollere, and we actually atate a fact when we assert that we have seen persons stand as long as ten minntes at a time and pull out and push back the volnmes over the rollers, asserting that it was a real pleasure to take down a book; in fact, tbat it would be a pleasant task to pnll down and pnt up hooks all day over them. The assertion was extravagant, bnt we exonsed it becanse, as like as not, they were inventors who had or expected to have cases of their own for our inspection, and were fishing in an underhand manner for a compliment for their own inventions. The rollers, however, merit a complimsnt.

One of the most important uses to which the roller oau be applied, is in connection with the



BOONE'S IMPROVED ROLLER SHELF EDGE.

shelves upon which large books of record are kept. An examination of the shelvee in our City Hall npon which these booke are kept will show that the authorities have been compelled to line and cover the edges of the shelves witb zinc, and even then the edgee of the booke look as though an army of rats had been let loose amongst them. This roller will not only preeerve the hooke but will cause them to move easily into and out of their compartments on the shelvee with but little mnscular exertion. This invention hae been recently patented, through the MINING AND SCIENTIFIC PRESS Patent Agency, by Jno. L. Boone, one of the firm of Dewey & Co. Gilbert & Moore, of 219 Bush street in this city, the well known office and school furnitnre manufactnrers, are the agents to whom all communiostions can bs, addressed.

Comstock Papers.

No. 7.

Brief Skstches of Washoe Pioneers, Continued.

John Osborne, who, as we have already stated, owned one-twelfth of the Ophir and one fourth of the Mexican gronnd, went to Western Utah at an early day, having been engaged in placer mining along Gold osnyon for several years prior to the discovery of the Comstock lode. Being a native of Kentucky, he was known among his companions as "Kentuck," the claim at Gold Hill so named having been oa led after him. He was a large owner in this ae well as in several other valnable locatione besides those above mentioned, and was at one time worth a good deal of money. For his interest in Ophir, eold to Donald Davidson and General Allen, he received a handsome sum, thongh we do not recollect exactly how mnch

Osborne, who was marked by that lack of thrift so chsracteristio of the first settlers on the "Eastern slope," parted with his money freely, and, therefore, as may be well supposed, pretty fast, having been reduced at the time of his death to rather moderate oirenmstances. He died at Silver City, a small hamlet on Gold oanyon, four miles helow the town of Virginia, in 1864, his death having been oansed by a fractnred limb that failed to mend readily, hastened, it is said, by grief arising from an unreciprocated attachment nnwisely cherished for a yonng woman with whom he met a short time before. It may seem improbable to some that one so long separated from refined society, and almost a stranger to female infinences, shonld have been seriously troubled by a feeling of this kind. Bnt it is notorious that this sort of partial exile is apt to render men all the more susceptible to the tender passion, many of these Washoe pioneers, after they had acquirsd some wealth, having given way to this weakness in a remarkable manner. Comstock, within a year after he received his money, was dispoiled of the most of it through the machinations of an artful woman, several of his companions having in like manner been cajoled out of their money, and sometimes into basty and ill-advised wedlock and that not always with women of the most exemplary or deserving kind.

Unhappy Effects of Suddenly Acquirsd Wealth on the Marital Relationship.

In some oases the staid and previously well behaved wives of these financially fortnnate men took it into their heads, upon their hnsbands becoming rich, to plsy an imperious snd overbearing part, persisting in which, they generally succeeded in seonring the larger share of his effects, and in rupturing the marital bonds that had bonnd them together. It was so with poor Berry, whose sponse, (the snpernumerary wife of a Washoe Mormon who had nnsealed and set her adrift,) so soon as she had got fairly wedded, deftly relieved her loving and unsnspecting hnsband of all his spare cash, and then took her departnre for the City of the Saints, leaving him to die poor and deserted. It was so with Wm. McNulty, once a well-to-do merchant in Ohio, afterwards a prosperous business man in California, who went to Washoe in '60, put np a mill and made money, lost some of it, took to drinking, mistreated his wife, who left him, having first secured the fragments of his fortnne, all of which drove the despondent and rnined man to commit snioide, which he did by shooting bimself at the Eagle hotel, in Sacramento, in the year 1865. It was so with poor Joseph Hastings, whose wife left him, perhaps not without canse, and afterwards married J. R. Hardenberg, of San Francisco. Hastings sold ont his interests in Washoe, which consisted of mining grounds, water franchises, arastras, etc., and realized from the same a handsome sum as esrly as 1860. He died a few years after, old and quite poor, his wife, a nephew and some other parties having secured a portion of his wealth, and thus saved it from going as the most of it had already gone, without any resultant benefit to any one.

So also fared Hiram Bacon, once the owner of the famous Bacon claim, now a portion of the Empire-Imperial ground, sitnated at what was long considered the very core of the Gold Hill bonanza. He owned also other valuable gronnd in the vicinity and became at an esrly day, through the sale of these properties, a man of large wealth, after which his evil star arose in the shape of a termagant and ungrateful wife, who, having set herself systematically at work to plunder him, succeeded so well with the job that he was compelled at last to seek relief from his poverty and sufferings in the almshouse at Placerville, where he died a panper only a few years after his unfortnnate marriage. Other examples migbt be oited tending to illnstrate the infelicitons effects of snddenly acquired riches npon that clase of people to which these Washoe pioneers belonged.

In our next paper we will speak of s class of men the very opposite of those we have just been considering, for a few such were to be found in those Washoe silver regions almost from the start.

ALPHA Council, No. 1. Order of Sovereigns of Indnstry, hae been organized in thie city, with Mrs. Winn as Secretary and J. Earl ae President. The object of the society is principally to associate the industrial classee together for co-operation so as to purchase all the necessary artiolee for family consnmption at wholesale prices.

AT the pisciculturnl convention held in the Centennial grounds on Satnrday, California received special commendation from some of the speakers for the extraordinary salmon propagation in her waters.

CORRESPONDENCE.

Alpine County—its Mines and Resources, Past, Present and Future.

[Written for the PRESS by VICTOR HARLAND.—No. 9.

Silver Mountain District.

In presenting to the pnblic the events of a series of years in any one locslity, let those eveuts be of whatsoever nature or description, there sre alwsys within the resch of the writer of such history or progress many items that serve as a basis for the wish thst the existing facts to be set forth could hsve been otherwise. Especially does this feeling pervsde the minds of those who, from a mining stsndpoint of the present day, review the former condition and progress of meritorions works which hsve been forced to an sbsndonment tbrough no fanlt of the enterprise itself; and in presenting to the readers of the PRESS the past history of one of the best and most promising mines of the district, it would most nsturally be of more satisfsction to the writer and to the pnblic, to ssy naught of those most interested in its future development, conld the immense and long continued labors of the compsny in prosecnting the work necessary for permanent operstions on their lode hsve resohed the point which the new organizstion hope to resch ere another yesr shall have psssed awsy. In the description that will follow of this mine, once so prominently before the mining pnblic, the first glimpse thus far shown in these artioles of the stupendous nndertakings of a few individnals that hsve been prosecnted throughout the length and breadth of these mining districts, will appear.

On the northern slope of the mountain ohain that rises upon the south side of the bssin in which is sitnsted the town of Silver Monntain, beginning, ss viewed on the snrfsce, on the south bank of Silver rreek, and forcing their way throngh the porphyritic walls that rise on either side, can be seen the massive oroppinga of the

Mountain Lode.

To the most careless observer this lode throughout its entire length appears of great strength and continuity, and from its prominent appearance it became the center of attraction to all who visited the district at the time of its discovery and earlier development. The mine was located in the earliest days of the district, a home organization was immediately effected, and labor commenced at a point a short distance below the outorop and at an slitude fully 1,000 feet above the town. The lode at this point shows a width of 15 feet, and the short surface tunnel driven at this high altitude through the lode, although being but a superficial opening in the mountain side, demonstrated the fact of tbe existenoe of a trne fissure vein, and also that the ore was of a qnality that wonld readily pay for reduction provided an economical metbod conld be obtained by which the ore could be transported from the mine to a mill.

In Those Early Days

The expense necessary for the transportation of ores and freights was proportionately high, and the oonstruotion of a new road from the town along the monntain-side to this point for the single purpose of transporting the ore that oould be taken from above tbe tnnnel level was deemed too expensive, and the proposition of running

A Long Tunnel

From the base of the mountain to the lode wsa laid before the company and finally accepted as the most practioal and immediate method of developing the mine. The company being, as before stated, of home organization, and composed in greater proportion of poor men, the idea of the erection of hoisting works at the base of the monntain was only for a moment entertained, they deeming the easier mode of extractiug the ore from above the level of the proposed tunnel more advantageous than the more expeusive mauner necessary in raising it from a shaft. It is donbtless, in the light of present events, well that this tnnnel was projected, for the length actually driven proved conclusively that the lode has a stronger dip than at first appears in the upper tunnel, and the distance from a shaft of even but a nominal depth sitnsted at the base of the mountain would be so great that an economical prosecntion of labor in development at the lower levels wonld be totally impracticable. Popular opinion at that time pointed to this tunnel system ss being the most proper method of opening the mines, especially, as in thia case, where an advantageous location is not easily fonnd for the erection of permanent works; therefore, this projeot of a tunnel which, when oompleted, would approximate 2,000 feet in length, met with but little or no opposition from partiea interested. Accordingly a site was seleoted, tbe gronnd broken, and the long and tedious battle with the rocky interior of the mountain commenced. For a period of five or six years

This Formidable Work

Was almost nninterruptedly carried on. The quantity and the qnality of the ore in the upper tunnel snd tbe hope of incressed value and proportions at the lower level when reached proved sn incentive for their lsbors, and never did a compsny organized under similar circumstances more faithfully prosecnte the lsbors thst dsy by day were beccming more tedions and hard to besr. As time passed on and the length of the tnunel gave rise to the belief of the penetrstion of the lode st almost any moment by dsy or night, the efforts to meet the nstural expense of such an undertaking were doubled, and a survey was msde for the purpose of ascertaining as near as possible the distance yet to be rnn before the lode wonld be penetrated by the tunnel. This completed and msde known caused the first actnal aud immediate embsrrassment of the compsny. By close and careful applicstion snd calculation the distance yet to penetrate the solid grsnite barrier wss fonnd to be considerably in excess of that determined upon by a former survey, and as the progress then made in driving the tunnel was neoessarily

Slow and Tedious

Witb snoh a solid, obdurste foe to contend with, it was fesred, snd not without foundation, as the sequel will attest, that the company would he nnable to complete the work, unless sssistsnce from other sonrces could be procured. The tunnel was persistently driven, however, till from a total lsck of funds or meaus at their command, the compsny wss compelled to desist, and for the time, at lesst, abandon the enterprise that wss commenced under snch fsvorsble and anspicious circnmstances. There being bnt one mill in the vicinity capsble of redncing ores even by the compsratively ineffectual process then known, the cost of transportation and reduction debsrred them the privilege of extssoting the ore alresdy on hand in the upper works, and the compsny, now forcedly impecunions, had but little hope of even a partial realizstion of their former wishes regarding the future permanency and vslue of their possessions. The dissdvsntage of location is really the only drawback thst a compsny would have to encounter during a final snd permauent prosecution of the work, but with the improved applianoes of the present dsy which are adapted for this speciea of mining, the greater portion of the difficulties that would heretofore have ensued can be proportionately obviated. The company have a property aggregating abont 2,700 feet in length on the lode, and now, after a rest of seven years, have tsken

Steps fsr a Reorganization,

And removed the office of the company to San Francisco. A high degree of interest seems to be manifested among the stockholders now residing in that city, and efforts are beiug made to resume work at an early day and npon a scale commensurate with their prospects as developed. The reorganization was effected on Sept. 11tb by the election of S. Reinstein as President, and John N. Barber, ex-connty clerk of Alpine county and a man well and favorably known in many places in the State, as secretary. About 10,000 shares of the new issue of stock have been placed in the market as a working capital, and it is now confidently expected that permaneut operations will be inaugurated withiu a mouth and pushed to a successful completion of tbe labors so enthusisstioslly begun so many years ago.

Tybo District.

EDITORS PRESS:—I cannot refrain from giving expression to the surprise that animated me on my entrance to this burg, after an absence of 14 months in the Golden State. Many new and substantial improvements have beeu wrought, not alone in and around the company's worka but in the town, which I fonnd adorned with several brick strnctnres, thus proving, to my mind at least, that the affairs of the

Tybo Consolidated

Company were in a flonrishing condition. When I was lsst here, State Mineralogist Whitehill and Professor W. Frank Stewart, of Virginia City, had visited this place in making their tour of the State, for tbe purpose of collecting samples of ores from the various mining centers for exhibition at Philadelphia. From here both gentlemen took some very fine argentiferous specimens, and Mr. Stewsrt, whose qualifications as a skillful mining expert are well known, unhesitatingly prononnoed the Two G, which forms one of the series of the mines of this company, one of the most promising base metal claims that he had met with during his extended trip through the mining districts of the State. Could that gentleman but see it now, and examine its fourth, fifth and sixth levels, I doubt not but a well defined smile of exultation would overspread his featnres as he contemplated the evidences which bear silent but tangible proof of his judgment as a mineralogist.

When I left here in Juue, 1875, there was not a great deal doing, and tbe sparse population of the place, like the illustrous Micawber, were supinely waiting and watching for some turn of fortune's wheel that would result to their advantage. Now, after, as I said, an absence of somethiug like 14 months, I return to find an almost Aladdin change all round; the inhabitants more than quadrupled; the tiger nightly bearded in his lair by the votaries of fortune, and trade dollars, drawn from the company's well stored coffers, strewn ronnd on the green cloth as thick as the lesves in Valombrosa.

The Business

Of tbe place is more concentrsted than heretofore, owing to the two upper towns being merged into one. I find slso thst the various industrisl pursuits, mining, coal-bnrning, etc., sre in a very healthy condition, and the most inattentive observer csnnot avoid noting the general well-to-do air of prosperity and finsncisl independence that pervades the camp and its energetic people. This, it must be said, is a plesssnt stste of things to either write of or read about. I have traveled mnch throughout Nevads, and have seen snd inspected many of its bossted mining locslities, snd in view of the dullness that I have witnessed elsewhere, it will not be too much for me to say that nowhere, ontside of Virginis City, have I seeu exhibited more resl and solid evideuces of wealth sud comfort thsn there sre existing in this vicinity. I must confess tbat it is very gratifying to me to be sble to note these facts, because they most strongly and conclusively bear testimouy to the fulfillment of my psst predictions regarding the brilliancy of the fntnre which from the first I foresaw wss in store for Tybo. Nature, always liberal, has bestowed no small store of her mineral treasures upon this favored locality. These miues, of whioh the Two G is the mouarch, sfford an irrefrsgible illustrstion of the bountiful resources of the minersl kingdom.

Eastern Nevada

Has alresdy become fsmous both at home and abrosd, on acconnt of the ohsracter and extent of its metsllio productions. Eureks, 100 miles to the north of here, was at one time the *ne plus ultra* of mining oistricts, and without a change hss taken place, it is yet the most importsnt oenter in the esst. The pristine glory of the Richmond and Enreks Consolidated hss not yet depsrted. A new stsr has, however, arisen in the horizon of the grest east, that bids fair to be by-snd-by classed as of the first msgnitude. Tbe growth of Tybo, together with the splendidly developed charaoter of its mines, cannot fail to confonnd those whose skepticism would not sllow them to think that the appsrently barren hills amid whicb this growing camp lies embosomed, contained, down deep beneath their rough exteriors, the rich snd inexhaustible argentiferous deposits which the unflagging energy and enterprise of the above corporation have helped to develop in the channels formed by Nature. And the said oompsny has not only developed but it has extracted, from the Two G fissure, thousands of tona of richest ore, which has been converted into bullion and shipped to your oity to add to its wealtb and greatness. The mines of

Eureka,

With one or two exceptions, have been self-sustaining from the first, and so have the mines of this company, whose immense and expensive outside improvements in bnildings, furnaces, water-tanks, pipes and ditches, coalbins, tramways and a 20-stamp quartz mill, etc., have all been completed without making a demand upon the pockets of stockholders. There are hnt few mining companies in this State that can exhibit a like atate of things, and none at all that can lay claim to the possession of as fine mining and reduction works, both furnsce and mill capacity, as can the company under consideration.

But I find that I have already exceeded my limits and must therefore briug these desultory lines to a close, promising that next week I will give you a full and correct description of both the mines and works of this corporation.

Tybo, Nevada. GOTHAM.

Working Quicksilver Ores.

The following article concerning a new process of working quicksilver ores, proposed by Emil Pellet, was translated from the *Berg und Huettenwesenmaennischen Zeitung*. It was furnished to the PRESS by Mr. Randol, manager of the New Almaden mine:

In the *Revista Minera*, volume XXII, as also in this journal, volnme XXXI, 1872, on 410th and following pages, is mentioned a new process for the reduction of cinuabar ores by Emil Pellet, and on the 309th and following pages of the first meutioned pnblioation, is a review by Ygnacio Gomez Salszar of the results of the trials of said process made in 1869 at the worka of Almaden in Spain, under the direction of the mining inspector Don Jose Monasterio y Correa and wbioh appears in his official report, the statements of which may prove of interest, as no further details about this process have been published since. In volnme XXIX, 1871, of the *Revue Universelle des Mines, etc.* by de Cnyper is, on the 1st and following pages, a communication about the qnicksilver mines of Almaden by Jose Monasterio y Correa, and at the end of it is promised also a description of tbe process employed in Almaden for the rednction of ores, but as this has not appeared as yet, the following remarks of Salszar on the results which were produced by the experimental tests of Pellet's process may find a place here.

According to the statements of Salazar, Pellet asserted that he had discovered a process for which he clsimed the following advantages: 1, No loss of quicksilver contained in the ore; 2, curtailing of the expenses of working the ore, and of fuel; 3, no loas of quioksilver hy vaporization, explosion or imperfection of apparatns; 4, reduction of the ore in the state in which it is mined, wet or dry, in large or smsll pieces; 5, nninterrupted-working throughout the year, regardless of the stste of the atmosphere; 6, low cost of the appsratus and inconsiderable repairs; 7, ssfety of the health of tbe workmen.

These great sdvsntsges of the new process were considered for the works of Almaden of tbe greatest importance, and each one of the advantsges clsimed was regsrded as meriting a reward; heuce the government of Spsin willingly offered opportunities and means to test the new process at the reduction works of Almsden under tbe msnagement of Monasterio and Arciags, who were directed to report upon the results in detsil.

Monasterio asserts in his report, that all conjectures of the inventor of the tested process had proved themselves to be incorrect. Tbe loss of quicksilver, which Pellet had promised to avoid entirely, had been found to be doubled. The cost of reduction hsd been four snd a half times grester than the expenses of the old process, which hsd been used in Almaden over 70 years; and the escape of quicksilver (volstilization) through crscks and in every conceivable manner, hsd csused great losses. Neither in the dry nor in the wet state, neither in small nor in lsrge pieces had they been able to reduce the ore as it had been mined; and after breaking with the hammer the ore had suffered losses in every stste of the atmosphere, in summer and in winter; and also the health of the workmen who were employed for the Pellet process hsd suffered considerable injury.

According to the process, by Pellet, the distillation of the volstile psrts of the ore is effected by mesns of a continnous rossting in plsce of the intermittiug rossting, and the condensation in the atmosphere is replaced by a condensation nuder wster. Sslazar fnrtber asserts that the process of Pellet respecting the two above-menticned devistions from the nsusl process of Almsden had been previonsly tried in Spsin and other countries with unfavorable resnlts. Tbe use of water for the condensstion of meronrisl vspors conld not properly be regsrded as the invention of Pellet, for the use of rsin had been proposed, but rejected, for the attainment of the same object; and the proposed conduction of tbese vapors througb a mass of water of five mi imeters did not promise f vorable resnlts. The application of a cnrrent of air, created by a ventilator placed at the bsse of the fnrnaoe, was neither new nor proper, and in the oase nuder oonsideration did not serve its pnrpose, and the arrangement of the contrivanoe was like many others, whose main part consisted in a system of chambers. Based npon these facts, Salazar believes to be justified in regsrding the process of Pellet as one which, although based upon good principles, througb their misapplicstion formed an aggregation totally unfit for the accomplishment of the desired object.

In accordance with Salazar's assertion, the unfavorable result obtsined of the competitive trial at Almaden cannot be ascribed to the retention of means and resources, as an nnlimited supply of them with the most favorable opportunities for their application had been accorded to Pellet. He was permitted to make a preliminary trial, and to introdnce, for tbe d cisive trial, several important modifications suggested by the resnlts of the prior trial. Pellet's process of redncticn was placed in comparison with the results of a furuace in Idria, which produced less than the older furnace of Bnstamante, and the competitive trial took plaoe in the hot season, which is the most unfavorable season of the year for the Idria furnace. Bills of oosl dust, which are always used in charging the Idria furnace, were omitted in the trial charge, for Pellet did not nse them. This was a disadvantage for the Idria furnace.

Notwithstauding the equality of the charges placed in both furnsces, Pellet protested against the coat of cement with which the interior of the Idria fnrnace was lined. But, to bring about, in this instance also, equality, Pellet's furnace was also liued with a coat of cement. Pellet asserted that the above mentioned coat of oement belonged to his invention and drew from tbis the inference that the nnfavorable difference of the obtained results at tbe trial was owing to this trifle.

Salazar says he would not have mentioned this assertion of Pellet's if Monasterio, in his report, had not spoken in favor of it. Bnt he wonld remark to both that neither the cement nor its applica ion belonged to the invention of Mr. Pellet, and that the cement coating of the furnaces of Almaden had beeu proposed many years previously by a mining engineer of Spain.

Omitting the other critical comments of the report of Monasterio, we shall make the following extrscts from the communication of Salazar, psge 392, etc., and 494 of the *Revista Minera:*

The mind of Pellet was not set at rest by the failure of the trial of his process at Almaden, bnt he gave it another test at Albunol, to which Salazsr had beeu previonsly invited; bnt the invitation was declined for the following reasons: Pellet had offered his process to the Spaoish government in 1867, olaiming for it tbe above meutioned advantsges; he had requested the government to compare the results obtained by his prooess with those obtained hy the process then in nse at Almaden; he had further requested the appointment of a committee of experts, and, in case the committee should report in favor of his process, to grant him a reward, whicb, according to the estimation of Pellet, would have amonnted to 15,000,000 reales.

Regarding the improvement in the process of

Continued on Page 254.

MECHANICAL PROGRESS.

Skill in Engine Firing.

People do not generally give to ths fireman credit for the skill his occupation embraces and demands. We have record of eome experiments made for a prize in an English contest which ere interesting and suggestive. The tests were made with a small motor, but the points involved are of general application. The Royel Agricultural Society of Englend offered prizes for the best driver of n portable engine. The first prize wns £5 and a silver medal, and the second and third prize consisted each of £2 10s and a silver medal. The *Engineer* says: The tests were carried out in the following wey: An eight horse-power agricultural locomotive was provided. The engine was fitted with n friction brake, euch es is nsed by the Royal Agricultural Society, end e counter. The brake was loaded to 22.5 horsepower. The engine wes hended over successively to the different competitore, 21 in number. Each man was supplied with 210 pounds of coal and 8 pounds of wood, and ae much oil and tallow as he required was weighed out to him, the quantities heing carefully noted. He wae then left to fire and drive es he pleased, without interference, except to warn him that he wes running hie engine too fast or too slow. The standard of effioiency was the number of revolutions got out of the engine. Without going into details we may say that nfter five days' work the four best men competed a second time, the result being thnt the first prize waa nwarded to John Watere, who got 13,967 revolutions ort of hie engine; the second prize to J. Snashell, with 13,366 revolutions, and the third prize to J. Gardiner, with 13,258 revolutions. Turning to the log sheets we find the following comments by the judges, Messrs. R. J. Sankey and Thomas Aveling. Againet Waters we have: "Tnbes swept: cylinder lubricated often, and engine oiled; damper closed; reversing lever maintained by a small wedge just hehind the fifth notoh. Coals well broken and wetted; preseure very regnler at 90 to 98 pounde; firing very good, ashes hurned." Very nearly similar entries were made by the judges for the two other prize men, from which it appears that they understood what tbey were about. We may call special attention to the use made of his expansion gear by Waters, who, finding that he could do a little better with the link in one pluce than in another, compensated for the want of sufficiently minute divisious in the sector of the reversing lever by wedging the latter just where he wanted it.

We may be asked wbat all thie amounts to, and what ie proved by the fact that Watere ran off 13,967 revolntions? The actuel running time wae 91 minutes; the mechanical time was 93 minutes, and the coneumption of fuel was 6.45 pounds per hrake horse power per hour. Now it must he borne in mind that none but tolerably good men, men with some reputation as divers, competed. If we turn to the log of the man who did worst during the trisl we ehall see what the difference between good and bed firing and driving comes to. The emallest number of revolutione obtained was 7,943, the running time being 59 minutes only; the mechanical time was just under 53 minutes, and the consumption of fuel was consequently over 11.3 pounds of coal. This is to eay that Gardiner used nearly twice as much coal per horee per hour as Waters. Gardiner'e driving eeeme to have been unsatisfactory throughout. The revereing lever was frequently changed from one notch to another, and the damper wee altered several times; the speed of the engine wae very irregular. We have thus the plainest possible evidence that the saving which can be effected in fuel by a skillful man is a very important item in the economy of engine power.

STARTING REVEESING ENGINES.—At the last meeting of the British science society, a short paper on an "Engine for Starting Large Reversing Engines," illuetrated by a working model, wae read by Mr. A. B. Brown, mechanical engineer, Edinburgh. The principal feature of this engine consisted of a combination of steam and hydraulic cylinders controlled by automatic valve-gear, which enahles the engineer to reverse the largest engines, without eesistance, in a few seconde. This is accomplished by the lever, which opens and closes the steam and hydraulic valves, being hung partly on the revereing lever, and at its other extremity on the weigh-ebaft lever, eo that auy motion given to it and the valves by the engineer in one direction is counteracted by the movement of the weigh-ehaft lever to which the liuks of the marine engine are attacbed. In thie way these links follow the motion of the reversing lever, and are locked fast at any degree of expansion in the quadrant.

A NEW PREVENTIVE FOR SLIPPING.—A European engineer, C. Heinrich, hae invented a new epparatus, inetead of the sand box now in uee, for preventing locomotive wheels from slipping. It cousiete of a narrow tuhe, running from the hot water reeervoir to the drivere, so that a small jet of hot water oan he played upon the traok, thue cleaning and drying the track at the same time, thereby giving the drivere their full power to propel the train. It hae been need with most eatisfactory reeulte on the Motan road, of Reechetza, Hungary.

Extinction of Fire on Board Ships.

At a recent meeting of the chemical section of the Glesgow Philosophical Society, a paper on this subject wae reed by Mr. D. Cargill, Dundee. He referred firet to the ventiletion of ships, and enid: Before cargo is put on board, place plenke along the bottom of the hold to make an open space about one foot squere; lead a three-inch diameter cest-iron pipe from this open space to deck, which can he closed with plug screw flush with deck till wanted; have one of these pipes every 50 feet length of ship. On deck have en ordinary blaet fan about 12 inches diemeter, may he more or lees as reqnired; attnch to thie fan one end of n flexible hose, en ordinary three-inch eenves hose will do; the other end attach to the top of the cast iron pipe. Wben ventilation ie wented work the fen by hand, wind or eteam power, which will blow through the ship any quentity of eir to purify the gee arising from coal cargo, or expel any sweat arising from other cargoes. As to the meene of preventing firee by counteracting the ignitable and inflammable tendency of gas-emitting cergoes, Mr. Cargill said: For this purpose an earthenware, fireclay or metel veseel, or even an empty cnsk, ie pleced upon the deck, or at otber convenient parts of the ship, into which a quantity of broken chalk, marble, hicerbonate of seda, or other carbonate ie plnced. The vessel is formed with two openings or necks, but nny enitable form of vessel may he employed. To one neck a flexible pipe, composed of gntta percha or other suitable material, is attached and secured to a vertical pipe. Into the other neck or opening of the vessel a eyphon pipe, formed with a funnel or mouth at its outer end, is inserted; and it, together with the flexible pipe, is luted with putty, or otherwise fixed in a manuer to prevent escape of gas from the veesel. Through the syphou pipe n mixture of eulphuric or muriatic acid and water, acid salt, or dry acid dissolved in water, is poured into the vessel, which mixture, acting on the chalk or other carbonates, liberates carhouic acid gae, which is conducted through the flexible pipe into one of the vertical pipee, and is thereby conducted to the bottom of the ship'e hold, where, combining or commingling with the gases arising from the coal, or other gaseous or inflammable cargoes, the carbonic acid ghe destroys the combustible tendency.

BOILER EXPLOSIONS.—The Manchester Steam Users' Association (established by the late Sir W. Fairbairn, to prevent the sacrifice of humau life from steam hoiler explosione) has published a etatement, showing that, in ten years euded in 1874, there were 534 explosions, which killed 617 persons and injured 997 others; an average for each year of 53 explosions, killing 62 persons and injuring 99. During 1875 there were 45 explosions, killing 67 persons and injuring 96. The Secretary of the association, Mr. Tonge, writes: "This sacrifice of humen life continues year after year. It is perfectly gratuitous. There is nothing in the nature of steam to cause it. It arises from the use, in most cases, of bed hoilers, sometimes purchaeed second-hand, and put to uses for which they are quite unfit, sometimes bought at so stiogy a price that the maker cannot put in good material or good workmanship. In other cases it arises from working boilere till long after they are worn out, and frequently so reduced that the platee are no tbicker in places than an old sixpence. The association is desirous of promoting a searohing investigation in the event of every explosion, so that the truth may be arrived at and published, instead of letting negligent eteam ueers get off under a verdict of 'accidental death.'"

WHAT THE CENTENNIAL IS DOING.—Every day brings to our notice freeh indications of the great adventagee which the International Expositiou must almost immediately and from time to time bring to city and couutry. The Philadelphia *Press* says: 'We have just seen a letter from a large house in Geneva, heving extensive connections throughout Switzerland, making inquiriee respecting the manufacture of hosiery, of which very favorable and gratifyiug accounts have been eent home by the Swise experts in attendance upon the exhibition. Thie house was led to believe that American goods in the hosiery line could be more profitably introduced iuto Switzerland and the adjoining states than similar goods of European manufacture, and they desired full information as to dealere' prices, terme of sale, etc., with a view of extensive operetions. From Naples, also, we have seen a communication inquiring as to American sewing machines. These are but indications of the widespread interest in American manufaotures which has been awekened, and which cannot fail to be of immense practical advantage to all our industries.

WOODEN WALL PAPER.—The machinery for the manufacture of wood paper hangiogs has been so perfected that an inch of white maple or other fine grained wood can be slit ao ae to furnish 200 thin leavee, having the surface and grain of the wood. These leaves are laid upon a peper backing, and, thus coustituted, may be fastened to the wall the same ae common wall paper. A room thue furnished presente the appearance of a paneled apartment, since all the surface visible is that of the actual wood. With smoothed and poliehed woods of a coarser or more open grain, the number of leavee or veneers to the inch ie 125. The machine which producee these leaves ie a marvel of mechanical ingenuity and skill.

SCIENTIFIC PROGRESS.

Electric Lights at Sea.

At the time two rival lights were being tested on the clock tower at Westminster, it was asserted that the wonderfully brilliant electric light would, by-and-by, come to be very generally adopted on shipboard, not merely as a substitute for the lamps now commonly in use, but ae a meane of lighting a vessel on her ocean pethway hy night. It wae thought possible to throw a glere of light from the mesthead so far in advence of the veseel, that rocks, floeting icebergs and other dengere ehead might he descried in time to avoid collision. The London *Globe* seye that the French Trensatlantic company's vessel, *Amerique*, hes been trying the experiment with an apparatus similar, we believe, to thet which wes shown on the clock tower, and the success of it is said to have beeu so decided thet the compeny hes taken steps to provide other vessels helonging to them with the seme illumination. This experimental triel hes been made in the course of a run from Havre to New York and back, end the light has been found of immense service in many ways. As described in the *Revue Industrielle*, the apparatue consists mainly of a Gramme machine, a portable lamp and a signal light placed in the upper part of a sheet-iron turret. The Gramme megneto-electric machine has a power of 200 carrel jets, while the lamp is fitted with prismatic lenses, and is capable of throwing a glare of brilliant white light over an aro of 225 degrees. The lamp on board the *Amerique* wae 33 feet above the water, and at this hight it was thought to have a poesible range of ten geographical miles for an observer etationed 20 feet above the water. Not only would euch a range, or anything approaching it, tend greetly to reduce the rieks of collision, but the power ful illumination was found available for loading or unloading operations, and was useful in guiding the vessel in or out of port, at night. As regards the movable lamp, a very important use wae found for that. By means of a cone of sheet-iron placed over the light, with the broad base of the cone nppermost, a flood of light wae thrown on the *Amerique's* topgallant sails, so that these might be seen hy other vessels a long distance off, even apart from the signal light. It is further added that the whole apparatus is by no meane expensive, is easily managed, but little liable to get out of order, and occupies little room.

INFLUENCE OF THE SUN'S HEAT.—Prof. J. D. Whitney, in the *American Naturalist*, describes the way in which the sun accomplishes the evaporation of great bodiee of water ae follows: The sun's heat is notoriously the source of all climatee, and changes in the amount of heat rsdiated from the sun are now regarded aa causing the changes in terreetrial weather. It is therefore reasonable to ascribe our drying up, since it requires ages for its completion, to a change in the solar cause requiring also a long cycle for its fulfillment, provided that astronomy gives us proof of any sucb change. And astronomy does tell us of two such cycles; one in the obliquity of the elliptio, and one in the perihelion distnnce of the earth from the sun, both oycles being results of planetary perturbations of the earth's orbit. The effect of the second of theee cyclee is too abetruse to explain here; the first ie simpler. As the angle between the plane of the earth's equator and that of her orbit diminiehee, the limite of the torrid zone also diminish, inasmuch es that zoue is bounded by the tropica which are determined by the angle in questiou. The region, then, over which the sun is occasionally vertical is being narrowed. An obvious result of this narrowiug would seem to be an intensificatiou of the equatorial pbenomena of trade-winde, heat and rainfall within the torrid zone, and a correeponding loss of heat and of precipitation in the extra-tropical zones.

REDISCOVERY OF A LOST PLANET.—The astronomers of Europe, eays the *Polytechnic*, are just now excited by the re-discovery of Leverrier'e planet, Vulcan. Some twenty years ago the great French astronomer announced that certain perturbatione in the orbit of Mercury could only be accounted for by the exietence of another planet still nearer the eun; even as the perturbations of Saturn had enabled him to discover the planet Neptune. Within three yeare after Leverrier's announcement, a French observer, Dr. Lescarbault, detected Vulcan in his trensit across the eun'e disk; bnt inasmuch he has not been seen since then, most savana have hegun to doubt whether he was ever seen at all. But the lateet Parisian journals inform us that two eminent astronomers at the observatory in that city—M. Porro and M. Wolf, of Zurich—heve just found Vulcan duriug hie transit ae before. It is not stated whether their observations were sufficient for the preciee calculation of the elemente of the planet. Keppler'e law, however, would reduce the time of Vulcan's revolntion around the sun to about a month. Thie youngest of the planets muet swim in a eea of almoet unimaginable light and heat, and be uninhabitable by any form of life known to us.

MR. POGSON, the Government astronomer of Madrae, carries hie love of hie science to such a pitch that he hae his children christened in accordance with the names of the chief celestial bodies which he from time to time discovers.

The Growth of the World.

Prof. C. A. Young, the well knowu astronomer of Dertmouth college, has written for the *Journal of Chemistry* an estimate of the growth of the world from the fall of meteorites. We meke the following extract:

Since meteoric metter is continually falling npon the eerth, she must of course he growing larger, end the daily number of meteore ie so immense that it would be netural to suppose that the increase might be quite appreciehle in a few centuries. It ie not so, however; the surface of the earth is so enormous, compared with the quantity of meteoric metter, thet, even on the most favoreble hypothesis, her diemeter would grow only about an inch in five hundred million yeers by eccessions of this kind.

A few figuree will meke this clear.

As to the number of visible meteors there is a substantiel egreement emong nuthorities. The estimete of Prof. Newton is ae lerge ae that of any one, I believe, nnd he puts it at 7,500,000 per diem, which number we will use.

As to their averege weigbt there is more difference of opinion. Prohehly, however, the moat careful and best founded investigation is that of Prof. Harkness, published iu his report upon obeervations of the November meteore of 1866, and hie conclusion is thet "the mase of ordinary shooting stara does not differ greatly from *one grain*." Prof. Newcomb appears also to concur in this estimate. There ere reaeons which it would take too long to discuss, for thinking that this value is likely to he somewhat too small; but on the other hand it is almost absolutely certain that the average mess cannot be as greet as one-fourth of an ounce. To he on the eafe side, we will assume 100 greins as the mean weight of the visible shooting stare.

Remembering that the pound ie 7,000 grains, we shnll then find nearly 107,000 pounds, or about 50 tons, for the total weight of one day's supply of shooting stars. An allowance must also he made for the meteors too small to be visible (which are known by telescopic observations to he very numerous), and for the matter brought down by aerolites. If we double the quantity stated above we shall certainly he abundantly liberal, and this will give us 214,000 pounds a day, or about 78,164,000 pounds per year, as the earth's rate of growth *in weight*.

Her increase of *bulk* depends upon the density of the meteoric matter, and probably this density does not differ much from that of ordinary soil, or nearly three timee that of water. If so, each cnbic foot would weigh about 187½ pounds, and the annual meteoric accession to the bulk of the earth would be not far from 417,000 cubic feet. A cube about 75 feet on each eide would he a little larger. It would take more than four million euch to make a pile ae large as Mount Washington. Now, since the surface of the eerth is about 5.484 millions of millions of square feet, it follows that the annual supply of meteoric metter, if spread uniformly, would form a layer whose thickness would be only 1-13,155,000,000 of a foot, or very nearly 1-1,100,000,000 of an inch.

In other words, even on euch extravagantly favorable hypothesee ae we heve assumed, the formation of a eheet of meteoric matter covering the earth to a depth of one inch would require a period of eleven hundred millions of yeare.

If we suppose meteoric matter to have been just as abundant in space as now since the beginning of time, and that the velocity of the earth's orbital motion has remained unchanged, and that the effects of her atmoephere and of gradual shrinkage under the action of gravity can be neglected, then it can be shown by an easy couree of reasoning, which would, however, hardly suit these columns, that her diameter must have grown during her whole existence at the seme uniform rate as now, and we find that to build her up to her present dimensione by euch a process of aggregation must have teken a period of at least twenty-seven and a half millions of millione of years.

It is not intended to assert, however, that the earth was really formed in this way, and even if it was, the above estimate is of little value except as indicating the order of magnitude involved, since there ie no certainty whatever—not even a probability—that in tbe early atages of the formation of the planetary system circumstances nearly enough resembled the present to warrant any conclusion. Nor must it be forgotten that the more probable estimatee of Harkness and others as to the weight of meteors would lengthen all the periods of time mentioned from ten to one hundred fold; we have given the smallest valuea possible.

THE PRESSURE OF SUNLIGHT.—Prof. Clerk-Maxwell says: The meen energy in one cubic foot of sunlight is about 0.0000000882 of a foot-pound, and the mean pressure on a square foot ie 0.0000000882 of a pound weight. A flat body exposed to ennlight would experience thie preeeure on ite illuminated side only, and would therefore be repelled from the eide upon which the light falls. Calculated out, this gives the preseure of sunlight equal to about two and a half pounds per square mile. Between the two and a half pounds deduced from calculation and the 57 tone obtained from experiment the difference ie great, bnt no greater than ie otten the caee between theory and experiment.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to Sept. 21.		1 W'k to Sept. 28.		1 W'k to Oct. 5.		1 W'k to Oct. 12.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	...	...	...	...	...	...	...	...
Advance	...	...	...	...	...	...	...	...
Alpha	47½	45½	46½	42½	47	44¾	46⅝	41
Alta	2½	2¼	3½	2½	2⅝	....	2	....
Amer'n Flag	....	....	....	....	....	....	1	....
Amer'n Flat	....	....	....	....	....	....	1	....
Andes	2½	2	2	....	2½	2	2	1¾
Alpa	1	95c	87½c	75c	75c	....	....	....
Amazon	80c	....	80c	75c	....	....	....	....
Baltim'e Con	2⅝	2½	2¾	....	3⅛	2⅝	2¾	2¼
Belcher	22⅝	2 3/4	21½	21	22½	21½	21	16½
Belmont	2½	2⅛	2⅛	2	2½	2	2	....
Best & Bel	45¾	45½	47	44	48⅜	46½	46	39¾
Buckeye	....	....	....	....	....	....	....	....
Bullion	37	35½	35½	31½	35	35	33½	33½
Caledonia	8¾	9	10	8¾	10¾	9⅞	9⅞	8¾
California	63	59¾	61	59	62½	61½	61	55
Challenge	....	....	1¼	....	....	....	3½	3
Chollar-P'ts	94½	88	88	83	83½	79¾	71	68
Confidence	17	16¾	16	15½	17	16¾	15	13⅜
Con Imperial	5¾	4½	4⅝	4¼	4.40	4.00	4¼	3½
Con Virginia	56	52½	55½	52	57	54⅜	55¼	48¾
Crown Point	12½	11¾	12	11¾	12	11¾	11½	10½
Cosc'n Con	15c	12c	25c	15c	60	20	....	....
Daney	....	....	....	....	....	....	....	....
Dayton	5	....	....	....	....	....	....	....
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka (C V)	....	....	....	....	....	....	....	....
Eureka Con	16½	13	13⅝	13	15¼	13½	15¼	12⅜
Exchequer	15	14¼	15	12⅜	15½	14¾	14¼	12¾
Europa	....	....	....	....	....	....	....	....
Gila	75c	....	60c	....	70c	....	55c	50c
Globe Con	20c	15c	....	....	....	....	....	....
Golden Char	⅞	1½	1¼	1⅛	1¼	....	1¼	....
Gould & Cur	16	15	13¾	14½	15	14¼	14⅝	13
Hale & Nor	11¾	10½	12	10¼	10¾	10¼	8½	7¼
Ida Ellmore	....	....	....	....	....	....	....	....
Jefferson	1½	....	....	....	....	....	....	....
Julia	7½	7⅛	7½	7	7¼	6⅞	6¾	5½
Justice	19½	18	18⅜	17½	19¼	18	18½	16¾
Jackson	3⅝	3⅜	3¾	....	4	....	4	3⅝
K K Con	....	....	....	....	3	2½	3	....
Kentuck	13	11½	12	10¾	11¾	....	11¼	10½
Knickerb'k'r	50c	....	....	....	....	....	50c	....
Kossuth	1¾	1½	1½	1⅜	2	1½	2	....
Lady Bryan	50c	35c	40n	27½c	30c	25c	30c	25c
Lady Wash	2½	3	3	....	3	....	3	2
Leo	....	....	....	....	....	....	....	....
Leopard	10½	8¾	11¾	9¾	10½	8¾	8¾	8¼
Leviathan	81½c	70c	81½c	75c	95c	80c	90c	80c
Mahogany	....	....	....	....	....	....	....	....
Mansfield	....	....	....	....	....	....	....	....
Meadow V'y	75c	70c	75c	....	62½c	50c	25c	....
Mexican	35½	32¾	33¾	28½	30¼	27½	26	23½
Mides	....	....	....	....	....	....	....	....
Mint	2 c	....	....	....	....	....	20c	....
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	75c	65c	70c	65c	1½	1	1½	1
Niagara	20c	....	....	....	....	....	....	....
Northern Belle	23	21½	22¾	23	18½	21	21	15
New Coso	2¾	2½	3	2¾	3½	2⅝	....	....
Occidental	3¼	3	3¼	3	3	2⅞	2⅝	....
Ophir	60½	56½	59	55¾	56¾	51	47	40¼
Or Gold Hill	....	....	....	....	....	....	....	....
Overman	77	73	82	74½	81	77½	78¼	74
Pacific	....	....	....	....	....	....	....	....
Phil Sheridan	....	....	....	....	2¾	1	2	....
Ploche	....	....	....	....	3 c	2c	....	....
Poorman	1¼	1	2	75c	2	75c	20c	....
Prospect	2¾	1⅞	2	1½	....	....	1¼	87½c
Prussian	....	....	....	....	....	....	....	....
Ray & Ely	6	6½	6	5	6	....	5¾	5¼
Rock Island	1¾	....	1½	1½	1½	1⅝	....	....
Rye Patch	....	....	....	....	....	....	....	....
Savage	20¼	17¾	19	17½	18¼	17⅝	16	12
Seg Belcher	19	18	19	15	....	....	....	....
Sierra Nev'da	14½	13¾	14¾	12⅞	14	11¾	11⅞	....
Silver Hill	9¼	8	9	8	8⅞	8½	7¾	7½
Sch Charlock	....	....	....	....	....	....	....	....
Snecor	50c	....	....	....	20c	....	25c	10c
Union Con	14½	14¼	14½	12½	13½	12½	11¾	10¼
Utah	21½	20	20	19	19	18	19	14
Wells-Fargo	20c	....	20c	....	....	....	20c	15c
Weaville	1½	1⅜	1¼	1	1¼	1	1⅜	1¼
Yel'w Jacket	30¼	24⅝	26	23½	26½	25	24½	21

Sales at S. F. Stock Exchange.

FRIDAY, A. M., OCT. 6.

95 Andes.....2
155 Alpha.....44½@44¼
310 Bullion.....3 @3¼
85 Best & Bel.....45⅝@45
255 Belcher.....19½@20
1655 Baltimore Con...2½@2¾
1500 Caledonia.....8⅝@8¾
40 Challenge.....3½
175 Crown Point.....11¾
1050 Confidence.....16¾
4605 Con Imperial.....4⅞@4¾
280 California.....61@60½
155 Chollar.....18@17¾
675 Con Virginia .51⅞@54½
275 Exchequer.....14
425 Gould & Curry.14½@14⅜
860 Hale & Nor.....8¾@8⅜
840 Julia.....6@5¾
960 Justice.....17⅜@17⅛
60 Knickerbocker.....20c
810 Kosauth.....2
55 Kentuck.....10¾
670 Lady Bryan.....25@30c
30 Lady Wash.....3
100 Leviathan.....80c
2340 Mexican.....25@25½
200 Monumental.....20c
70 New York.....1¼
50 North Con Vir.....1½
1845 Ophir.....45@46⅛
200 Prospect .....87½c@
1210 Savage.....14@14¾
400 Succor.....35c
1050 Sierra Nevada..11½@11¾
490 Trojan.....80c
975 Tahoe.....37½c
820 Union.....11@10¾
35 Utah.....15½@16
100 Virginia.....3
125 Woodville.....1¼
200 Wells Fargo.....15c
1180 Yellow Jacket..24¾@24½

AFTERNOON SESSION.

540 Alpha.....44¾@45
190 Best & Belcher.....46@45⅝
220 Caledonia.....9¾@9⅝
280 California.....59¾@59½
100 Chollar.....16¾
125 Crown Point.....11¼@11⅜
223 Con Imperial.....4.85
200 Con Virginia.....54@53⅝
3095 Eureka Con.....15@14¾
100 Exchequer.....14
100 Gila.....70@75c
880 Gould & Curry.....14@14⅜
100 Gen Thomas.....1⅝
200 Genesee Valley.....2.15
340 Hale & Nor.....8¾@8⅝
440 Hussey.....40c
555 Jackson.....4@3⅞
200 Julia.....5¾@5⅞
70 K K Con.....3
680 Leopard.....8¾@8⅝
495 Mexican.....24¾@24⅝
180 Manhattan.....16
20 Modoc.....4
100 Northern Belle.20¾@20½
1050 New Coso.....2¾@2⅞
1200 Ophir.....44¾@44¼
140 Overman .....78½@78¼
610 Savage.....13⅝@13
1880 Sierra Nevada.....11¾
325 Union.....10¼@10⅝

SATURDAY, A. M., OCT. 7

100 American Flat.....1
390 Alpha.....44¾@44½
230 Best & Belcher...45½@46
165 Belcher.....21@20¾
565 Baltimore Con...2¾@2⅝
95 Caledonia.....9¾@9⅝
790 California.....60¾@60¼
260 Cosmopolitan.....3¾
50 Challenge.....9
430 Crown Point.....11¾@11¼
90 Chollar.....76@73¾
275 Gould & Cnrry.13¾@13¼
1050 Gold Run.....1@1¾
30 Genesee Valley.....2.10
100 Gold Chariot.....1¾
1650 Hussey.....45@40c
510 Hale & Nor.....7¾@7½
300 Jackson.....4
850 Justice.....17@16⅝
350 K K Con.....3
50 Kentuck.....11½
935 Leopard.....8¼@8⅜
715 Manhattan.....15@15¾
385 Mexican.....24¾@24½
510 Northern Belle...20½@20
300 New Goso.....2¾@2⅝
190 Overman.....75½@74
1150 Ophir.....40¾@41½
500 Poorman.....20c
200 Panther.....35c
50 Raymond & Ely.....5¾
260 Sierra Nevada...11@11¼
430 Savage.....12@12½
1440 Union Con.....10¾@10⅝
935 Yellow Jacket...21¾@21

TUESDAY, A. M., OCT. 10.

390 Alpha.....44@43½
70 Alta.....2
15 Andea.....2
90 Bullion.....33¾@34
12 Belcher.....18 @18¾
55 Best & Belcher...43@43½
1465 Baltimore Con...2⅝@2¾
470 Caledonia.....9½@9¾
600 Challenge.....3
100 Cosmopolitan.....35c
2275 Con Virginia.....53½@54
335 Crown Point.....11@11¼
265 Chollar.....74½@76
470 California.....60@60½
1855 Con Imperial.....4@3.90
210 Confidence.....43¾@41
35 Exchequer.....13¾@13⅝
220 Gould & Curry...13¾@14
850 Hale & Nor.....8¾@8⅝
190 Justice.....17½@17
585 Julia.....5¾@5½
30 Kentuck.....11
310 Ko-auth.....1½
470 Lady Bryan.....29@30
50 Leviathan.....80c
30 Lady Wash.....3
1580 Mexican.....24@24⅞
50 Mint.....20c
40 Maryland.....62½c
100 Morning Star.....4¼
295 New York.....1¼@1⅜
200 North Con Vir...1¾@1⅝
180 Overman.....76@77
2250 Ophir.....43¾@44
100 Phil Sheridan.....2
375 Prospect.....87½c@1
1040 Savage.....13¾@13⅝
20 Silver Hill.....7½
1240 Sierra Nevada..11@11¾
275 Tahoe.....75c
100 Trojan.....75
215 Union.....11@10¾
20 Utah.....14
40 Virginia.....2
100 Yellow Jacket...21¾@21½

AFTERNOON SESSION.

130 Alpha.....41@41½
315 Belcher.....16½@16¾
310 Best & Belcher...40@38¾
1990 Con Imperial...3.8@3.60
285 Crown Point.....11@10¾
520 California.....58@58¾
215 Con Virginia.....52@53
175 Chollar.....73@74½
790 Caledonia.....9@8¾
1390 Eureka Con.....14@13
100 G Chariot.....1¼
800 Genesee Valley.....2.10
70 Gila.....50@40c
355 Gould & Curry.13¾@13¼
610 Hale & Norcross...7¾@8
1153 Hussey.....40c
200 Jackson.....4

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., OCT. 5.

190 Alpha.....42¾@41¼
260 Andes.....2
2516 Baltimore Con...4¼@4⅜
150 Best & Bel.....47@47¼
115 Belcher.....21@21½
160 Bullion.....35
225 Chollar.....8@80
1450 California.....61¾@61
940 Crown Point.....11¼
1020 Con Virginia.....55¾@56
50 Challenge.....9
1318 Con Imperial.....4@4¼
60 Confidence.....16@16¾
260 Cromer.....2½
460 Exchequer.....14¾@14½
675 Gould & Curry.14¾@14⅝
100 Globe.....15c
735 Hale & Nor.....10¼@10⅜
180 Julia.....6¾@6¾
785 Justice.....17¾@18½
115 Kentuck.....11¾
50 Kossuth.....1¾
2 5 Lady Bryan.....25c
150 Lady Wash.....3½
250 Leviathan.....87½@90c
540 Mexican.....26¾@26¾
100 Morning Star.....4¼
770 New York.....1¼@1⅜
375 North Con Va...1¾@1.30
1296 Ophir.....42¾@43
50 Overman.....75½@76
210 Prospect.....1⅛@1.20
175 Phil Sheridan.....1¾
540 Savage.....14
1080 Sierra Nevada.11¾@11⅞
100 Silver Hill.....7½
225 Tahoe.....75c
700 Trojan.....80c
110 Utah.....16¾@17
1135 Union Con.....11¾@11
100 Woodville.....1.05
200 Wells-Fargo 15c
2070 Y Jacket.....24¼@24⅜

AFTERNOON SESSION.

75 Alpa.....70c
80 Best & Belcher.....47¼
395 Baltimore Con.....2⅞@3
750 Coso Con.....2c
310 California.....61¾
475 Con Virginia.....53¾
498 Eureka Con.....14@14¾
1350 Gila.....65c
45 Gould & Curry.14¾@14⅝
30 Hale & Nor.....10¼
1000 Hussey.....40@40c
495 Jackson.....4@4¼
2193 Leopard.....8¼@8⅜
75 Meadow Valley.....50c
495 Manhattan.....16¾
30 Modoc.....4¼
315 Mexican.....27@26¾
785 Northern Belle...19¾@20
1518 New Coso.....2¼@2¾
320 Ophir.....43¾@43⅝
185 Overman.....76½@77
2280 Poorman.....25@25c
100 Panther.....40c
20 Raymond & Ely.....5¾
15 Savage.....13¾
200 Union.....11¾
770 Yellow Jacket...24½@25

THURSDAY A. M., OCT. 12.

270 Alpha.....44@44¼
310 Bullion.....35@35½
290 Best & Belcher.42¾@43½
115 Belcher.....18¾@19
280 Baltimore.....2½@2⅝
290 Chollar.....77@78¾
2230 Con Imperial...3.85@3.90
1100 Crown Point.....11¾
1100 Con Virginia.....56¾@49
965 California.....59@59¾
585 Caledonia.....9½@9⅝
40 Challenge.....3
115 Confidence.....16¾@17
120 Gould & Curry.....13¾@13⅝
620 Hale & Nor.....8¾@8½
425 Julia.....6¾@6⅝
570 Justice.....17¾@17⅝
45 Kentuck.....10¾
475 Kossuth.....1¾@1⅞
280 Lady B.....25@27½c
495 Mexican.....25½@26
430 Maryland.....50c
500 New York.....1¼
335 N Con Vir.....1¼@1⅛
215 Overman.....77½@78
1760 Ophir.....43¾@44½
740 Savage.....12¾@12½
100 Silver Hill.....7½
515 Sierra Nevada..11¾@11¾
200 Succor.....10@12½c
25 Utah.....15½
100 Union.....11¾@11½
100 Woodville.....1¼
950 Yellow Jacket..22¼@22¾

AFTERNOON SESSION.

70 Alpha.....43½@43¾
210 Belmont.....2@1¾
35 Belcher.....18½@19
30 Bullion.....34
130 Best & Bel.....47@47¾
1220 Con Virginia.....48¾@47¾
625 California.....50¾@58
180 Caledonia.....9¾@9¾
1215 Con Imperial...3.70@3.75
645 Eureka Con.....14@13¾
80 Exchequer .....13¾@13½
200 Gen Thomas.....1¾
200 Grass Valley...2.15@2.10
650 Hussey.....40@50c
50 Jefferson.....75c
70 Justice.....17¾@17⅝
1120 Leopard.....8@7¾
50 Meadow Valley.....25c
145 Manhattan.....15¾@15¾
260 Modoc.....3½@4
420 Mexican.....25¼@25⅜
470 Northern Belle...22@24
315 Newark.....75c
100 Overman.....78
1390 Ophir.....42@43¾
300 Poorman.....80c
175 Sierra Nevada.....11¾
425 Savage.....12¾@12½
405 Union.....12½@12½
910 Yellow Jacket...22¾@23

Pacific Board—Latest Sales.

WEDN'SDAY, A. M, OCT. 11.

459 Atlantic.....2½
50 Alpha.....42¾
160 Best & Bel.....40½@40¼
100 Belcher.....18 @17¾
340 Con Imperial...3.80@3.75
35 Caledonia.....9¾
20 Chollar.....74
85 California.....58¾@59
15 Crown Point.....11@10¾
210 City of Rest.....27@26
75 Con Virginia.....48¾@49
100 Gould & Curry.13¾@13⅝
25 Hale & Nor.....8
200 Indiana.....3.85

140 Justice.....17¾@17¼
315 Julia.....5¾@5½
300 Kossuth.....1½
100 Lady Bryan.....26c
250 Leviathan.....8 @80c
110 Monumental.....20c
200 Mexican.....24½
530 Ophir.....41@42½
50 Ohio 10c
15 Sierra Nevada.....11¾
430 Savage.....12¾@12½
200 Twin Peaks.....15
2100 Trenton.....1¾@7
365 Yellow Jacket...22¾@21½

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Deling'nt.	Sale.	Secretary.	Place of Business.
Andes S M Co	Washoe	7 25	Sep 15	Oct 21	Nov 8	M Landers 307 Montgomery st
Baltimore Con M Co	Washoe	12 1 00	Oct 6	Nov 8	Nov 27	C A Sankey 331 Montgomery st
Belmont M Co	Nev	9 50	Sep 18	Oct 24	Nov 21	W H McClintock 419 California st
Bullion M Co	Washoe	1 2 50	Sep 22	Sept 30	Oct 23	J S Kennedy 419 California st
Caledonia S M Co	Washoe	18 1 00	Aug 29	Sept 30	Oct 20	R Wegener 414 California st
Cherry Creek M Co	Nev	7 30	Oct 3	N v 10	Dec 6	D F Verdenal 409 California st
Coso Con M Co	Cal	3 15	Sep 29	Oct 7	Oct 28	R H Broom 419 California st
Dardanelles M Co	Washoe	4 1 00	Sep 5	Oct 6	Oct 24	W S Duval 402 Montgomery st
Dayton G & S M Co	Nev	5 1 00	Sept 8	Oct 13	Nov 3	W E Dean 419 California st
Equitable Tunnel & M Co	Utah	13 20	Sept 7	Oct 12	Nov 1	C S Healey Merchants' Ex
Exchequer M Co	Washoe	1 *1 00	Sep 23	Nov 1	Nov 15	J S Kennedy 419 California st
Geddes & Bertrand M & M Co	Nev	1 50	July 24	Sept 22	Oct 29	J A Vance Stevenson's Bldg
Hale & Norcross S M Co	Washoe	52 1 00	Oct 10	Nov 14	Dec 5	J F Lightner Nevada Block
Insurance M Co	Washoe	3 25	Aug 30	Oct 2	Oct 23	M Landers 309 Montgomery st
Jefferson S M Co	Nev	2 50	Oct 11	Nov 18	Dec 11	C A Sankey 331 Montgomery st
Julia Consol M Co	Washoe	1 1 00	Sept 11	Oct 16	Nov 6	A Noel 419 California st
Julia G & S M Co	Washoe	23 3 00	Sept 11	Oct 16	Nov 6	A Noel 419 California st
Justice M Co	Washoe	19 5 00	Sep 14	Oct 18	Nov 7	J S Kennedy 419 California st
Lady Bryan M Co	Nev	13 50	Sep 15	Oct 17	Nov 7	W H McClintock 419 California st
Mariposa Land & M Co	Cal	7 1 00	Sept 7	Oct 9	Oct 30	L Leavitt 309 Montgomery st
Maruosa M Co	Barcelona, Nev	7 10	Sept 7	Oct 11	Nov 1	J P Moore 426 California st
Meadow Valley M Co	Ely Dist	13 75	Sep 29	Nov 6	Dec 4	T W Colburn 418 California st
Mexican G & S M Co	Washoe	2 50	Sep 5	Oct 11	Oct 31	L McCoy 419 California st
Mitchell G & S M Co	Nev	10	Sept 7	Oct 16	Nov 8	A C Hammond 401 California st
New York M Co	Washoe	10 25	Aug 29	Oct 2	Oct 21	D L Thomas 419 California st
Niagara M Co	Washoe	3 25	Oct 3	Nov 4	Nov 24	W B Townsend 309 Montgomery st
North Caraon M Co	Nev	5 10	Oct 3	Nov 6	Nov 27	W A Van Bokkelen 320 Sansome st
North Con Virginia	Washoe	5 25	Sep 21	Oct 25	Nov 14	J Maguire 419 California st
Pacific M Co	Washoe	1 20	Sept 11	Oct 14	Nov 3	J W Clark 418 California st
Panther M Co	Nev	3 25	Oct 4	Nov 8	Dec 5	F Swift 419 California st
Peosta M Co	Washoe	2 50	Sept 21	Oct 31	Nov 17	J P Moore 426 California st
Secator S M Co	Washoe	14 50	Sep 19	Oct 24	Nov 13	J H Sayre 330 Pine st
Silver Hill M Co	Washoe	9 1 00	Sep 18	Oct 24	Nov 14	W E Dean 416 California st
South Chariot M Co	Idaho	18 25	Aug 29	Sep 29	Oct 20	W H McClintock 419 California st
Spruce M M Co	Cal	12 50	Sep 18	Oct 23	Nov 15	D F Verdenal 409 California st
Snecor M & M Co	Washoe	16 50	Sep 26	Oct 31	Nov 22	W H Watson 302 Montgomery st

*$12 50 old stock; $1.00 new.

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Accidental Con M Co	Nev	1	10	Aug 21	Oct 2	Oct 20 O Metchke 426 Montgomery st
Almaden Con Quick M Co		1	30	Aug 15	Sept 25	Oct 16 O C Finkler 638 Montgomery st
Aureola G & S M Co	Nev	2	10	Sep 23	Oct 30	Nov 21 T S Fitch 240 Montgomery st
Barcelona Con M Co		1	1 00	Aug 21	Sept 25	Oct 18 J P Moore 426 California st
Beach & Paxton G & S M Co	Nev	2	25	Aug 30	Oct 3	Oct 24 M Landers 309 Montgomery st
Cabinet M Co	Washoe	1	2	Sep 21	Oct 26	Nov 27 J P Sterling 330 Pine st
Carbon Hydraulic M Co	Cal	3	15	Sep 29	Oct 30	Nov 20 Chas H Bridge 224 California st
Cincinnati G & S M Co	Cal	6	10	Aug 29	Sept 29	Oct 16 W Small 53½ California st
Eagle Quicksilver M Co	Cal	9	250	04	Sep 30	Nov 29 Dec 4 Wm H Watson 302 Montgomery st
East Branch M Co	Plumas Co	Cal	5	10	Sep 26	Nov 6 Nov 25 E P Sanford 514 Washington st
Emigrant S M Co		Cal	1	00	Sep 22	Oct 29 Nov 15 W H Chickering 426 California st
Glenco Con G M Co		Cal	2	5	Aug 29	Oct 2 Oct 23 L Leavitt 309 Montgomery st
Gold Canyon Con M Co		Nev		10	Sep 15	Nov 13 Dec 20 A A Pardow 636 Clay st
Golden Crown M Co		Cal	3	5	Sept 12	Oct 20 Nov 10 D Buck 309 Montgomery st
Houston M Co		Nev	1	5	Oct 2	Nov 6 Nov 21 W Stairley 410½ California st
Lone Range Ledge S M Co		Washoe	1	2	Sept 11	Oct 16 Nov 7 F E Lady 507 Montgomery st
Mariposa South M Co		Nev	1	10	Aug 8	Sept 19 Oct 17 J W Clark 418 California st
Minietta Belle M Co		Inyo Co	Cal	1	25	Oct 4 Nov 4 Nov 27 J G Riley 209 Sansome st
Monumental M Co		Washoe	2	15	Sept 7	Oct 9 Nov 1 W B Townsend Nevada Block
Morgan M Co		Cal	3	1 00	Sep 19	Oct 23 Nov 20 J H Wallace 108 California st
Moore's Flat Blue Gravel M Co		Cal	3	25	Sep 14	Oct 18 Nov 6 Wm Moore 525 California st
National Prospecting & M Co		Cal	1	10	Sept 9	Oct 10 Nov 11 T L Wiswall Merchants' Ex
Nonpareil G M Co		Cal	6	5 00	Sep 15	Oct 23 Nov 9 A DuPrat 508 Jackson st
Oceanic Quicksilver M Co		Cal	4	50	Aug 26	Oct 9 Oct 30 O G Funk 438 California st
Purdy S M Co		Colorado	1	2 00	Sep 23	Nov 14 Dec 5 A J Bell 331 Montgomery st
Renton Coal Co		Washington Ter	2	50	Sep 7	Oct 16 Nov 23 T H Henderson 24 Sacramento st
San Francisco Sulphur M Co		Nev	1	10	Sep 29	Oct 30 Nov 21 J Roberts Jr 328 Montgomery st
San Jose M Co		Nev	13	30	Sep 12	Oct 21 Nov 19 A Carrigan 109 Front st
Sierra Iron Co		Cal		1 00	Aug 18	Sept 99 Oct 26 Caleb T Fay 318 Sansome st
South Barcelona M Co		Nev	1	1 00	Aug 21	Sept 27 Oct 18 J P Moore 426 California st
Sonoma M Co		Nev	1	10	Sept 11	Oct 13 Nov 11 J P Moore 426 California st
Welch Con Quick M Co		Cal	1	4	Aug 21	Sep 30 Oct 23 J P Forbes 408 California st
West Comstock G & S M Co		Nev	5	25	Sept 12	Oct 16 Nov 3 J D Thompson 401 California st
Young America M Co		Nev	5	20	Sep 29	Oct 31 Nov 18 R H Brown 426 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date
Balance Con M Co	Nev	W Easton	419 California st	Annual	Oct 24
Eureka Con M Co	Nev	W W Traylor	309 Montgomery st	Annual	Oct 16
Eureka G M Co	Graas Valley	R Wegener	414 California st	Annual	Oct 18
Exchequer M Co	Washoe	J S Kennedy	419 California st	Annual	Oct 16
McCrackin Con M Co	Arizona	Called by Trustees	419 California st	Special	Oct 16
North arson S M Co	Nev	W A Van Bokkelen	320 Sansome st	Annual	Oct 16
Silver West Con M Co	Nev	F K Banker	606 Montgomery st	Annual	Oct 16
South Chariot M Co	Idaho	F Swift	419 California st	Annual	Oct 16
Weaverville Ditch & M Co	Cal	F H Rogers	934 Pine st	Annual	Oct 16

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	O D Sopire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	Oct 11
California M Co	Cal	C P Gordon	Nevada Block	2 00	Oct 16
Consolidated Amador	Cal	F B Latham	420 California st	25	Oct 9
Con Gold Hill Quartz M Co	Washoe	R Wegener	411 California st	25	April 17
Con Virginia M Co	Washoe	A W Havens	Nevada Block	2 00	Oct 11
Comanche M & M Co	Nev	W W Traylor	Nevada Block	25	Sept 25
Empire M Co	Nevada Co	Cal D A Jennings	401 California st	2 00	April 11
Empire M Co	Sierra Co	Cal Chas Collfahonn		50	Sept 26
Empire M & M Co	Washoe	W E Dean	414 California st	25	April 17
Imperial S M Co	Washoe	W E Dean	414 California st	25	April 17
Leopard M Co	Nev	R H Brown	426 California st	50	Oct 16
Manhattan S M Co	Nev	J Crockett	419 California st	1 00	Oct 10
Northern Belle M & M Co	Nev	W Willis	909 Montgomery st	1 00	Oct 15
St Patrick M Co	Cal	D F Verdenal	409 California st	30	Mar 10
West Comstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Feb 24

California Board—Latest Sales.

WEDNESDAY, A. M., OCT. 11.

125 Alpha.....43@12½
70 Alta.....1¾@2
150 Andes.....1.80
700 Baltic.....27@26c
200 Baltimore.....2¼@2⅜
45 Belcher.....17½
50 Best & Bel.....40
140 Caledonia.....9⅝@9
50 California .....55¾@57¾
200 City.....19.3
415 Crown Point.....10¾@11
100 Chollar.....80c
50 Gould & Curry 19½
500 Globe.....15c
105 Hale & Nor.....8¾
1000 Hussey.....40c
50 Jefferson.....75c
100 Justice.....17¾
300 Lady Bryan.....27@26c
230 Lady Wash.....2¾
200 Leviathan.....90c
100 Mar-Bee.....75c
100 North Caraon.....6c
45 Ophir.....40¾@41
200 Phil Sheridan.....2
5 Prospect.....87½c
180 Sierra Nevada.10¾@10¾
300 Superior.....10@8c
400 Trenton.....7¾@8¼
400 Trojan.....16¾@15c
50 Utah.....15
1600 Union Flag.....80c@1
300 Wells-Fargo.....14c
50 Woodville.....1¼
60 Yellow Jacket.....21

AFTERNOON SESSION.

130 Hale & Norcross...8¾
80 Justice.....17½@17¾
20 Julia.....5¾
895 Leopard.....8¾@8¾
240 Mansfield.....22½c
290 M Valley.....30c
230 Mexican.....24½@24¼
30 Manhattan.....15¾
100 N Co-o.....2½
250 Northern Belle.....20½
425 Ophir.....44¾@45
50 Prospect.....87½c
105 S vage.....12½@12⅝
120 Union .....11¾@11⅝
75 Woodville.....1¼
220 Yellow Jacket..22¾@22⅝

Mining Share Market.

The stock market has for some time been under the weather. Without any appreciable cause securities have been steadily declining, scarcely a glimmer of a reaction occurring to mar the disagreeable monotony prevailing. What is known as the "outside" public will never buy at low figures, although in times of excitement and inflated prices this element is only too anxious to get in. It therefore becomes necessary for some strong power to lift the market bodily until a decade of values is established which will prove sufficiently tempting. The news from the Comstock is encouraging, without any important or new developments being announced. The bear canards have been successively exploded, and the forthcoming regular dividends of the bonanza mines are the best answer to the reports spread about the condition of these mines, while the water scare has evaporated under the steady strokes of the Savage and Hale & Norcross pumps. One of the features of the market has been the eccentric movement in Eureka Consolidated, presumably under election influences, and this has caused the stock to become for a time a favorite gamble. Other outside stocks have sympathized in the general decline. Altogether, the week has been anything but a satisfactory one, and all, for there are no hears now, are looking anxiously for signs of improvement. The stock which is now coming upon the market is sold under pressure, and not for short account. Brokers have been very cautious of late and have weeded out most of the elements of insecurity by keeping a sharp lookout for shaky customers, and the market is now sufficiently stable to remove all apprehension of a serious panic.

Two thousand one hundred Californians have been registered at the California building from June 15th to October 1st.

MINING SUMMARY.

The following is mostly condensed from journals published in the interior in proximity to the mines mentioned.

California.

ALPINE.

I. X. L. MILL.—Alpine *Chronicle*, Sept. 30th: The whole of the machinery for this mill, with the exception of that en route, will leave San Francisco on Thursday next. The mechanics for the erection of the buildings arrived yesterday, and are pushing their work with great energy. Thirty-five men are engaged about the place.

AMADOR.

MINING IN VOLCANO.—Amador *Dispatch*, Oct. 7: We understand that another company has been formed for the purpose of deep gravel mining at Volcano, and that the work of running a tunnel into the mines has been commenced. The tunnel is begun down Sutter creek, about 1,000 feet below town, and is expected to strike the mines in the basin some 30 or 40 feet beneath the surface. This is the second company prosecuting this kind of work at Volcano. It will cost thousands of dollars to develop these mines, but when they are developed there is little doubt but that they will yield their ten-fold rewards to their owners. Volcano stands a fair show to again see the flush times of '49.

THE MONTERICHARD MINE.—Amador *Ledger*, Oct. 7: It is pleasing to be able to state that this mine—the only one now being worked which is tributary to Jackson—is in a prosperous condition. A whim has just been erected on the property, and commenced hoisting rock on Friday of last week. The shaft is now down 80 feet; the ledge at the bottom showing four feet in width. The character of the rock continues to improve. It is estimated that the ore now being extracted will run at least $20 to the ton. Three men are engaged in stopiag. On Monday sinking operations will be resumed, when the working force will be increased to 21 hands. The intention is to sink 100 feet deeper before the winter sets in, and if the ledge at that depth is found to hold its own, a quartz mill will be erected close to the mine. Altogether the Monterichard must be classed among the most promising mines in the county. It has paid its way from the very start, and considering the depth attained, we do not know of another claim that shows so well. We understand that the property has been incorporated recently in 32,000 shares, at $3 per share. Persons having spare cash could not, perhaps, find a more desirable investment than the purchase of some of this stock. The neighborhood in which this mine is located seems to be rich in mineral. A great many claims have been taken up, some of the ledges surpassing the Monterichard in size and richness. The development of the Monterichard into a permanent paying mine would have the effect of starting up all these dormant claims.

ANOTHER DRYTOWN MINING VENTURA.—From present indications it seems probable that the neighborhood of Drytown is destined to be as thoroughly prospected for quartz as any part of the State. In addition to the many claims we have noticed of late, O. Dickerson and seven others have taken up a claim close to and parallel with the Crown Point and Bonanza mines. They have put two men to work, and have sunk a depth of 15 feet, developing a ledge 2½ feet wide, apparently of high grade ore. The rock has been tested, and averages well. It is the intention to incorporate at an early date, under the name of the Drytown mining company.

PILFERING GOLD.—Stealing gold used to be a frequent occurrence years back by the miners engaged in the Amador Consolidated mine, of Sutter Creek. The rock was so rich, the free gold being visible throughout, that the employees were unable to resist the temptation to try and get away with some of the richest specimens they met with in their work. Latterly, however, little has been heard of this species of dishonesty. Within the last few months the ore has rivaled in golden wealth the days of yore, and the inducement to steal, it is rumored, has been more than the moral courage of some of the workmen could withstand. The utmost precaution is taken by the company to guard against the possibility of loss by dishonest workmen, but of course some will resort to expedients to avoid detection in theft. One man was discharged on Saturday morning last, it is commonly reported, because of being suspected of taking specimens from the mine.

CALAVERAS.

RICH ROCK.—Calaveras *Chronicle*, Oct. 7: We have been shown some specimens of rich quartz from Potter & Co.'s mine, at Mosquito. We are informed that the ledge is a wide one, and if the rock shown us was an average sample it is the richest thing in the country.

LAMPHEAR MINE.—Everything continues favorable at the Lamphear mine. Sinking the shaft and running the north level progresses rapidly, and the mill is kept running day and night.

COLUSA.

THE BUCKEYE.—Colusa *Sun*, Sept. 30: We are very glad to hear that the shaft recently sunk on the Buckeye ground has at last reached the ore bed. The shaft is 200 feet deep, but it is only 175 down to a very rich bed of ore. The face of the tunnel run from the shaft is 12 feet, and shows a cinnabar of the richest quality all the way across. This mine has been one of the best managed in the State, and, until a cave in the tunnel some months ago, was turning out a large amount of quicksilver, at a profit. We may now expect to see them come in with between 100 and 200 flasks a month.

EL DORADO.

ST. LAWRENCE.—*Mountain Democrat*, Oct. 7: Geo. M. Lederer, of No. 2,628 Battery street, San Francisco, President of the St. Lawrence mine, was up here last week, and went over to take a squint at the big hosanna lately discovered in the St. Lawrence, wishing to "see it with his own eyes," as the saying goes. And he went down to the 800-ft level, and did see with his own eyes far more than had been promised or expected. With his own hands he picked and gadded from the ledge, in a place where it was fully four and a half feet thick, one chunk of ore weighing about 30 pounds, which showed on its surface gold to fully the amount of $100. Mr. Lederer is more than satisfied with what he saw in the St. Lawrence.

ROBINSON.—El Dorado *Republican*, Oct. 5: The Robinson mine, at Prospect Flat, has the finest bed of gravel developed that it has ever yet had, and the mill is turning out the precious metal in highly satisfactory quantities.

INYO.

LOCAL NEWS.—Coso *Mining News*, Oct. 7: We have the pleasure this week of presenting our readers with a report of our principal mines, written by E. E. Crossman, one of the most thorough practical and theoretical mining experts on the coast. First the Modoc mines: The Confidence mine is the most valuable of their several properties. There are about 2,000 tons of high-grade ore on the dump, with thousands in sight as reserve. My assays, taken carefully, run high in both lead and silver, and are of a character, with proper fluxes and worked understandingly, to guarantee big results—high-grade bullion and dividends close at hand. Lookout, a fissure on the line, filled with boulders and fragments of a high-grade argentiferous galena, promises a brilliant future from the few levels and winzes that have been sunk. Hundreds of tons have been extracted, assuring many hundreds of tons more as reserves. The Modoc shows a blanket of high-grade silver-lead ore. Its extent is to be proved. The plant is complete in all its parts. The 60-ton furnaces are ready to start up. The company have excellent boarding houses, blacksmith shops, etc., which are perfect in all their appointments. The Defiance, located near Darwin, I consider to be the "mother lode" of your district. The vein is a true fissure, coursing northerly and southerly, and lying between two dissimilar formations, partaking in some respects of the character of a contact deposit, but as it occasionally cuts the formation, I class it a true fissure. This property consists of four several veins running parallel to each other and but short distances apart. Distinctly defined upon the surface, heavy croppings, traceable for five miles, and the underground workings, at a depth of 150 feet, show conclusively their character. By measurement I am satisfied that the four several veins are approximating, and will form, at no great depth, a veritable Comstock, containing kidneys and chambers of high-grade argentiferous ores. The improvements, steam hoisting works, inclines, etc., are planned with good judgment for future development and workings, but, unfortunately for the success of the mine, the owners of the property were too anxious to realize in the immediate future, and killed the goose that laid the golden egg by building extensive smelting works and other improvements before their mine was properly opened and in shape to supply the ore demanded, and thereby incurring a heavy liability that the product of the mine could not stand. A reasonable amount of capital—say $50,000—would put this mine on a dividend paying basis. The New Coso, I will simply say has merits which, like good wine, requires no bush. I carefully examined the mine and consider it quite equal to Meadow Valley in its palmy days. Ores high grade, a true fissure vein and improving rapidly as depth is attained. A bright future for New Coso. The Emigrant mine is a very interesting piece of property, and I should have been glad to have spent a longer time there.

MR. VERNON DISTRICT.—J. R. Frink, who is interested in the Emigrant company's mines, at Lee district, is also interested in mines at Mt. Vernon, San Diego county, near the Colorado river. He informs us that he has got the foundation for a five-stamp mill built, and the machinery for same is at the terminus of the railroad, waiting transportation to the mines. The mines are gold bearing, the ore of high grade. The mine is looking well, although but little work has been done upon it. Barney Lee, the discoverer of Lee district, is interested with Mr. Frink. It is believed to be a valuable property.

LOS ANGELES.

FINE SPECIMENS.—Los Angeles *Express*, Oct. 7: Mr. Richard Duryea yesterday exhibited to us some fine specimens of gold-bearing ore from Bear valley. From a piece of this ore, weighing scarcely three ounces, he pounded out upwards of a dollar's worth of gold, of a very fine grade, in one of Dr. Heinzeman's mortars. It speaks well for the prospects of that district if there is much of that kind of ore to be found there.

MONO.

BENTON MINES.—Cor. Inyo *Independent*, Sept. 30: In my last communication I promised to give you more of a detailed account of matters and things in this vicinity, especially in relation to the mines. Our mineral interests are looking much better than at any time heretofore, and the prospects for the prosperity of Benton were never so flattering as at the present time. Water at the mines has hitherto been an enormously expensive item, as it was all drawn on wagons from town. But fortune has smiled on the Comanche M. & M. Co.; at last they have struck water in the bottom of the shaft in quantity quite sufficient to supply the hoisting works. The Comanche makes regular shipments of bullion, and declares her dividends monthly. A contract for sinking a shaft on the Blind Spring mine is completed to the depth of 150 feet, and Superintendent Howell is talking of putting up a small hoisting engine, sufficient in power to hoist 1,000 feet. The contractors, Messrs. Louder & King, did the mining. The mines at the Yellow Jacket, seven miles south of Benton, are assuming quite a conspicuous place in the history of the mines in this vicinity. John Tregembo has opened up in the Tower mine a vein of the metallic substance about two feet thick, which assays up in the thousands. Messrs. Tregembo & Thomas, who purchased the Illinois mine last spring, have worked manfully upon it ever since. In the matter of dollars and cents their accomplishment thus far has not amounted to much, but the preparatory work has been immense. A depth of 75 feet has been reached, and there is not a mine or a mining piece of workmanship in the State of California that is any more deserving of credit to the workmen than that of Messrs. Tregembo & Thomas in the Illinois mine at Yellow Jacket. The Indian Queen mill and mine has started up, under the superintendency of Mr. Dudley Hoyt, and that he is equal to the emergency is established by his regular shipment of the usual seven bars per week. This morning the steamer put out loaded down by the guards with bullion. The Diana mine is not panning out as some might expect, but on the other hand it is paying out for improvements now being made, after the completion of which it is thought the owners will begin to realize dividends. A mine known as the "Careless Tom" was incorporated a short time ago, with a capital stock of $5,000,000. It is the south extension of the Diana, and there is no doubt but that the Careless Tom will prove as good as either the Diana or the Kerrick.

NEVADA.

NEW ENTERPRISE.—*Foothill Tidings*, Oct. 7: A new mining enterprise has been started a short distance below the old Allison Ranch mine, on what is supposed to be an extension of the Carlhoo ledge. The owners have been quietly working for some time. They have a shaft down 18 or 20 feet, and in running a drift therefrom on Friday morning the miners cut into a fine ledge which looks well. The owners are N. Dodsworth, Geo. Johnston, T. W. McFate, Wm. McFate, M. Roach and others, who are, we understand, feeling well over the discovery.

THE Orleans mine is turning out very fine ore. A few days ago a crushing of 19 loads was put through the mill and the yield was 278 ounces of gold, worth about $5,000. The ore was from the old Hueston Hill mine.

INKERMAN.—Some parties are taking out rock "on tribute" from this old mine, and we are glad to learn the prospects are good.

PLACER.

MINING ITEMS.—Dutch Flat *Forum*, Oct. 5: The work of cleaning ditches, repairing flumes and fitting up the various claims for the approaching season is being carried on with vigor. The Baker claim already shows that the superintendent means business. The shaft leading down to the grade of the Yankee tunnel is completed. An incline therefrom along the bedrock to the rim is being run. A string of pipe is laid ready for water. A blacksmith shop is being built. The Yankee derrick is being removed to this claim, and in fact everything is being prepared for early washing. The Yankee tunnel will reach a point opposite the Baker shaft this week, there then remains but the running of the branch to complete the work. This tunnel was driven 181 feet last month, at a cost of $23.41 per foot. The Southern Cross and Polar Star claims are idle at present, pending the repairs on the South Yuba ditch, and all the men were paid off on Saturday night. In the Franklin claim the superintendent is taking time by the forelock, by driving the main tunnel ahead, so as not to be delayed while washing. He is also constructing a water power derrick of the most improved style, so as to hoist the large boulders out of the pit instead of blasting and sledging them. At Gold Run the claim of the Gold Run H. M. Co., limited, is being prepared for early washing. An incline leading from the tunnel to the surface of the gravel is being run. Powder drifts are being driven under the banks, so as to be in readiness to use when desired. The Indiana Hill claim is also in a state of activity. Powder drifts are being run under the banks and a deep, open rock cut, for the ground sluice to convey the loosened gravel to the incline, is being blasted out of solid rock. The Illinois or Midas claim, owned by the Miners' ditch company, is being rigged for washing the approaching season. A short bedrock tunnel is being run, so as to wash the gravel to the rim rock. The gravel in the Bailey claim adjoining was quite rich, and it is reasonable to suppose that this piece of ground will pay well.

GREEN VALLEY MINING ITEMS.—The Green Valley mining company are still busy sinking. The shaft is up the old channel is down 63 feet. It has passed through the quicksand, and is now about three feet in gravel, which prospects well in fine gold. The shaft in the hill is down 50 feet, among large boulders, and is making slow progress. The tunnel of the Oppel is completed, and washing the top ground will commence in a few days. Norvey & Co. are making good headway running their tunnel, also in preparing for the erection of a cement mill. The Hidden Hill and other companies are busy, making preperations for winter.

BEAR RIVER MINES.—The Centennial claim, worked by Messrs. Bailew and Crisman, has commenced washing gravel that insures good pay. At the Richie mine they had the misfortune to break the incline rope, which will have to be replaced by a new one, causing a few days' delay. The Bartlett claim, after running a tunnel 600 feet, have struck a channel which prospects well. They have commenced washing. At the Whipple claim they are still busy drifting, but without any success as yet.

THE claim owned by Ross & Ford, at Euchre bar, on the North fork of the American river, has been steadily worked since last winter. They employ 15 men and use 500 inches of water. Good dividends have been paid during the year. This claim has been worked by the owners for a number of years, and is likely to be a good piece of property for some time to come.

YANKEE JIMS.—The miners here are working with a will to get their claims in shape for operations when the water comes, and will no doubt all be in readiness. The drift claims are doing well. The Sebastopol, near town, is paying about $7 to the hand per day, and the Centennial, half a mile from here, is doing still better, averaging $10 per day to the pick. The owners are in good spirits and are making extensive and permanent improvements. They have built an engine house, a fine blacksmith shop, a machine shop, superintendent's office and a boarding house, all new and substantial, and are now building a wood shed, 36x100 feet, and grading the site for their crushing mill. Everything runs smoothly under the management of the superintendent, John Hensley, a practical miner and a gentleman of the old school.

LITTLE YORK MINES.—As the water is turned out of the ditches, with a view to clean and repair them, the only work being done in the mines at present is the running of powder drifts. As soon as the ditches are repaired, water will be turned on at the Empire mine. The other claims will not resume washing until after the winter rains set in.

SAN BENITO.

READY FOR OPERATIONS.—Hollister *Enterprise*, Oct 7: One of the new furnaces at the Stayton mines is almost completed, and will be ready to operate next week. Work on the other furnaces is being pushed along as rapidly as possible. A rich and extensive strike of first-class metal was struck in one of the mines located near the furnaces a few days ago, exceeding anything yet developed in the mineral line in this section of the country. The owners are much elated over the prospects and believe, as we do, that they have the biggest thing in the shape of mines in the State. They will commence shipping metal about the 15th inst.

QUICKSILVER MINING.—The prospect for the successful mining of quicksilver in this section seems now to be very bright. As developments in several localities have disclosed the existence of paying bodies of ore, preparations are being made in some of the mines for work on a far more extensive scale than has been the custom heretofore. The new proprietors of the Stayton mines are pushing ahead their furnaces as fast as possible, and will in a short time be ready to turn out metal in large quantities. This company are also preparing for the reduction of antimony, of which ore they have a great deal in nearly all their mines, some of it being of the highest grade and very best quality. M. Cody & Co. in the Picacho district, we learn will also increase their working facilities this fall, and judging from some samples of the ore sent down the other day, we may look for large shipments of the metal from that quarter. We made mention of an unprecedented rich strike in these mines a couple of weeks ago, and we are informed that the ledge grows better every day, and is clearly a permanent vein. The Consolidated Wonder mines show excellent prospects and it is the intention of the owners to work them up to their fullest capacity this fall and winter. A strike was made a short time since in one of the Consolidated Ralston claims lying southwest of the Stayton mines, which is said to be immense. We have seen some of the surface ore, which shows good sign of metal. The ledge containing it is 20 feet wide and traceable for a long distance. Old and experienced miners seem to have much confidence in this discovery. A number of other claims, mostly north of the Consolidated Wonder, have been worked considerably during the summer and are looking well.

TRINITY.

RICH QUARTZ.—Trinity *Journal*, Oct. 7: A few weeks ago we made mention of a new discovery in quartz on Dead wood gulch, above Lewiston, by Muncey & Belleau, who were then erecting an arastra at the mine. Since then they have crushed two tons of rock, from which they got over $800, and Mr. Muncey is well satisfied that if they had cleaned the bed of the arastra thoroughly at least $200 more would have been secured. They are now down on the lode to the depth of 30 feet and it is six feet in width. Specimens of the rock brought to town are rich in gold, much of which is visible to the naked eye. Four hundred dollars to the ton is certainly a good yield, particularly when obtained by the crude process of an arastra, whereby a large percentage of the gold is lost that would be saved by a regular milling process.

GOOD PROSPECT.—News of a rich strike in the Trinity quicksilver mine reached here last week, and Hon. W. J. Tinnin and Mr. J. W. Smiley have since visited the mine for the purpose of investigation. They report a seam of considerable width impregnated with rich cinnabar, and brought with them some specimens that look remarkably well. The discovery was made in the lower tunnel which is now being run, and is not within 40 feet of the deposit found in the upper tunnel last year. Indications now are that the Trinity company will open a mine equal in richness to either the Altoona or Boston, and another season will find them producing quicksilver in large quantities.

TULARE.

DISCOVERY.—Tulare *Times*, Oct. 7: Dr. Clark and C. M. Tubbs, Esq., have just returned from the mountains at the head of Kings river, where they secured some of the rarest and richest specimens of ore we have yet seen. The specimens can be seen at Kirkland's real estate office. There is some talk of organizing a joint stock company for the purpose of immediately developing the mine. This is a rare opportunity for capitalists to invest with good results.

Nevada.

WHITE PINE DISTRICT.

ARRIVED.—White Pine *News*, Oct. 3: The machinery and drills for the Eberhardt tunnel, through Treasure hill, have arrived and are being set up. At the present time the tunnel is completed to a distance of 200 feet, which has been accomplished by two shifts of men since its commencement. When the machinery and drills are set in motion, it is thought that not less than from five to seven feet of tunnel will be made every 24 hours. We are informed that very favorable indications for veins of ore have already been struck in the tunnel, in the way of a number of feeders that probably attach to some mine. The company are also sinking an incline shaft, which has now attained a depth of 342 feet, and the indications are said to be very encouraging for striking ore.

CLEAN-UP.—The Eberhardt & Aurora company's mill closed down last Saturday night for a clean-up and repairs. The run lasted 36 days, during which time the engine stopped only 30 minutes, which was for needed repairs to the machinery. There is no better 30-stamp mill in the State, and there is no men in the country who can do more or better work with a mill than Perley Rowell, the company's millman.

EUREKA DISTRICT.

MATAMORAS MINE.—Eureka *Sentinel*, Oct. 6: Messrs. Steele & Sturgis, of the Chicago company that owns the Matamorae mine, have gone to Chicago to meet the other members of the company and make arrangements for the thorough working of the mine. At present there is no means of getting ore down from the mine except by pack mules; but it is the intention to build either a road or a tramway, most probable the latter, when ore can be brought down cheaply and conveniently. The furnace is now shut down for want of ore, but the run which was recently made had demonstrated its entire practicability and proved it a success to the satisfaction of Captain Taylor, the inventor, and other gentlemen interested. The mine is now in charge of Captain T. J. Taylor, who has a force of men at work opening and getting it in condition for active operations in the way of extracting ore. The ore body shows up well and promises to yield largely when everything is fairly under way, and everything indicates that the Matamoras company has a first-class mine.

REESE RIVER DISTRICT.

MANHATTAN. — *Reese River Reveille*, Oct. 6: As an evidence that the mines of the Manhattan company are now producing ores of extraordinary richness, we will state that the average assay of ores worked at the Manhattan mill, from the Panamint vein, during the past week, was $383.15; and of the ores from the Frost shaft, $114.12. Are there any other mines in the State that can show so high an average grade of ores? If there are we do not know it; and the best of it is that these ores are not taken from small bunches, but from regularly defined fissure veins, carrying extensive chimneys. The results mentioned are not for a day or for a week, but are now a regular thing. The immense ore bodies, from a portion of which these results are obtained, are barely touched as yet. There is ore enough in sight in the Panamint and Independent veins alone to run the Manhattan mill for the next six months, without a stroke of work being done to develop them further than they are at present, with the exception of the cross-cut connecting the Curlis shaft with the Panamint vein.

WASHOE DISTRICT.

CON. VIRGINIA.—Gold Hill *News*, Oct. 5th: Daily yield, 400 tons of ore, keeping the mills steadily crushing. The ore breasts on the 1400-ft level are yielding richer ores than for some time past, and are looking splendidly. This ore is east of any that has yet been taken from that level. On the 1550 ft level the ore stopes are yielding richly. The ore and bullion productions of the mine are again steadily on the increase. The mine is in splendid working condition throughout, and it will not be long before the old standard of $2,000,000 per month of bullion will be reached. The new pan mill is being tested and put in order for regular work. It will start up regularly about the 8th of this month. The usual dividend of $2per share, aggregating $1,080,000, was declared yesterday, payable on the 11th inst. Day before yesterday the diamond drills on the 1700-ft level, designed to penetrate to the bottom of the south winze and drain the water, were again started up. The air pipes, however, proved defective, obliging the entire suspension of the work until new pipes can be inserted, which is now being done as rapidly as possible. A large supply of reserve ore is being hauled to the Sacramento and Occidental mills, to guard against any delay that may be occasioned by the storms and snows of winter. The dividend, declared yesterday, makes the thirtieth consecutive monthly dividend paid by the mine, the whole aggregating $22,680,000, and the appearances of the mine warrant the belief that it is good for almost as many more of the same amounts.

CALIFORNIA.—Daily yield, 550 tons, keeping the mills crushing up to their capacities. The ore stopes on the 1500-ft level are looking finely, and are yielding the richest character of ores. The main south drift on the 1600-ft level, running through the center of the ledge, has advanced 18 feet during the week, the face still being in ore equal to any that has yet been developed in the mine. Cross-cuts are now being run at different points on the 1400-ft level, which are opening up ore of a much richer character than has before been developed. The yield of bullion for the month of September will not fall much short of $2,000,000. The mine was never showing better, or in a more prosperous condition than at present. Sinking the C. & O. shaft is progressing at the rate of 12 feet per week. All the blasting, and the entire extraction of the rock from the bottom of the shaft, has to be done under water, at a very great disadvantage. Every blast discharged brings a fresh flood of water, which keeps the pumps steadily running at the rate of ten strokes per minute. The work has been prosecuted in this manner for the last 140 feet. The shaft is now down 140 feet below the 1500-ft level.

CROWN POINT.—The main incline is down 140 feet below the 1700-ft level. Burleigh drills have just been put in, and are worked with compressed air to a great advantage. Much better progress can now be made with the sinking. The main south drift on the 1700-ft level has reached a point about 30 feet directly east of the combination pump-shaft on the Belcher line. The drift was run east of the shaft purposely to give room for the large water tanks required at that point. This connection will be completed as soon as the tanks are in place for the reception of the water. The joint pumping machinery on the south line of the mine started up on Sunday last and works with the utmost perfection. There is not sufficient water in the pump-shaft to hardly give it a fair test, but there is no doubt of its doing immense work whenever it is required. A splendid new air compressor has just been placed ready to run, which will not only facilitate greatly the work on the lower levels, but benefit the air circulation as well.

GOULD & CURRY.—The shaft is now in good working condition to within about 400 feet of the bottom. The main incline has been cleaned out and repaired to the bottom, a distance of 85 feet below the 1700-ft level. The flood of water in the bottom, which formerly resisted all efforts to drain it, has all disappeared, and the bottom of the incline is now perfectly dry. The water has evidently been drained by either the C. & C. or Savage shafts. On the 1700-ft level a cross-cut is now being run east from the shaft to cut the ledge. The main south drift on the 1700-ft level is steadily advancing, the face still in favorable ledge matter.

JUSTICE.—Daily yield, 150 tons of ore. The ore stopes are looking splendidly and yielding good ore. The mills are all kept steadily running on ore from the mine, and the yield of bullion is steadily on the increase. The cross-cuts from the main south drift on the 800-ft level show no change of value for the week. The main south drift on the 1000-ft level is showing much better, and the chances are that it will soon cut a continuation of the rich ore body found on the levels above. The flow of water at the bottom of the shaft is still very strong, and greatly impedes the progress of the work at that point. The condition of the mine for

extracting ore and driving the developmente on the lower levels is heing greatly improved.

NIAGARA.—Everything in and ahont this mine is being pnt in the hest possible working condition. The shait is now down 475 feet, tbe prospects of the ledge where it has been cnt heing of the most encouraging character. The new Board of Trustees have wisely re-elected Mr. William Alperson as superintendent for the ensuing year. The choice is one of the hest that could have been made, Mr. Alperson having proven, by his vigorous management and prosecution of the work of development, that he was the right man for the position.

HALE & NORCROSS.—The water in the main shaft was lowered 208 feet np to Tnesdey afternoon. At that time some new reserve of weter appeared to have broken loose on the lower levels, and it rose steadily, gaining on the pnmps until it hes filled the shaft for a distance of 60 feet ahove the lowest point reached. The rise has not ceased, the pnmps harely holding it in check at that point, and being unable to make any headway against it, although running at the rate of seven strokes per minnte. This sudden rise of the water is snpposed to have been caused by the breaking loose of the floods of water thet had prohably heen dammed np hy caves in the drifts on the lower levels, and cannot therefore he of any lasting or permanent duration.

OVERMAN.—Sinking the main shaft below the 1300-ft level is going repidly ahead. The soit streak of ground recently encountered at the hottom haa heen passed thrnngh, and the hottom of the shait is again in hard porphyry of just such a character as to make the most permanent and durahle kind of a shait. The flow of water is still considerahle, hut is easily handled hy the pumps.

BULLION.—The east cross-cut from the north drift on the 1400-ft level is in much more favorahle grnnnd, with evident indications of soon reaching the mein ledge. The east cross-cut on the 1500-ft level is steadily advancing, and is in very lively ledge material of a favorahle character.

FLORIDA.—The north cross-cnt on the 400-ft level hae been advanced 20 feet during the week. The rock in the face of this cross-cut is much softer. The flow of water is very strong. During the week several fine stringers of qnartz have heen passed through hy this drift.

SAVAGE.—The pumping machinery is doing splendid work, end, assisted hy the Hele & Norcross pumps, had reduced the water over 200 feet up to last Tuesday afternoon, when a fresh tlood of weter poured into the shaft, causing a rise of 60 feet in less than 36 hours in the main shaft. The rise has, however, heen again overcome.

CALEDONIA.—At the 1150-ft station a drift has heen started northward, for the donble purpose of prospecting the ore veln in that direction and making a connection with the south drift on the 1200 ft level of the Overman for air purposes.

TWIN PEAKS.—The hoisting works shaft over the new huilding is completed. The shaft is down nine feet, the first two sets of timbers having just heen pnt in. This shaft is situated several hundred feet east of the old shaft and the croppings of the ledge.

BEST & BELCHER.—The continned hot weather greatly impedes the progress of the developments on the lower levels, the air always heing much hotter and poorer in deep mines during the hottest seasons. But little prospecting is heing done in the mine at present and hut little can be done on the lower levels nntil the new pnmping machinery of the Gould & Curry is completed.

AREOLA.—Total depth of shaft to-day, 63 feet, and heing well timhered throughont. The hottom of the ehaft is all in quartz, with clay seams.

BELCHER —Daily yield, 300 tons of ore. No changes in the ore hreasts, which are showing very well. The new and powerfui combination pumping machinery started into full operation last Monday morning, and works with the ntmost perfection.

NORTH CON. VIRGINIA.—The new pumping machinery is working splendidly, and drains the water without an effort. Sinking the shaft is going ahead at the very rapid rate of four to five feet per day.

NEW YORK.—Three shifts of men are employed at three different points, cntting out the third compartment of the main ehaft. As soon as the shaft is completed the pumps will he lowered into place and the sinking resumed.

IMPERIAL.—Daily yield, 35 to 40 tons of ore. The ore stopes on the 2000-ft level show little or no change.

ROCK ISLAND —The flow of water at the 850-ft level still continues very strong and keeps the pumps husily employed.

CALCUTTA.—The diamond drill is still heing pnshed downward in search of the rich honanza at the lower levels, and very encouraging assays are occasionally met with, showing that the drill is on the right treck. It has already penetrated to the depth of a little over 300 feet.

KOSSUTH.—Sinking the main shaft is making excellent progress. Prospecting the 500-ft level is heing pushed ahead with great vigor.

JULIA.—The sonth drift on the 1600-ft level, running to connect with the Ward shaft, has passed throngh the helt of hard qnartz recently encountered, and is now in quartz of a very fine charecter. This hody of qnartz is much further to the eastward than any that has hefore heen opened in that portion of the mine, and is looked upon as a highly encouraging feature.

YELLOW JACKET.—The main south drift on the 1740-ft level, on last Monday, made the connection with the north drift on the 1700-ft level of the Crown Point mine. This connection has greatly cooled and henefited the main incline and the 1740-ft station.

AMAZON & GLASGOW.—The pnmp is in place, the hoilers set, the machinery heing pleced in position, and next week the work will he started up again, when sinking the combination shaft will he resumed under the most favorahle anspices.

OPHIR.—Daily yield, 300 tons of ore. There is little or no change in any of the ore-producing sections of the mine.

PHIL. SHERIDAN.—Sinking the main shaft is making excellent progress, the hottom in very favorahle ledge material.

HERSAL.—The drift north from the 180-ft level hes advanced 20 feet, encountering some very fine hlack snlphurets and chlorides, and with every indication of soon finding a large hody of ore.

SILVER HILL.—Cntting out for the pump station at the 600-ft level is completed.

LADY BRYAN.—The erection of the new and powerfnl pnmping machinery is making excellent progress. This machinery is all paid for, and when once in operation will rank with the finest and most serviceable on the Comstock lode.

WARD.—Sinking the main shaft ie making good progress, notwithstanding a conelderahle flow of water, which gave some trouble.

SIERRA-NEVADA. — Cross-cntting the 1250, 1500 and 1700-ft levels is being carried forward in the usuel energetic manner.

DAYTON.—The developments on the 300, 500 and 700-ft levels are heing prosecnted with vigor.

BALTIMORE & AMERICAN FLAT.—The drifts south on the 1050-ft level are showing somewhat of en improvement.

LEVIATHAN.—The north drift on the 800-ft level is steadily advancing, with more favorahle prospects than for some time past.

CHOLLAR-POTOSI.—Sinking the main incline is making steady progress. Sinking the combinetion shaft is also making rapid progress. Dally yield, 110 tons of ore.

SUPERIOR.—The west drift at the 160-ft level is showing better every day, the quartz and ore becoming more concentrated and of a hetter quality.

SUTRO TUNNEL.—Face of heading in herd porphyry, with streaks of quartz and clay. Total length of tunnel, 14,483 feet this morning

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(Continuad from Page 250.)

reanction and the preservation of the health of the workmen, the government had referred the petition to the highest mining authority, which had agreed with Pellet to test his process under the following conditions: The reduction of the quickeilver ore taken from the same pile should take place simultaneously in two furnaces, one to be constructed according to the direction of Pellet, and the other to be modeled after the furnaces then used in Almaden, and the obtained results to be placed side hy side for comparison. Pellet had received, with the greatest readiness, during his presence of two years at Almaden, and even before the beginning of his principal trial, all the required means and assistance; and, furthermore, in a preliminary trial for the discovery of some possible defects, he had been materially aided. Workmen for the training in the work of the new process had been placed in his charge and in every respect the greatest possible latitude in his actions had hean granted to him. But notwithstanding these opportunities favorable to success, a large number of laborers had got sick, and a smaller yield of quickeilver had been obtained, and, without counting the cost of erection, the expenees had heen greater than was usual at Almaden. Pellet had acknowledged the trial and the ohtained results, but after the expiration of two years he had rejected the trial and had insinuated that Monasterio was responsible for the failure; and therefore, he, Salazar, could not accept the invitation to Albunol. Salazar asserts further that the failure of both trials in Almaden and Albunol had not heen sufficient to refrain Pellet from making a third trial. Pellet had transferred his invention to a company, to which the Spanish government had granted a repetition of another trial. Salazar does not doubt but that this would be another competitive trial, that one furnace would be constructed according to Pellet's direction, and the other after the Almaden old style, that in both the same quality of ore would be used and that all necessary caution would ba taken at the trial. He also thinks it indispensable not to lose sight of the experience already gained at the former trials, and to guard against any error which might give a right to the inventor to claim the premium of 15,000,000 reales. He (Salazar), thinks the decision of the new trials of Pellet's process under all circumstances as determined, for the following reasons:

1. The appointed commissioners possess the most extensive knowledge of mining and reducing quickeilver ores.

2. In case this trial should result in favor of Pellet's process it would be imperative that another trial should be ordered, to decide the contradictory results of the trials so far made.

In the following volume, XXIII, of the *Revista Minera*, no mention is made of Pellet's process, with the exception of the single allusion to the first unsuccessful trial, and as Salazar, (page 389, etc., of this vol.) when speaking of some objections which had been made against the furnace of Bustamante, commends the said furnace, it would appear that the trial had not then taken place. Salazar will doubtless publish, in the *Revista Minera*, the results of the new trial as soon as it shall have ended, and will, at the same time, make publicly known the peculiarities of Pellet's process, and the application of the contrivance employed.

The Combination Shaft.

The following description of the Chollar, Hale & Norcross and Savage shaft company's works is from the Virginia *Enterprise*: The development of the Comstock is continually putting on new phases. One project after another is conceived and carried out, and generally these are gradually becoming of greater magnitude and importance. Improvements are being made also in the facilities for conducting extensive operations, until almost any attempt seems feasible, and no plan which has for its object the furthering of the general desire of following our great lode to increased depths, is seemingly too great to be undertaken and carried out successfully. In some respects the greatest of all these undertakings is that of

The Chollar-Norcross-Savage Shaft Company,

Who are carrying on operations east of tha southern part of the city. As a step preparatory to the inauguration of this truly mammoth enterprise the company, after its incorporation, took up and inclosed 35 acres of land east of tha ravine leading down into tha Six-mile canyon, and a mile south and east of the city. This land is now owned and occupied hy the company and upon it are situated the works hereinafter described. Having secured the desired site for future operations the next step was to make it available for their purposes. In order to do this

Approaches Were Constructed

In the shape of grades for a side-track from the Virginia & Truckee railroad, and for a wagon road to an elevated point thereon. Both approaches are easy. The side track on tha railroad is a little over half a mila in length, and takes its run from tha main track at the second tunnel. It is made hy alternate cuts and fills, some of both being quite heavy. These were completed something over a year ago. Tha wagon road winds around the sharp ribs of tha ravine, crossing and recrossing the railroad track, and furnishes a delightful drive from tha city. While all this was going on, I. L. Requa, of tha Chollar-Potosi, the chosen superintendent of the company, was busy maturing plans for the present works.

The Site

Which had been selected was an eligible and commanding one. From it the view of the city is particularly fine. It stands some 200 feet above the bottom of the ravine, just where the hill rounds to meet another ravine coming down further east. Both of these ravines are of great use to the company in furnishing dump-room, a site for reservoirs, etc. In fact, should the company go on with the work till the next Centennial dawns they will still have dump-room to spare. The outlook to the east is magnificent, and the whole site is aptly chosen in every respect.

The Present Works Were Inaugurated

Something about a year ago. The beginning was small but the growth has been wonderful, and it is not even yet completed. But they have grown to the general plan conceived by Mr. Requa till, in the perfection of their arrangements and the magnificence of their design, they are second to none on the lode. First, a double grade was cut out, one lying above the other, and then, on the lower temporary machinery was set up and operations commenced. The upper grade was continued till some three acres were made available for building and other purposes.

The Shaft

Was started on the lower grade, and of dimensions such as were never attempted before. The actual excavation is 30 feet 6 inches in length and 10 feet 6 inches in width. It is in four compartments, three of which are 5 by 6 feet in the clear, the other 6 by 7. This is timbered up with 14 hy 14 timbers in sets of 6 feet each. The lagging is 3 by 12. In the timbering and construction of the shaft only tha best red-spruce timber from Dutch Flat is used. Experience has demonstrated this to outlast any and all other woods used in the mines. As the work of sinking the shaft has progressed the other work has been carried on to its present state of perfection.

The Main Building,

Or engine room, as it is very properly called, is 60x140 feet and 20 feet high. It is in this room that the hoisting and pumping engines are placed and the winch, hereafter mentioned. These engines are put on foundations of hewn stone and set on a level with the floor. The room is well lighted and ready of access, being situated on the upper grade, which is reached by both the side track of the railroad and the wagon road. It extends out over the shaft room, heresfter mentioned, and near the west end a flight of stairs descends to

The Shaft Room.

This is 40x60 feet and 32 feet high, that being the difference in elevation of the two grades. Here the shaft goes down into the depths below, and here the dump is situated, into which is emptied all that comes up out of the ground, and from which the waste is run out. It has an easy communication with both the carpenter and blacksmith shops. The east side of this room is a wall extending from the lower to the upper grade. This is eight feet in thickness on the bottom and 32 feet high, built of hewn granite. It contains four vertical piers. The hatter of the wall is two feet six inches. It is pierced for the shaft-end of the pump-bob, hereafter mentioned.

The Carpenter Shop

Is at the southwest corner of the shaft room. Here are the usual facilities for prepering timbers, lagging, wedges, etc., for the shaft. The machinery is run hy a 35-horse power engine The timbers, planks, etc., all come in by rail, and are dumped from the upper grade directly down at the door of the carpenter shop, where they are handy when wanted. The room is 80x40 feet and 16 feet high. It has a communication also with

The Blacksmith Shop,

Which is at the west end of the main structure, communicating with both the carpenter shop and shaft rooms. It is 30x60 feet, and 20 feet high, and contains two forges and two fires, driven hy a Sturtevant No. 5 blower. Tha motive power is a small vertical engine in an adjacent room. The pipes from the blower lead underground to the fires, thus giving perfect access to them from all sides. Both shops are admirably arranged with the view of facilitating work and communications all through the buildings.

The Remaining Buildings

Are the boiler and drying rooms. The former is situated north of the main building, near the east end. It is 40x50 and 20 feet high, allowing communication directly with the main or engine room. It contains two sets of boilers, 52 inches by 16 feet, containing each 52 three-inch tubes, with supply pumps and all complete. Another set of boilers of the same size is on hand ready to be set up when needed. The drying room is south of the main building, and is 30x50 feet, and used by tha workmen to dry their clothes in. A good drying room is one of the essentials of all mines.

The Machinery

Is first-class in every respect. The hoisting engine in use is 135 nominal horse power, driven hy gearing which makes it equivalent to 350-horse power. It turns a reel upon which is wound and unwound an English steel wire cable 2,900 feet in length. This cable is flat, six by five-eighths inches. The second cable, of like dimensions and make, will be attached in four or five days. It is already on the reel. North of the hoisting engine

A Heavy Steam Winch

Is being put in to handle the big pumps and other heavy substances which are to be raised or lowered in the shaft. This will be strongly geared and handle easily a weight of 60 tons. To this will be attached the hoes cable of the Comstock. It is seven inches by five-eighths, and made of the very best steel wires by Hallidie & Co, of San Francisco, on a special order thereof. It has the strength to handle the pump to the depth of 3,500 feet, if it be required.

The Pumping Engine

Stands in well towards the shaft, and is a most magnificent affair. It will be ready to run in about eight days. It is a compound, vertical condensing engine of 700-horse power, and is to run a double column of 12-inch, eight-feet plunger pumps to any required depth. It will be controlled by a Davy differential valve, by which it will be made to make any number of strokes between one in 15 minutes and 12 in one minute. The stroke will be made in the same length of time, whether the engine be running fast or slow, and when not in motion it will consume no steam. The attachment will be made direct to the bishop-head of tha bob, thus doing away with all unnecessary friction and the liability of intermediate gear to break.

Its Dimensions.

The initial cylinder is 32 inches in dismeter and has a stroke of 10 feet. The expansion cylinder is 64 inches in dismster and has a stroke of aight feet. The whole engine, pumps and bob weigh 150 tons. The cylinders stand on an immense foundation of iron and stone, and side by side, the larger being nearest the shaft of the pump-bob. The beam of this bob alone weighs 52 tons and is all iron. It is known as an imperial beam.

The Pump Rods,

Which are on the ground and ready for use, are tha finest sticks ever seen on the Comstock. They are Oregon pines sawed square, 15 hy 15 inches, each stick being 100 feet in length and as straight and clear as an arrow. The joints at the ends of these are they go together to form the rod will be out squsre and oak kays fitted and driven in so as to make all solid as the native stick. These joints will be still more firmly secured hy iron straps ten inches wide, one inch thick and 35 feet long, one on each side. At every 200 feet two plunger-pumps will be put in, one on each side of the rod. The rod will be balanced by bobs 300 feet apart. For sinking, a suction of 17¼ inches will be used, that being equivalent to the two plungers of 12 inches each. Returning again to the hoisting apparatus,

The Sheaves

And the construction of the gallows-frame are worthy of particular attention. This frame is built upon the top of the wall heretofore mentioned, and the timbers are framed and seonred there in the firmest manner possible. These carry three enormous sheaves, 18 feet in diameter, so set as to carry the cable over to the center of the shaft below. The faces of these sheaves are eight and one-half inches, filled with oak wood where the ropes run, to prevent their crystallization. These are constructed to stand a strain of 100 tons each. Following the cable over the sheaves to the end, we find

The Skeet.

This is a receptable made of boiler-iron and capable of holding five tons. Tha sides are parallel, but the ends are flaring. It rests its bottom on two bars of iron, upon each of which it is hung as a hinge. Being used for sinking, it has false guides reaching 18 feet above its top. As this is run up the shaft and comes to the top of the dump, it is made by an ingenious contrivance to unload itself into either an ore or waste-bin. As it descends again it rights itself, and so no man is needed to stand at the shaft to attend to the work of loading or unloading.

It is Attached to the Cable

By means of several large and strong links, so that if any extra strain comes thereon at any time these links will break and the safeties catch and save the skeet. With this skeet a round trip can be made in one minute. Another one will be in use in four or five days, and then the hoisting capacity of the shaft will not be less than 2,880 tons per day. The capacity of the skeets can with slight expense be increased to ten tons each, but for sinking these would be too high to throw into. Tha skeet empties into the dump between the shaft and the wall before referred to.

The Rope House

Is to be built soma 200 feet to the east of the main building, so that in case of accident by fire the hoisting works will not be endangered. There now stand the reels and they are each connected with the reels on tha engine hy underground trongha through which the cables run in reeling and unreeling. This is a most excellent arrangement and one which, while safe, is very convenient. Tha works are, however, amply supplied with means for

Protection Against Fire.

Connection has been made with tha Virginia and Gold Hill water company's tanks and flumes hy a four-inch pipe laid a mile and a quarter long. This pipe descends into tha bottom of the ravine, a distance of 207 feet below tha grade of the works, and then comes up to where there are three hydrants ready for use. These are so situated as to thoroughly protect

the buildings. Two of them are supplied with the regular fire, star, carbolized hose, while the third is two-inch. The hydrants and hose are well housed and always ready for use.

Miscellaneous.

Winding around the hill to the east is a ditch leading to the reservoir. This has a partition in the center. On one side flows the water to the reservoir and on the other is the return for the use of the condenser. The reservoir has a surface of from 22,000 to 30,000 square feet. The wood for the boiler rooms is dumped to the east of the works, where there is capacity to store 1,000 cords if wanted. The arrangement is very complete and handy. The building is surmounted by a flag-staff of galvanized iron 76 feet six inches in hight, ready to give "old glory" to the breeze whenever occasion requires. The staff is topped with a large golden ball.

Such and So Great

Is the undertaking of the Chollar-Norcross-Savage shaft company to overcome the disadvantage and loss of power incident to working inclines and to gain, at the same time, the depth which experience has shown to be necessary to success in mining. They have, at one step, overcome all these obstacles or will as their work progresses. The dip of the Comstock is to the east, and when it is reached through this shaft, as reached it will be at some time, the lode can be explored and its treasures taken out on a scale almost incomprehensible. In the choice of Mr. Regna for their superintendent they have put the right man in the right place.

Mining in Drytown.—The ancient mining camp of Drytown, which, until within a few months past, has apparently been on the down grade for years, continues to revive perceptibly. The Crown Point mine, which has just been incorporated, is expected to add much to the material interests of that place. One of the shareholders, who has unbounded confidence in the property, informs us that the lead runs parallel with that of the Bonanza mine. The croppings of the ledge are very heavy, and can be traced for 800 feet, averaging about 8 feet in width, all said to be gold bearing. The development at present consists of a shaft 70 feet deep, the width of the ore averaging six feet. Three men are now at work upon the claim. Two crushings of the rock have been had, one comprising 73 tons, yielding $10 per ton, the other giving $10.50. Ground is now being graded for the erection of a ten-stamp mill, which will be pushed to completion as early as possible. It is contemplated to get the water to run the mill from the Gover mine, thereby insuring an almost uninterrupted supply. The Crown Point company is incorporated with 60,000 shares at $1 per share; 9,000 shares are offered to the public to provide working capital. Another quartz discovery has lately been made in the neighborhood, which has been christened the Exchange mine. The ledge describes an acute angle with that of the Crown Point, running in a southeasterly direction. The rock, we are told, will yield something like $20 per ton. Mining experts have great confidence in this claim, and expect that in connection with the Crown Point it will restore Drytown to its pristine glory.—*Amador Ledger.*

Chinese Method of Welding.—Mr Balestier, who went on a mission to the East, describes the Chinese method of welding cracked iron-wares by cementing them with cast iron while in a liquid state. In a cast-iron pan which Mr. B. required to be welded, the operator commenced by breaking the edges of the fracture slightly with a hammer, so as to enlarge the fissures, after which the fractured parts were placed and held in their natural positions by means of wooden braces. The pan being ready, crucibles, made of clay, were laid in charcoal and ignited in a small portable sheet-iron furnace, with bellows working horizontally. As soon as the pieces of cast iron with which the crucibles were charged were fixed, it was poured on a layer of partly charred husk of rough rice, or paddy, previously spread on a thickly doubled cloth, the object of which is to prevent the sudden cooling and hardening of the liquid metal. Whilst in the liquid state it was quickly conveyed to the fractured part under the vessel, and forced up with a jerk into the enlarged fissures, whilst a paper rubber was passed over the obtruding liquid inside of the vessel, making a strong, substantial and neat operation.

Fog Signals.—An interesting experiment with fog signals is about to be tried at Heligoland. At the extremity of that island farthest from its little town of 900 people is a steep cliff overhanging a dangerous shore, and for a long time past ships belonging to various nations, but more especially to Germany, have suffered disaster at the spot. The English Government has been solicited to establish a signal station there, and the Trinity Board, to whom the matter was referred, have resolved to accede. The establishment of the new station will be marked by the employment for the first time of gun-cotton to produce the warning reports. The gun-cotton will be in discs varying from one-half pound to one and one-half pounds; they will be kept wet, and will be fired in that state by electricity, a dry primer and a detonating fuse. A sergeant of artillery will go out in charge and work the signals, which are made of various powers, to be used according to the state of the weather. No gun, reflector or other appliance is to be used with the cotton, thus effecting a saving in stores.

Useful Information.

Construction of Petroleum Tanks.

The magnitude of the petroleum resources of some of our Southern counties is attracting the attention of capitalists, and investment in the shape of machinery, etc., is being freely made. A necessity of the industry is for tanks. We find in the *Scientific American* an article on the construction of tanks, written by W. S. Newall, which may be of value to our Southern readers:

Storage tanks, whether built by private enterprise or constructed in the interests of the pipe lines, are necessarily of iron. They must needs be of some such material in order to resist the pressure of enormous quantities of fluid intended to be stored within them. Their contents vary all the way from 8,000 or 9,000 to 25,000 barrels of 42 gallons each. These tanks are constructed of heavy iron, riveted together and made fluid tight in the usual boiler fashion. The first step, after the bed has been made by carefully compacting and leveling the ground on which the tank will rest, is to lay out the sheets which are to constitute the bottom on wooden horses properly arranged in the bed. These bottoms are then riveted together until a vast iron disk of the required diameter is produced; the diameter in the case of a 20,000 barrel tank, for instance, being about 80 feet. It is calculated in a rough way that the bottom of the tank, with the first ring of siding attached, is chargeable with half the cost of the whole tank. This first ring is attached to the bottom by means of a number of L-shaped pieces, to which these parts are respectively riveted. The remaining rings are attached or built up in the usual boiler fashion. At the proper time the wooden bases are withdrawn; and by means of jack screws or similar devices, the tank is let down upon its earthen bed. The roof is either of iron or of wood. Iron roofs are sometimes constructed of something akin to ordinary roofing metal, properly supported by a frame within, if the tank be small; but if it be large, the roof is generally constructed of heavier sheets, riveted together. The vast majority of tanks have wooden roofs. Out of 85 examined recently, only 18 had iron tops. Wooden roofs are generally tarred and graveled. Sometimes, instead of being flush with the top of the tank, they are set some inches below it, forming a water top intended to hold water. Sometimes they are covered with earth, in which vagrant grass seeds take root, the roof presenting somewhat the appearance of turf. These are the earth tops.

Every roof has a manhole, generally upon the principle of an ordinary house scuttle. It affords access to the interior of the tank for cleansing and other purposes. There is a supply pipe which runs up the side of the tank and enters at the top near the manhole. About an inch or so above the bottom, one or more drawing-off pipes are inserted. Access to the roof is secured by a wooden ladder or steps; these are generally permanent attachments. Across the roof, be it of wood or iron, a slatted or oleated wooden walk is provided, so that the roof may not be injured by being trodden upon. Sometimes, if tanks are near together, their roofs are connected by wooden bridges or plank ways, that easy access may be had to all. Sometimes the base of the tanks is earthed up for three or four feet with sloping banks of gravel.

Sometimes a trench two feet in depth is dug about the base, with an opening towards the downwards slope of the land. When the tank is completed, it is subjected to an hydraulic test; water to its full capacity is pumped in; and if the tank bears this strain without either bursting or leaking, it will of course withstand the pressure of an equal quantity of oil. Occasionally the water pressure proves too strong, particularly if the iron has not been of a good quality. The tank, now completed, receives its contents through the supply pipe, the oil coming through, it may be, miles of piping, either direct from the wells or from other tanks or from barges laden with the oil in bulk. In this way the oil producing country is threaded with countless miles of piping, sometimes above ground, sometimes on or beneath its surface, and sometimes in the beds of rivers.

Some tanks are on the tops, others on the sides or in the hearts of mountains, others at their base. Sometimes they cluster together in particular localities by the dozen. Frequently we find knots of tanks, only from five to ten feet apart, hence all morally certain of destruction by the fire that seizes upon any one of them. On the other hand, where wiser foresight has prevailed—as on the Anchor farm, Chestnut hill, opposite Parker—it is made obligatory upon tank owners to build at least 200 feet apart. There are now 12 tanks upon the summit of this hill. At Mount Nebo, just south of Parker, there are ten tanks separated by distances varying from 100 to 150 feet; while at Montrose there are ten new tanks being built on the river bank, separated from each other by only 50 to 75 feet.

Gold leaf is cut by placing it on a flat, clean leather pad, pressing it very gently and sawing with a perfectly straight-edged knife or split cane. The dutch metal may be cut between paper by close shearing scissors, with such long blades that each cut is made with one motion.

Saving Waste Iron.

The progress in saving waste material is apparently prompted by a method which professes to use profitably the very lowest classes of scrap iron. The latest issue of the *Bulletin of the Iron and Steel Association* contains the following: Mr. William Batty, of 140 Hazel street, Philadelphia, has invented a process by which partly decarbonized iron, such as stove and machinery scrap and the harder numbers of pig iron, 2, 3 and 4, can be melted and made softer, or carbonized to such an extent in melting as to take the place of No. 1 pig for all kinds of castings. By this process any old stove can be made in one melting into a new one. An old tin roof may be transformed into any kind of cast iron article, and clippings of tin and other tin refuse can be utilized in making castings. The inventor claims to be able to melt iron waste of every description, and produce therefrom castings of any desired quality, by modifying certain details and varying the duration of the operation, the rapidity of which (that is, the productive capacity of the cupola) he claims to have doubled, while effecting a decided economy in the consumption of fuel. The essential part of the process seems to be to decarbonize the iron, which always loses carbon when being melted in the usual way. This is accomplished by introducing into the furnace a larger proportion of carbon than is contained in the coal, in such a way as to combine with the oxygen of the blast. This is done by dropping in the blast pipe, just before it enters the tuyeres, a fine powdered pure carbon. The oxygen of the blast commingling with the carbon, they both strike the melting zone together, and each atom of oxygen having an atom of carbon with which to unite, a neutral flame is obtained, in which the heat is very intense. The iron is made better, melting more rapidly, and there being no oxygen whatever left to combine with the carbon in the iron, but rather an excess of carbon being present, the iron becomes carbonized, and therefore softer after melting than it was before, a result entirely contrary to that now obtained by iron founders. Where iron is very much decarbonized, Mr. Batty uses as an auxiliary a bed of charcoal in the bottom of the cupola furnace below the tuyeres. The slag that forms in the furnace lies between the tuyeres and the top of the charcoal bed, and prevents the latter from burning out, while the molten iron circulates through the charcoal and takes up such a quantity of carbon as will refine, purify and soften the cast iron. Mr. Batty's process has been in constant operation in Philadelphia, under his own supervision, for a considerable time, working up tin scrap, old roofing, etc.

A Laundry Secret.—The following recipe for doing up shirts will be found of use to many housewives: Take two ounces of fine white gum arabic powder; put it into a pitcher and pour on it a pint or so of water, and then having covered it up let it stand all night. In the morning pour it carefully from the dregs into a clean bottle and cork it, and keep it for use. A tablespoonful of gum water stirred into a pint of starch made in the usual manner, will give to the lawns, either white or printed, a look of newness, when nothing else can restore them, after they have been washed.

Swimming a Horse.—On reaching deep water, the rider should relieve the horse of his weight, by sliding into the water beside the horse, grasping the mane near the withers with one hand, thus requiring the horse simply to tow the rider, the latter assisting him in this by using his legs and free arm in the same way as in swimming. In crossing rivers with rapid currents the rider should take the down stream side of the horse.

Mercury is made to adhere to any metal by putting a very little sodium with the mercury, the hundredth part by weight is ample. The sodium mercury may, if necessary, be washed off by fresh, pure mercury, which continues to adhere.

Good Health.

A Generation on the March.

A recent English magazine gives the following interesting summary of statistics concerning the life and death of a generation of people:

An English generation on the march from the cradle to the grave is an instructive spectacle. Let us trace the physical fortune which any million of us may reasonably expect. The number, to begin with, is made up of 511,745 boys and 488,255 girls, a disproportion which, by and by, will be redressed by the undue mortality of the boys, and will be reversed before the close of the strange, eventful history. More than a quarter of these children will die before they are five years old—in exact numbers, 141,387 boys and 121,795 girls. The two sexes are now nearly on a level. The next five years will be much less fatal. In the succeeding five years, from 10 to 15, the mortality will be still further reduced. Indeed, for both sexes this is the most healthy period of life; the death-rate, however, is lower for boys than for girls. There will be some advance in deaths in the next five years and still more in the five which follow, but 634,045 will certainly enter on their 26th year. Before the next ten years are at an end, two-thirds of the women will have married. The deaths during that period will be 62,052, and of these no fewer than 27,134 will be caused by consumption. Between 35 and 45, a still larger "death-toll" will be paid, and little more than half the original band—in exact numbers, 502,915—will enter on their forty-sixth year. Each succeeding decade, up to 75, will now become more fatal, and the numbers will shrink terribly. At 75 only 161,124 will remain to be struck down, and of these 122,559 will have perished by the 85th year of their march. The 38,565 that remained will soon lay down their burdens; but 2,153 of them will struggle on to be 95, and 223 to be 100 years old. Finally, in the 108th year of the course, the last solitary life will flicker out. Such, then, is the average lot of 1,000,000 English men and women.

The Apple Cure.—The apple cure is the use of apples as food, on the same principle that grapes are used. The cure by apples might be equally popular if introduced. Who has an orchard where it can be tried? The scenery and surroundings should be good. A writer in the *Laws of Life*, for June, states that after being troubled with heartburn, wakefulness, indigestion, etc., he adopted the practice of eating apples with each meal, daily. The wakefulness and heartburn are gone. He is cured. When he began he weighed 130 pounds. Two months later he had increased to 160 pounds, his strength being similarly increased. Instead of "bitters for the stomach, cathartics for the bowels, iron for the blood," all of which weaken the vital organs and give a relief that is only temporary, apples are a natural stimulant. Apples, like medicine, induce a sustained healthy action of all the organs. Apples are, besides, very nutritive, and rightly termed the "bread of fruit."

Alloys of Tin and Lead.—Dr. Knapp, of Brunswick, Germany, has been investigating the use of these alloys for culinary purposes. He has studied their behavior with distilled water, vinegar and ordinary salt solution; and corrects the idea that the mere proportion of mixture of the metals or the chemical constitution *per se*, is decisive as to the behavior of the alloys. There are at least two other important points to be considered, namely, the mechanical nature of the surface of the metal and the nature of the attacking substance. To these may be added the joint action of atmospheric air, the time the metal has been attacked and the temperature. One alloy, A, with an equal amount of tin, contained nine times more lead than another alloy, B, but gave up, with vinegar, not nine times but nearly 26 times more lead. With ordinary salt solution, on the other hand, B lost over 21 times more lead than A. In diluted water, also, A resisted both.

Carbon Bisulphide as an Antiseptic.—Herr P. Zoller publishes the statement in the *Deutsche Industrie Zeitung*, that, in an atmosphere containing a small quantity of the vapor of carbon bisulphide, animal and vegetable matters are effectually preserved against decomposition or putrefaction. The author affirms that a few drops of this substance is sufficient for the purpose; and since it volatilizes at ordinary temperature the employment of heat is rendered unnecessary. In this manner, he adds, bread, vegetables, fruit of every kind (and fruit juices), and meat may be preserved for a considerable time in closed vessels. Upon opening the vessels the unpleasant odor of the bisulphide is very apparent; but upon airing the substances treated for a few minutes, it disappears entirely by volatilization. In the case of meats, the flesh, after having been submitted to the above treatment for several weeks, is in no wise unpleasantly affected.

Body and Mind.—Science and medicine are demonstrating that the body and the mind are so intimately related to each other that we are driven to believe in physical health as a most desirable, if not always necessary, condition of moral and religious health. We ought to cultivate health of body in every direction; we ought to cultivate and restrain the passions; we ought to carefully observe the hygienic and sanitary laws; we ought to give our children a good birth, and we ought to cultivate moral goodness, love, truth, faith and religious confidence, as being, each and every one in its own way, conducive to health, happiness and righteousness. If we need the Holy Ghost within, we need frequent bathings without; if godliness is to be sought after, so is cleanliness; if faith is necessary to salvation, so is purity of body; sin is not worse than filth; devil means dirtiness; total depravity is being badly born; grace has its counterpart in physical vigor.

Sunshine.—The world wants more sunshine in its disposition, in its business, in its charities, in its theology. For ten thousand of the aches and pains and irritations of men and women we recommend sunshine. It soothes better than morphine; it stimulates better than champagne; it is the best plaster for a wound. The Good Samaritan poured out into the fallen traveler's gash more of this than of oil. Florence Nightingale used it on the Crimean battlefields. Take it into all the alleys, on board of all the ships, by all the sick beds. Not a phial full, not a cupful, not a decanter full, but a soul full. It is good for spleen, for liver complaint, for neuralgia, for rheumatism, for falling fortunes, for melancholy. Perhaps heaven itself is only more sunshine.

A law has been passed in Germany forbidding the construction of school-rooms with windows on both sides, as they are injurious to the eyes.

MINING AND SCIENTIFIC PRESS

W. B. EWEB.....SENIOR EDITOR.

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THE ORIGINAL ARTICLES in this paper are mostly set in solid type, giving in our columns one-third more reading than is contained in ordinary leaded matter.

ADDRESS all letters to the firm, and not to individnal members, or others, who may at any time be absent from our office.

Our latest forms go to press on Thursday evening.

San Francisco:

Saturday Morning. Oct. 14. 1876.

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PERSONAL.—By Wednesday morning's overland train, Alfred T. Dewey, senior member of the firm of Dewey & Co., took his departure for a visit to the East aud the Oentennial. Mrs. Dewey accompanies him. In the absence of our chief, we are free to inform the readers of the PRESS how richly Mr. Dewey is entitled to the brief respite for rest and recreation which he has taken. He labors for the success of his publications, and in the interest of those who patrouize them, with an untiring zeal and devotion not common among men. The success of the publications themselves is the best evidence that he labors wisely and effeotively. While he profits in strength by the enlivenment of chaugiug scenes, we have no idea that he will be idle, but expect that his journey to the East will secure for the PRESS new attractioos and points of inoreased value. We wish him a most happy and prosperous journey and a safe and speedy return.

GEORGE W. AMOS, driver of engine No. 4, who was thrown from this seat while going to a fire on Fifth street about ten days ago, and sustained serious injuries, died on Snnday. He was one of the oldest drivers in the paid department.

THE Society of Pioneers have decided to meet on the 25th instant to consider the question of electing a successor to the late James Liok, president of the society.

ON FILE.—Letter from Tybo District, Nevada; Alpine County Mines; Leaching Processes; Mechanical Ore Conoentration.

THE eleventh annual convention of locomotive firemen is being held in Baltimore with closed doors.

THE St. Louis fair closed on Satnrday, after a very successful week. The receipts were about $70,000.

A New Method of Packing and Refining Sulphur.

Edwin J. Fraser, of this city, has recently patented through tbe MINING AND SCIENTIFIC PRESS Patent Agency an improved process and apparatus for producing mercantile snlphur from deposits of crude sulphur or sulphur ore, the object being to provide a cheap and simple method of refiniog and packing the sulphur so that its production in a suitable form and condition to reuder it marketable can be accomplished at a small expense. This method the inventor thinks will render the working of snlphur deposits profitable even when the refined product commands a low price iu the market. As there are large deposits of sulphur on the coast, some description of the process will be of interest.

Instead of separating and removing the sulphur from the matrix or gangue with which it is intermixed in its natural state, by sublimation, and restoring the fumes to a solid form by condensation, as has been heretofore practiced, Dr. Fraser accomplishes the separatiou by fusion and settling, and then refines by passing the sulphur through suitable strainers, by which the gangue or earthy portions of the ore or crude sulphur are separated and the pure sulphur obtained. The ore or crude sulphur as it comes from the mine is dumped into a tank under which is a furnace. Sufficient fire is maintained in this furnace to tuse the sulphur in the tank and reduced it to a liquid form, so that the heavy impurities or gangue will settle to the bottom of the tank. The fused sulphur is drawn from the tank by means of sponts and deposited in a filtering bag. This filtering bag is suspended over a second tank, under which is also a furnace, so that the strained solphur will be received in the tank and kept in a liquid condition so as to allow a further settling of the impurities.

The filter employed is made of a textile fabric of sufficient porosity (such as common bleached muslin) to allow the liquid sulphur to strain through and yet retain the impurities or earthy matter in the bag. This style of filter will serve an excellent purpose as loog as it is kept heated and the filtering operation is coutinned, but care must be taken not to allow the bag to become cool or chilled, otherwise its filtering quality is destroyed and it must be thrown away. The tube inside which the bag is suspended prevents tbe air from striking its exterior aud cooling it, while the heat from the fused sulphur in the tank keeps it in a properly heated conditiou. A filtering bag made of this material, however, will require to be removed and a fresh one substituted when the impurities accumulate inside of it sufficiently to clog its interstices. In the settling tank the heat of the furnace keeps the sulphur in a fluid condition and ordinarily the settling is completed, but if found desirable other settling tanks can be used. From the settliug tanks the sulphur is drawn off through the spout and packed by Dr. Fraser's improved process, which is as follows:

Ontside of the settling tanks is placed a tauk, which is filled, or partially filled, with water. Over this tank is suspended a short tube or cylinder, so that the spout which draws the liquid sulphur from the settling tank will deliver it into the upper open end of the tube. The inventor then takes a sack made of common textile fabric, and dips it into water so as to thoroughly saturate it, and then draws its open end ou over the tube referred to, so that its lower end will hang iu the water tank. The liquid sulphur is then allowed to flow from the spout into the sack through the tube. As the sulphur strikes the wet sides of the sack it is instantly chilled and solidified so as to form a shell on the inside of the sack, which prevents it from passing through the meshes of the cloth. The weight of the sulphur as it accumulates withdraws or forces the sack gradually off of the tube so that it settle into the water in the tank until it is filled. It is then removed from the tank and set away to cool. This method of packing sulphur is extremely economical and convenient. The sacks, containing as they do a solid roll of sulphur, are easily handled, and none of the sulphur is wasted in case it should become broken. The tanks are mounted one above another so that the sulphur can be drawn directly from one into the other. The inventor thus produces a simple and effective process for redncing, refining and packing sulphur, which will be specially valuable when the deposit is largely composed of sulphur, as in several instances where it is found on the Pacific coast. This process of refining and packing is now in use at a mine in Humbolt county which produces about six tons of pure sulphur per day. It is found to answer exceedingly well and is much more economical than the methods previously in use.

THE United States coast survey party, under Captain Elliott, is now engaged on Puget sound taking hydrographical and typographical notes above the line of the coast, making charts, maps, etc., for publication by the Government. The party has accomplished a large amount of work thus far.

THE Comstock mining companies have levied $45,925,153 in assessments, and have paid $82,924,199 in dividends, showing an excess in dividends over assessments of $36,996,046.

Aerial Navigation.

Has any earnest, persistent and systematic attempt yet been made to produce a machine or craft capable of navigating the air? Periodically some enthusiast makes his debut with flattering promises and possible prospects, but as often he sinks back into oblivion without leaving any substantial evidence of progress to immortalize his name. In fact, has any real and important discovery or improvement in aerial navigation been made since Montgolfier discovered that a bag filled with rarefied air or gas would float in the atmosphere? These questions naturally present themselves to us in commencing to write an article on aerial navigation. A careful examination fails to discover any decided advance towards the successful solution of the problem. We have certainly made discoveries which enable us to more fully comprehend the philosophy of ballooning, so that we are able to utilize and take advantage of the flight of balloons for many purposes, but have we made any substantial progress towards the production of a practical and useful solution of the question of aerial navigation? By practical and useful we mean the production of a craft or vessel possessing all the elements of utility, adaptability and manageability. The mere demonstration of the fact that a balloon will rise in the atmosphere and float upon the air currents at once surrounded the fact with many philosophic corollaries which we had long before deduced from our knowledge of the laws of motion, of the laws of gravity and of the laws of nature, and these established rules we were able to apply at once from our knowledge of them derived from other sources. As soon as the main fact of possible flotation was demonstrated we immediately and almost intuitively became cognizant that certain rules and regulations were involved in the act, and so far only as we have been able to apply them have we been able to control and utilize the discovery. The fact is, that the discovery of Montgolfier stands alone by itself until some other great discovery shall enable us to overcome existing disabilities and thus accomplish what at present is impossible. It is one of the meteors which the world encounters in its flight through space that is of but little account to build a meteoric house with, until others are overtaken to supply the deficiency. We do not doubt but that the deficiency will be supplied. The meteors are somewhere whirling in space, and it is only a question of when we shall overtake them.

The conditions incident upon successful air navigation are different from those involved in water navigation. In the former the vessel or craft is submerged in a single fluid of a uniform or nearly uniform density, while in the latter the vessel floats in a medium of sufficient density to sustain it on a permanent level, while the greater portion of its bulk is in a lighter and more active element, so that the gravity of the vessel and the comparative sluggishness of its sustaining fluid counteracts the fickleness and activity of the atmosphere or upper element. If the ship were entirely submerged in water there would still be elements of difference to prevent us from drawing a parallel case, because water is dense, sluggish and non compressible, while air is rare, active, elastic and practically imponderable. Although a fish can dart through the water with great speed and control its actions perfectly, it would make a sorry bird, and a bird, although a perfect swimmer in the air, would never soar well in the water. We must therefore learn from the bird and not from the fish how to navigate the air. A dead fish will float in the water, but a dead bird will not float in the air. The bird therefore is heavier than the air, so that practically our balloon does not help us so far. The bird has wings and great muscular power to move them, and herein is certainly the secret of aerial navigation. Let us make an hypothetical example. Say that a bird weighs two pounds and that the area of its two wings is 100 inches and that its muscular power is sufficient to lift five pounds. Now, a vessel weighing 100 pounds, engine and all, to be equal in proportion must have 5,000 square feet of wing surface, and an engine capable of lifting 250 foot-pounds in order to simply propel itself through the air, and when we come to make it of a practical size and load it with human or other freight, we simply render the matter impossible. We therefore fall back upon our balloon again, because it enables us to obtain an equipoise or even flotation if desired. Utilizing this discovery we can make as large a vessel as we may desire and by inflation take away its weight so that it will float of its own volition. When we do this, however, we increase the size and consequently the resistance area, thus necessitating a propelling agency of increased power. It thus resolves itself into a question of suitable power. If we could produce, in a small compass and in a light form, an engine of sufficient power, the question of aerial navigation would not long vex us. We pause to see who will supply the wanted motor.

THE California and Consolidated Virginia mines paid out $94,463 for labor last month. The amount was divided between 933 men, and all of it was in gold, except $5,663, necessary in making change.

Gems and Precious Stones.

[Written for the PRESS by HENRY G. HANKS.]

S. Turquois.

This mineral occurs in incrustations and in reniform or stalactitic masses. Its color is sky blue, bluish green to apple green. Hardness, 6; specific gravity, 2.6, 2.83-2.61; streak, white or pale green; tracture, concboidal. The true turquois is a hydrous phosphate of copper and alumina, with generally a small portion of oxide of iron or sesquioxide of iron. An analysis of a specimen of blue Oriental turquois gave the following result: Phosphoric acid, 27.34; elumina, 47.45; oxide of copper, 2.02; water, 18.18; sequioxide of iron, 1.10; oxide of manganese, .50; phosphate of lime, 3.41=100.00.

In a closed tube the turquois decrepitates and yields water, turning at the same time black or brown. B. B. in platinum points becomes brown but does not fuse. The blowpipe fisme becomes green. After wetting the assay with hydrochloric acid the blowpipe flame is blue, from the copper present in the mineral. A bead of horax glass in a loop of platinum will become yellowish green on the addition of a minute portion of the powdered mineral and application of a strong heat. In cooling, the bead becomes green. On charcoal, by skillful manipulation a bead of copper may be obtained.

Turquois finds its way to commerce from Persia. According to the most reliable accounts it is found in veins which traverse the mountains in every direction. Pieces the size of a hazelnut are unusual. There is a deposit of turquois in the State of Nevada, at Columbus, which should be more thoroughly prospected. Very fine specimens occur in that locality.

Turquois can be polished, and when of good quality is much prized as a gem. There was a curious superstition concerning the turquois in ancient times. It was supposed that the gem was in sympathy with its owner, and that it paled when sickness came. It is stated as a fact that some turquoises do change their color, but that the change is owing to temperature or from dampness. An old treatise on precious stones relates of a turquois, that while its owner enjoyed good health the stone displayed remarkable beauty, but when he sickened and died it became dull and assumed a faded, withered appearance. When sold, the purchaser was surprised to see it suddenly assume its former beauty.

Turquois was formerly called turkis or Turkey stone, taking its name, no doubt, from having been first brought from Turkey.

There is a fossil or mineralized bone called odontite, which is often confounded with the turquois. It is called bone turquois, but has but little of the nature of true turquois. The Persian turquois is much prized as a gem. The price varies according to the size and beauty of the stone. A very fine specimen has lately been sold for £400. The beauty of a fine turquois is greatly enhanced by setting it in a circle of small diamonds or pearls.

BULLION SEIZED IN MEXICO.—A dispatch by the steamer *Montana*, which arrived on Saturday, dated La Paz, Lower California, September 26th, states that 19 bars of bullion, valued at $25,000, the property of the Hormiguerra mining company, had been seized by the government authorities for back taxes alleged to be due during the administration of D. O. Mills and Thomas Bell. The amount claimed by the Mexican government was $8,500, which Mr. Brooks, superintendent of the mine, refused to pay, and applied for protection to the United States steamer *Pensacola*, then lying at Prehelingue, near La Paz. The *Montana* sailed before the result was known. No bullion was shipped by this steamer, which will be a disappointment to those holding drafts against the company.

THE London *Examiner* says: "So long as Englishmen prefer the chance of 20 per cent. to the certainty of five per cent., so long will there be periodical times of trouble, and political economy must remain a dreary science while its teachers pretend that they can juggle away these facts by the manipulation of pieces of paper."

THE Centennial anniversary of the founding of Mission Dolores by the Franciscan fathers on the 8th of October, 1776, was celebrated with great eclat last Sunday, with a procession of various civic and military organizations through the public streets, services at the old Mission church and exercises at the Mechanics' Pavilion.

THE Oakland health officer reports that the city water, furnished by the Contra Costa water company, is pure, and further reports that the present unpleasant taste is caused by the large amount of sulphur in the rocks at the bottom of the reservoir.

THE regular amount of square timber used in the Consolidated Virginia and California mines each month is something over 2,200,000 feet.

A MINING stock board is reported to be incubating in Chicago.

[Editorial Correspondence.]

The Centennial at Philadelphia.—No. 16.

There yet remains one of the five main exhibition buildings to which your correspondent has made no reference, and which, for its size, is the most costly of all.

The Art Gallery or Memorial Hall.

This structure is situated just north of and parallel with the main building, and, like horticultural hall, has been built to remain upon the grounds after the exhibition is over. It is intended to serve the double purpose of an art gallery and a permanent monumental memorial of the great exhibition and of the first Centennial occurrence of our national existence. It stands on a terrace six feet above the surrounding level, and over one hundred feet above the Schuylkill river, which flows near its base. The structure is in the modern Renaissance style of architecture. No wood has been used in its construction, the materials being granite, iron and glass, and the intention is that it shall be thoroughly fire-proof. The superstructure is 365 feet in length, 210 feet in width and 59 feet high, standing upon a substantial granite basement 12 feet high, and covering an acre and a half of ground. A beautiful dome, constructed of iron and glass, rises from the center to the hight of 150 feet from the ground, terminating in a colossal bell surmounted by a gigantic figure of Columbia, with outstretched arms, in an attitude of protection, and holding a laurel wreath in her right hand. On each of the four corners of the base of the dome stands an emblematic figure, typifying respectively art, commerce, manufactures and agriculture.

The general design of the building is a right-angled parallelogram, relieved by square towers at each of the four corners, and by a corresponding projecting vestibule in the center of the front or main entrance. The towers at the angles do not rise much above the line of the walls. They are ornamented at each corner with the national eagle—16 in all, with outspread wings and in defiant attitude. The entrance is gained by a broad and easy flight of steps, and made through massive doors of bronze. The steps to the terrace in front of the main entrance are flanked by enormous bronze figures of winged horses, held from their desire to spring forward by women of proportionate mold and ample flowing drapery. The terraces and surrounding grounds are well turfed and bordered with flowers and shrubbery. The whole forms quite an imposing and most fitting entrance to this great palace of art.

The accompanying illustration conveys a very good idea of its construction and appearance.

It is intended that this beautiful structure shall stand as a memorial for generations to come, and that within it shall be shown, free to all, the art treasures of the world—paintings, sculptures, engravings on steel, copper and wood, lithographs, chromos, drawings, architectural designs, etc. So great was the application for space from all quarters of the earth, that the Commission was early compelled to erect an additional, temporary "annex," of nearly equal area to the original building.

Within the Walls.

Nearly every nation on the globe, with any pretence to civilization, is represented within the walls of memorial hall or its "annex." Each country appointed its own art committee of selection, or rather, we should say, rejection; through the gauntlet of whose criticism each work of art had to pass before it could find a place within these walls. England, France, Germany, Spain, Belgium and Italy are all large contributors. We have seen it stated that France alone has sent over 500 specimens of her art in painting and statuary. Italy sends about one hundred groups of statuary. Mexico, Chile and Brazil are also contributors. Nineteen different nationalities are represented, which, reckoned according to space occupied, and rating the United States at 40, stand about as follows: United States, 40; France, 34; Italy, 32; England, 30; Germany, 24; Belgium, 20; Netherlands, 12; Sweden, 9; Spain, 8; Austria, 6; Russia, 4; Canada, 4; Brazil, 4; Portugal, 4; Mexico, 2; Denmark, 2; Norway, 2; Chile, 1; Argentine Republic, 1.

With regard to the relative merits of the several exhibitors, your correspondent will have but little to say, except in general terms, as he does not pretend to any special knowledge in such matters. The rooms are well proportioned and well lighted. A large corridor with a broad entrance runs entirely through memorial hall from north to south, with a narrow, but ample and convenient exit, at its farther extremity, through which the visitor passes direct to the temporary "annex."

The Display of Statuary.

In a central position in the main corridor, Doulton & Co., of Lambeth, England, the largest pottery and china-ware manufactrera in the world, have erected a copy of their famous group, "America," which adorns the base of the Albert memorial in London. As indicative of the care with which everything has been packed, transported and handled, we may remark that not a single one of the thousands of parts of which this group is made up, has been broken. In this central hall there are also some equestrian figures occupying the corners, and several other minor pieces of sculpture. But the chief exhibit in this line is made by Italy in the "annex," and that exhibit constitutes her chief contribution to the art department. The visitor, on entering that building, is encountered at the entrance by a great crowd of figures in marble and bronze, which fill to profusion two large rooms and a long hall or corridor besides. Some of these groups, 100 or more in number, have been pretty severely criticised. They consist of statues, big and little, tragic and pathetic, comic and otherwise, in an almost endless profusion. France also makes several contributions to this department, most of which are highly characteristic of French ideas, and some of which so far transcend American ideas of morals that the short-comings in that direction have been, by order of the Centennial Commission, supplemented by an addition of drapery which bears very little resemblance to that which the artists have so scantily supplied.

The Display of Paintings

Is certainly extensive enough, but the ill-natured critics claim that it is not sufficiently "select." They claim that it would have been better if the commissioners had "weeded and weeded and weeded until enough respectable pictures and statues had been obtained to have filled the main building, (memorial hall,) and then to have rested content." While they acknowledge the presence of some really fine pictures, they assert that the greater number do not rise even to the level of mediocrity—a fault which detracts so much from the general character of the whole, that that which should have been "the crowning joy-giver of the entire exhibition, is really the most disappointing and unwelcome feature about it." We are also told that "after surveying, in other buildings, all that industry, ingenuity and taste can do for the comfort and welfare of man as an animal," when we come to the memorial hall "to seek the springs of delight in seeing how the soul reveals herself in beautiful and solemn ideals clothed in form and color," we turn away in disappointment and sorrow.

Particular Exhibits.

England is generally accorded with the finest display. We are told that she has never before made so full and creditable an exhibition in any foreign country. One room in the English section is devoted exclusively to deceased masters. But we have no space to enumerate.

The United States makes a very creditable display of what has been accomplished by our own people during the first hundred years of the Republic. This exhibition shows that we have in this country a large number of artists of real genius and talent, who are diligent, intelligent and earnest students of nature; and if their efforts lack something of the finer and more conventional qualities that are so much admired in the works of the best foreign artists, they certainly possess qualities of a high order that are peculiarly their own, which fully compensate for their deficiencies. These qualities, moreover, give evidence that when the world comes up to this hall, as it surely will, to celebrate our next Centennial, if we do not rival European in her copyings from the ancient masters, we shall at least be able to present to the nations a distinctive and well established American school of arts, which will confound critics and give us a place which, if it be not higher, will at least be on an equal plane with the trans-atlantic school.

Of Germany it has been offered in apology for what has been considered by some a rather meager display, that there is an exhibition going on this year at Munich, where, for the first time in 30 years, a general display is being made of paintings contributed by German artists. This exhibition has very naturally drawn away from Philadelphia many works of a superior character, which would under other circumstances have found a place in memorial hall.

Conclusion.

But we have no space in this letter to make even the slightest detailed reference to all who have come up with their contributions to this great world's exhibit of art and genius. We have merely space for one or two more brief general references, and we shall leave the art department to the tender mercies of the critics and the more generous consideration of the great masses of the people who, by their daily pilgrimages thither, are recording their favorable verdict and full appreciation thereof.

Considerable criticism, not so much, perhaps, of the hypercritical order, has been devoted to another feature, which has become somewhat prominent in the eyes and ears of those who have been almost daily visitors at the art gallery for months in succession. It is generally understood among artists everywhere, that in cosmopolitan exhibitions of this kind care should be taken to avoid all appearances of offence in matters of international difference. It is held by many that the German commission has exhibited bad taste, if not feeling, in this direction in insisting, against earnest objections, upon the presentation of certain paintings distasteful to French nationality—that they have sought to make this exhibition a "brag" over the Franco-German war, in that they have placed in a particularly conspicuous position not one only, but two large representations of the disaster at Sedan. And what makes the matter still more unfortunate is the fact that the visitor approaches the German exhibit directly from that of France. The consequence has been that an ill-disguised bitterness and bad feeling is frequently manifested between visitors from these two nationalities who chance to meet before these pictures. This feeling is often displayed by fiery glances, and sometimes by low but bitter words.

Then again, our own people have not been altogether innocent of sin in this direction, since Rothermel's "Battle of Gettysburg" is displayed at one end of the United States main exhibition room, while Hicks' "General Mead" occupies a prominent position at the other extremity. It is held that these exhibits lead to a painful "dragging back" to the light, of many things which, on this occasion above all others, should be carefully buried out of sight, if not entirely forgotten.

Of course no exhibition or management can be entirely faultless; but with all its faults and short-comings, this great exhibition of the world's progress in the fine arts is one of the best ever made. Days and weeks may be spent in these two buildings with pleasure and profit, in looking upon and studying the great works of art here presented, which, without this opportunity of bringing them together, would have required of our people years of travel in foreign lands and our own to behold.

W. B. E.

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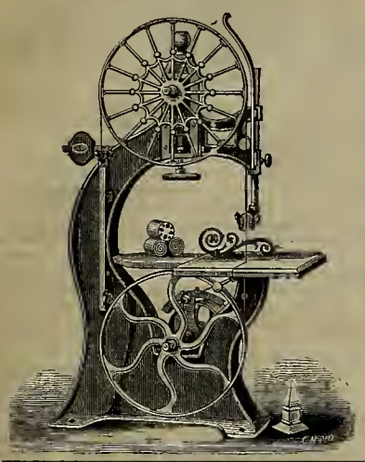

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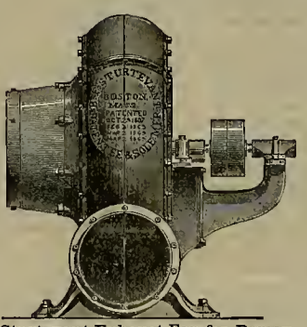

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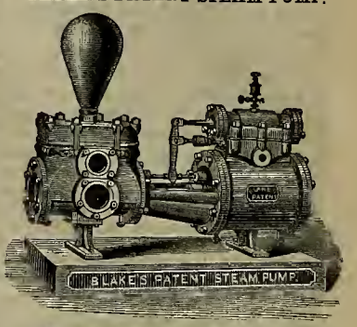

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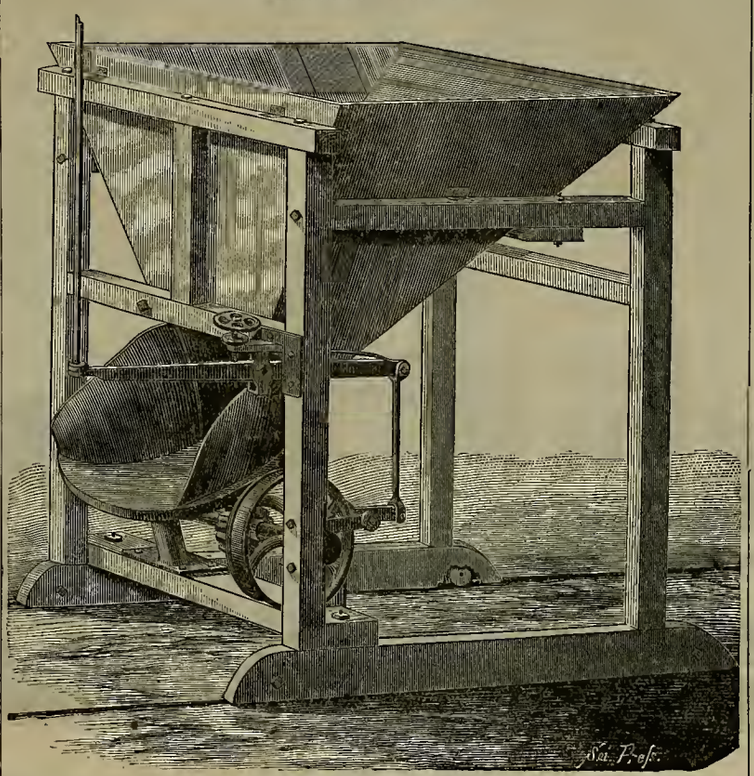

It may be considered as now fully demonstrated, by careful and long-continued experimentation, that the plan upon which a perfect ore feeder must be constructed is that of the *carrier*, and not that of the shaking table. Uniform and accurate feeding is not possible upon the latter plan. The ore must be evenly carried, upon a steadily advancing plane, or table, to the line of discharge, and there simply *dropped*. Spasmodic or jerky contrivances will not answer the purpose.

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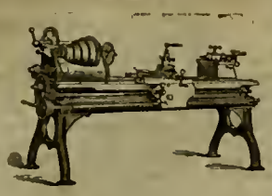

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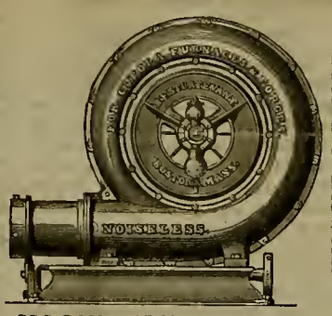

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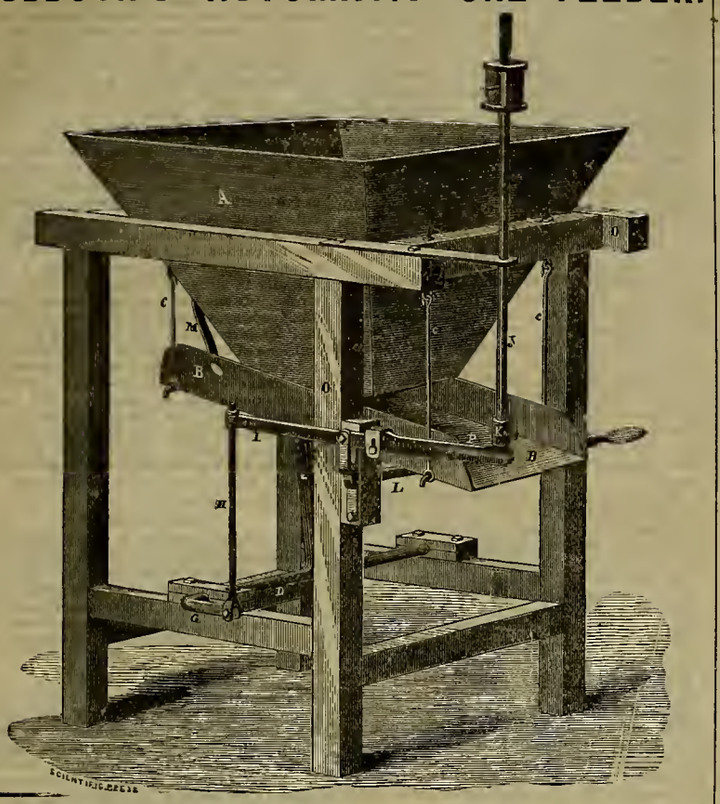

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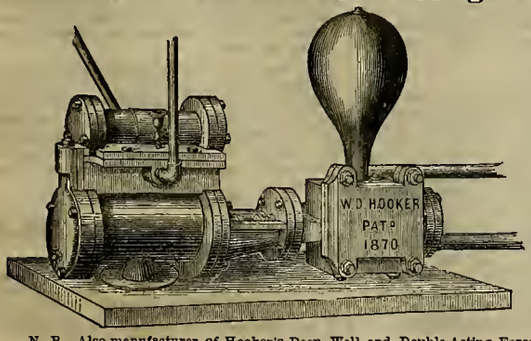

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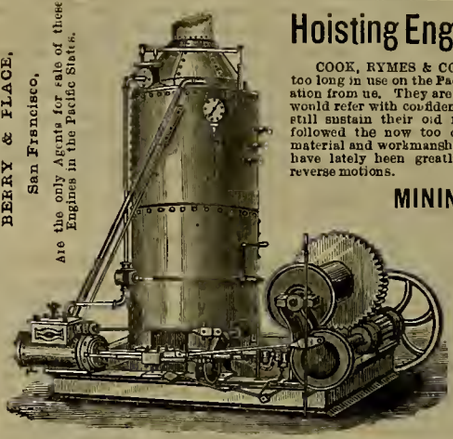

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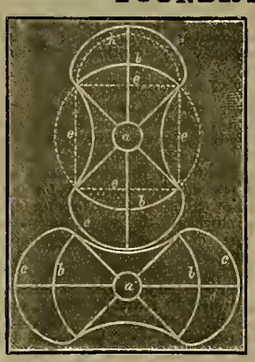

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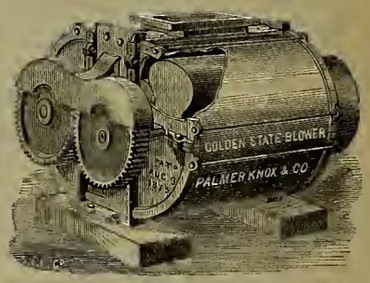

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SUTTER CREEK, February 26th, 1875.

MESSRS. DEWEY & Co.—I have received my Letters Patent through your agency. And, for your promptness, accept my thanks. Yours, S. N. KNIGHT.

(Continued from Page 254.)

Arizona.

MINING NOTES.—Cor. Arizona *Miner*, Sept. 29: In Peck district operations in the mines are going on quietly and successfully. I learned that Rigge & Hammond are running a tunnel in on the vein on their claim on the Tiger, and have struck fine argentiferous galena ore, and feel well satisfied. In the Bradshaw Basin, Luke & Co. are working in opening both gold and silver veins, and are negotiating with outside parties for the erection of a mill. Coe's work on the War Eagle goes on steadily, and the good ore holds out as well as ever. Goodwin & Co. have been taking out fine silver ore recently from the Lone Jusiper. Myers & Laird are sinking a shaft on the Black Warrior for the ore they take out, and have several tons on the dump, and are sure of good wages. On the Prince the owners are sinking a shaft on the main vein, near the point of discovery, and are following down a streak of the rich chloride ore which has made the mine famous. At the Peck mine the track through the 240 ft tunnel is in good working order, and the company is taking out a good quantity of ore. After sinking the main shaft 70 feet below the tunnel, water commenced coming in rapidly and rose about 10 feet in the shaft, where it now stands, and probably sinking will not be resumed until machinery for pumping is procured. High grade ore was taken out below the water level, the pay streak being over three feet thick, giving great satisfaction to all interested in the permanency of this mine. Three pack trains are now taking ore from the mine to the Aztlan mill, about 25 miles, to fill the contract to deliver 200 tons to the mill. The splendid results of the milling of the ore hae already been published. At Pine Flat, McCloud and others have recently opened a gold mine which promises great results, and were bargaining with parties in town to sink a 60-foot shaft for an interest in the mine. Dan Martin has just been packing some of the ore to the Crook mill for reduction, and it is stated that if the results are good, the mill may be moved to the Flat, which is a splendid location. The Senator mine yields as much ore as usual and Mr. Shipman, superintendent at the mill, is getting more than the ordinary yield of gold from the ore. Banning's new discovery just below Lount's old placer ditch, this side of Hassayampa, looks well, showing at the bottom of the 25-foot shaft a four foot vein of decomposed ore that shows a fine gold prospect in a horn spoon, while the ore apparently carries considerable silver also. The Aztlan mill had piles of silver ore from the Peck, and gold ores from the mines of Willis & Co. and Mr. Mojors, in front of the hatteries as the writer passed. The smeltiug works of Mulvenon & Roach were in full blast, and Martin's pack train was unloading ors at the furnace from the Accidental mine on Lynx creek for flux. The Accidental company are running their four steam arastras steadily and taking out a great deal of gold. Everything considered, the mining interests of this immediate section are probably in a more flourishing condition than ever before.

Idaho.

THE MINES.—Idaho *Avalanche*, Oct. 7: The prospects of the Poorman continue to grow brighter each day. It has, in fact, never occupied a more promising position than it does at the present time. The new ore shute between the 4th and 5th levels is developing splendidly, and gets larger and richer all the time, with the very best indications of its holding out to the surface. A sample of this ore brought down from the mine yesterday by Superintendent Bledsoe assayed at the rate of $612.38 to the ton, of which the gold percentage is $351.63. The Empire continues to look first-rate, and the force employed there have been doing a good business for the past few weeks. There are now 100 tons of ore out ready for shipment, and the work of hauling it to the Elmore mill will commence next week. We are glad to learn that there is a prospect of re-umption of work in the South Chariot at an early day. Favorable progress is being made in removing the water, and the sooner active operations are begun in the mine, the sooner will the parties interested profit thereby. Operations are progressing favorably at the Golden Chariot and the resumption of work has given quite an impetus to business on the hill. In the Belle Peck the tunnel has been completed to the shaft and everything is looking first-rate. The Potosi is prospecting finely, and Mr. Peck is beginning to realize that he has a bonanza here of no mean dimensions.

Montana.

MINING ITEMS.—Helena *Independent*, Sept. 28: Two hundred tons of silver ore was shipped down the river from Benton last week. Sixty thousand pounds of silver ore was shipped last week from the Lete Acquisition spur lode. The citizens of Butte are determined to have more quartz mills and several new ones are projected. Large quantities of copper ore are being taken from the Mountain lode at Butte. The Rainbow lead is furnishing splendid ore for the mills at Butte. The Dexter mill is turning out a weekly allowance of $5,000 in silver bullion. Several new leads have been opened in the Trapper district. Stuart's mill has been running on Luxembourg ore. The Black hills fever has utterly died out in Eastern Montana. Some rich discoveries have recently been made in the famous Willow Creek district. The yield from the claims in the Nine Mile mines is reported very light. Mining operations have closed for the season in Atlanta gulch. The Duck Creek quartz mill has recently made a fine run on ore from the Lone Tree lode. Several new quartz leads have been opened at the head of Montana gulch. Nowlan's furnace, at Jefferson City, has been put in complete order for smelting ores. The Quartz creek mines are said to be doing badly—not paying. There are about 40 miners at work at Cedar creek. Some fine copper leads have recently been discovered on Flint creek, above Georgetown. The drifting diggings on Georgetown Flat pay from $30 to $40 to the set of timbers.

Utah.

BEAVER COUNTY MINES.—Cor. Salt Lake *Tribune*, Oct. 5: The Shauntie smelter is running very successfully, and is now turning out from 80 to 100 bars of bullion every eight hours' shift. The bullion is said by good judges to be the best that has ever been run out in southern Utah. This speaks well for the Old Reliable and Pioneer furnaces, owned by good, square gentiles. A carload is run ready for shipment every 24 hours. 'Frisco, in San Francisco district is looking up. Buildings are being erected on every side. The big calcining ovens will be finished before the 10th of October next, and the smelter will start up then to run until it shuts down for repairs. The Big Horn silver mine shows no signs of weakening. Hoisting works are now being erected on the mine. Milford, at the Beaver river, is now making some show with its fine quartz mill now running, and the new smelting works of Williams & Co. building.

STOCKTON ITEMS.—There is little or no prospect of the Jacobs smelter ever again starting up under the management of Messrs. Longmaid & Co. The Southport mine is only working five men at present. The Chicago smelter is running two stacks, with every prospect of continuing to do so for some time. The Waterman is running hut one.

At the C. & C. shaft a cage containing two cars of ore is hoisted a distance of 1,500 feet in 36 seconds.

There is considerable placer mining going on in the canyons around Gold Hill and Virginia.

Mines Around Eureka, Nevada.

[From our own Correspondent.]

"Gallop apace, ye fiery-footed steeds."

Off from Tyho on a bright September morning, aboard of one of Bell & Co.'s fast coaches, the town of Eureka, 100 miles north, and the largest in Eastern Nevada, was not long in being reached. Right here, perhaps, an acknowledgment is due generally for frequent past favors, on the part of newspaper publishers, proprietors of stage lines or public-spirited individuals, shown to the MINING AND SCIENTIFIC PRESS as one of the great mediums of communication between miner and capitalist, or for its otherwise well-known devotion to the mining and other leading interests. You have doubtless seen and appreciate particularly the recent kindly notices given by the *Reese River Reveille*, the Belmont *Courier* and the Eureka *Sentinel*, all ranking among the most respectable journals of the State. In spite of laying you open to the old charge of the "you-tickle-me-and-I-tickle-you" motive, something, at least, seemed due for acts of kindness apparently so spontaneous, and nothing, it is thought, ought to deter one from a like spontaneous acknowledgment.

After arriving in

The District,

Some attention was paid to the surrounding country rock as well as to the peculiarities of the veins, without arriving at any very settled hypothesis in regard to either. Questions of this kind may well be left to those who have time for closer examination or who make geology a specialty. One thing, however, seems to be well settled, that whether the veins are inclosed between the stratified and unstratified rocks, as in some cases, or wholly in the limestone, or with clay, shale, quartzite, porphyry or feldspar as one wall or in close proximity, whether denominated fissure, contact, pipe, accumulated or what not, they all appear to carry more or less ore, varying from smaller pockets, of richer or poorer quality, to immense chambers or bonanzas of the very highest grade, sufficient in extent and value to have long since attracted the attention of the European market.

The Richmond,

A London incorporation, and by far the most productive and valuable in the district, is situated on Ruby hill, a spur of Prospect mountain, about two and a half miles from Eureka. The vein cropped out on the southwest side of the hill, and has been followed probably in the neighborhood of 1,500 feet on the dip of the vein to the northeast, the workings passing below the crest of the hill, at the depth of about 300 feet.

While it has been technically termed a "pipe vein," it is represented by Rev. Mr. Probert, (the managing director of the company, and to whom I am wholly indebted for this and all other information in regard to this valuable property,) as in reality made up a series of bonanzas of an ellipsoidal shape, with their longer axes in the direction of the dip. The country rock is a metamorphic limestone. The ore consists mostly of an argentiferous carbonate of lead, with nodules of galena interspersed, together with some decomposed gold-bearing arsenical pyrites. Large masses of oxide of iron, more or less rich in gold and silver and with other material, making an excellent flux, alternate with the richer vein-matter, consisting in the main what may be termed the "gangue." Some rarer minerals are also found, always rich in gold, such as mimetite, an arseniate of lead in combination with a chloride.

The ore for the most part is very easily mined and admirably adapted for smelting, requiring no previous fluxing, which is attributable mainly to the very high percentage of peroxide of iron it contains, amounting to upwards of 40 per cent. of the entire contents of the vein. The refining and desilverization process used here is a modification of the Pattinson. The stirring is done by steam, and the entire work of removing the intermediate products is performed by machinery and is considered a decided improvement on the old process.

Five large furnaces of the most improved pattern are kept constantly in operation during the whole running season.

As to the enormous amount of bullion that must have been yielded during its successful run since it was first opened, little can be said, as it is probably only known to those most deeply interested; the total product for the two years ending January 1st, 1876, alone, being definitely ascertained to amount to something upwards of $3,000,000. The mine at present is represented as looking fully as well and to be in every way as promising and productive as at any period of the past. It is looked upon by those best acquainted with its merits as not only one among the grandest silver mines of the State, but in many respects, at least, as scarcely inferior to the finest in the world, the rich bonanzas of Virginia City not excepted; for while the ore is not so rich ton for ton, the ore bodies thus far are believed to hold out proportionately longer. As the following mines are known to be on the same great belt, and in most respects exhibit chimneys of ore similar to those of the Richmond, a concise account as to details will be allowable.

The Eureka Consolidated,

H. Donnelly, Superintendent, lies, in fact, immediately adjoining the above, and has a linear extent of about 1,200 feet. Similar ore bodies are confidently anticipated as the work proceeds, particularly in view of the vast deposits previously encountered in the upper levels. Its prosperous past is too well known to need repetition. It is sufficient to state that the bullion product for last year, as per assessor's books, amounted to $1,384 708. In consequence of a considerable cave in the mine many months ago, the progress of the work was much retarded, and from this and other causes a much smaller amount of good ore has recently been extracted than formerly, perhaps 30 tons or upwards, valued at about $60 per ton in gold and silver, with 20 per cent. of lead.

The company, however, have shown their faith in the value and permanency of their mine by, no longer ago than last spring, putting up hoisting works of the most substantial character, provided with Burleigh drill, air compressor and all necessary appliances for a steady and vigorous prosecution of the work. In addition to this, from 40 to 60 men have for sometime been engaged, chiefly in making further developments, laying open in their progress several bunches of ore, "giving promise of better things" to come as deeper levels are opened, the greatest depth as yet reached being only about 750 feet. It seems to be a general favorite among the citizens, and many are on tiptoe of expectation to hear of a big strike at any day. Taking its past, in connection with all the surroundings, the chances ought to be favorable.

The K. K. Mine

Adjoins the Eureka Consolidated. Accompanied by Mr. Wm. Arrington, the superintendent, and by Mr. Morcom, the foreman, the third, fifth and sixth levels were visited, all exhibiting considerable quantities of good fair smelting ore, and consisting of yellow carbonates running in the precious metals from $50 to $60 per ton, with an average of 10 per cent. in lead, together with deposits of argentiferous galena yielding about $35 in gold and silver and 25 per cent. of lead, sufficiently impregnated with iron to make an excellent flux for the carbonate ores.

Molybdate of lead was frequently met with, at one point in particular in large quantities, showing many specimens of great brilliancy and beauty, enhanced by the fact that they are said to carry with them much of the "needful."

In view of the present developments, the mine is looking exceedingly promising, bidding fair when lower levels are opened of being ranked among the most valuable of the district or State. For the past two weeks the company have been running the furnace of the Silver West mining company, putting through about 40 tons of ore per day, and producing an average of five tons of bullion, worth each some $300, and have ore in store or in sight to supply the furnace for three or four months to come.

Next in order, in a southerly direction and perhaps from 1,500 to 2,000 feet from the works of the K. & K. and Eureka Consolidated, comes

The Jackson Mine,

Said to be the oldest in the district, and which probably gave an impetus to the prosecution of work on other mines in the vicinity, as the richest ore is said to have been discovered in this mine near the surface that has ever been found on the belt, averaging about $400 per ton. Before it was fully demonstrated by the Richmond and other companies that the ore bodies extended to any depth downward, work was suspended and for several years the mine lay idle. About a year ago a very suitable point at some distance east of the ledge was selected for the shaft. Works and machinery admirably fitted for the purpose were erected, with capacity to sink 1,500 feet or more if required. The shaft has already been lowered 460 feet, and two levels run, one of 200 feet and another of 400 feet, each cutting into fine bodies of ore, and represented by Mr. W. H. Shaw, the superintendent, as averaging about $100 per ton in the precious metals, the greater proportion gold. The prospecting is going forward with energy; the ore is being sacked and stored for future smelting, and the prospects are represented as altogether flattering. If Eureka could boast of no other mines than those briefly described, she would still stand very high among the mining districts of the State, but she has besides these a perfect host of locations, extending along what is supposed to be the same great mineral belt the distance of eight or ten miles. As some of these are at present yielding good ore, and others, so far as developed, seem full of promise, they must be reserved for another letter.

A. C. K.

BULLION SHIPMENTS.—Since our last issue bullion shipments have been made as follows: Comanche, Oct. 3, $8,097; Manhattan, Oct. 6, $13,700, Oct. 10, $14,000; Leopard, Oct. 2, $8,954, Oct. 5, $9,000, Oct. 7, 9,000; Humboldt, Oct. 3, $1,065; Rye Patch, Oct. 3. $1,900; Richmond, Oct. 5, $11,164; Chollar-Potosi, Oct. 3, $18,116; Northern Belle, Oct. 5, $11,749, Oct. 3, $10,773; Justice, Oct. 4, $29,000, total for September account, $144,000; Tyho Consolidated, total for September account, $69,647; California, total for September account, $129,-999.18; Consolidated Virginia, total for September account, $865,813; Total September account of Manhattan mine was $296,000.

The Burleigh Air Compressor at the Crown Point Mine.

In the deep workings of the Comstock the most potent forces of nature are called into requisition, and among the most effective of these is compressed air. Steam can be sent through pipes down into a mine to work small engines below the surface, but only to a very limited extent. The capacity or extent of compressed air in this respect, however, has not yet been ascertained. By means of the powerful air compressors now in use, this great motive force can be sent down through pipes, from the surface to the lowest depths of our deepest mines, and made use of to a greater possible advantage than any other known agent.

The Compressor.

The Gold Hill *News* has the following description of the large new Burleigh air compressor at the Crown Point works, which has been called into requisition to drive drills, pumps, hoisting and blowing engines, etc., at the lower levels of the mine. It is now in full and successful operation, furnishing much more power than is at present required, as it is simply used to drive a couple of Burleigh drills and a water pump in sinking the main incline below the 1700-foot level, the compressor running less than half the time to do this. Its sphere of action will shortly be enlarged, however. This

Burly Giant

Is size No. 7, of the Burleigh air compressor, the best and most effective of all machines of its kind yet invented or perfected. It stands at the north side of the works, and occupies but comparatively little space, being 6½ by 10 feet in size at the base, and 13 feet high. The engine portion of it is known as the Putnam balance poppet valve cut-off, with a steam cylinder 18 inches in diameter, having a 24-inch stroke. It has two air compressing cylinders, single acting, each with a diameter of 24 inches and 20 inch stroke, delivering one and a half millions of cubic inches of free air per minute. A boiler pressure of 80 pounds of steam, with the engine cutting off at quarter stroke, will give 80 pounds of air pressure. The receiver or reservoir for this compressed air is of the heaviest boiler iron and is 48 inches in diameter by 16 feet in hight. The machine has all the latest improvements, with a neat gallery to get at the upper works of it conveniently, iron sinirway, railings, etc.

Solid Weight.

The solid ponderosity of this condensed and condensing giant may be judged by the fact that its total weight is 45,000 pounds. It is all of cast and wrought iron, the bed-plate and crank shaft alone weighing 11,000 pounds, and being the heaviest single piece in the machine. The fly-wheel is all in one piece, and weighs 8,000 pounds. This

Splendid Machine

Was manufactured for Parke & Lacy, of San Francisco, sole agents for the Pacific coast, by the Putnam machine company, Fitchburg, Mass. They have already furnished machines of the same size and description for the Ophir, Belcher and Dayton mining companies in this State, to say nothing of smaller compressors for other mining companies along the Cometock range. They have also furnished one of the same size for the Mariposa and land mining company, in California, for use at the Bear River tunnel. The demand for them is constantly on the increase, and they have several other machines ordered or on their way across the continent. As we have before stated, these machines are the most perfect and effective of the kind now in use, the principal credit for which is due to Mr. Lyman Parke, who first introduced them here, and whose mechanical brain and ingenuity has constantly suggested improvements until they have at length attained their present wonderful power, popularity and admirable efficiency. The one at the Belcher mine has been in constant use for the last nine months, without costing a dollar for repairs, showing that the first cost is everything, and also bearing very practical testimony as to the excellence and perfect durability of their construction.

Coast Railroad Items.

The Southern Pacific railroad engineers are surveying the route of the road from Goshen toward Mussel slough, doubtless with a view of making the main line connection from the Salinas valley to the San Joaquin.

ONE of the locomotives on the Central Pacific railroad ran into and demolished a caboose and three flat cars and went down an embankment near Pleasanton, October 6th. James Butler, Jr., of Livermore, a passenger, was slightly injured.

THE San Diego *World* says that the people of San Bernardino propose to build a railroad to Colton at a (probable) cost of $20,000 to $55,000, and to continue it to Mound City, so that when the Southern Pacific railroad has completed its line between Mohave station and the San Gregorio pass, it may be induced to connect at San Bernardino.

WOODWARD'S GARDENS embracee an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

LADIES who for years have depended on all manner of powders and cosmetics for giving them artificial complexions, now find that GLENN'S SULPHUR SOAP supplies them with pearly skins and rosy cheeks, elicited by the gentle stimulation of nature. Sold everywhere.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING OCTOBER 3D, 1876.

ELECTRIC COUPLINGS FOR TRAIN TELEGRAPHS.—Andrew Ryder, Oakland, Cal.

CIGAR PIPES.—Isaacher A Heald, S. F.

MACHINES FOR GENERATING EARTH AUGERS.—Ellery M. Hoagland, Watsonville, Cal.

WATCH CHAINS.—John J. Kohrbeck, S. F.

REISSUES.

HAY AND GRAIN ELEVATORS.—Thomas Powell, Stockton, Cal.

——The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

THE Main Feather River mining company, of Butte county, have commenced sinking their shaft The contract has been let to Nevada miners. It is the intention of this company to tunnel under the bed of the river and take the gravel from under the river.

DRIFTING from the C. & C. shaft, to strike the Consolidated Virginia and California ore body at a depth of 1,650 feet, was commenced on Monday. The distance from the shaft to the ledge is about 490 feet.

THE product of the Chollar-Potosi mine last week was 386 tons ore; amount sent to the mills, 587 tons, assaying $32 per ton. Bullion product for September, $59,769

THE American ships in this port at present find great difficulty in getting crews.

ISSUED OCT. 1st, 1876.

Testing and Working Silver Ores.

The above is the title of an illustrated work of 114 pages, for miners and prospectors by Chas. H. Aaron, which has just been issued by Dewey & Co. Mr. Aaron has managed to give many useful hints and suggestions, free from all technicalities, and in such a style as to be easily comprehended. It is written for the miner, with no chemical symbols or metallurgical technicalities to confuse those who are not chemists or metallurgists. The following summary of the contents of the work will give an idea of its scope:

Under the heading of the first chepter, 'Testing Ores for Silver," we find paragraphs on ore formation, test for silver, with heat and water, acid or blow pipe. In speaking of testing for a process, the extent and richness of ore is considered, smelting ores, selecting and working sample, appliances for testing, roasting, etc. Under the head of "Working Ores" the author describes Aaron's process, has something to say of superheated steam, preparation of dichloride of copper and protochloride of copper, use of copper and iron, quantity of chemicals, carbonate of lime, chloride ores, amalgam, Patchen's process, etc. He also describes the methode of working roasted ores, treatment of base metals, stirring, heat of furnace, want of sulphur, etc. Under the head of "Leaching Processes" are the titles, Smelting, Mexican process, Kroencke's process, Chilean processes, etc. Under "Pulverizing Machines" are described the arastra and its construction and operation, stamp batteries, screens, Crooker's trip-hammer battery, Paul's pulverizing barrel, Kendall's battery, Noica's pulverizer, a cheap rock breaker, etc.

In speaking of smalgamators the author describes a cheap amalgamator, grinding the ore, directions for making a barrel, preventing mechanical wear, use of quicksilver, copper in bars. Freiberg barrel, cheap barrel, trough, barrel on rollers, Aaron's amalgamator, separator, etc.

He describes an improved retort, roasting furnace, furnace tools and furnace building. Among the miscellaneous mention may be found Aaron's leaching apparatus, with two or three different arrangements, a smell mill, sampling tailings and setting tanks, dichloride of copper, etc.

The book is serviceable one for miner's and prospector's use. Price, post free, (in leather,) $2.00. Address Dewey & Co., MINING AND SCIENTIFIC PRESS, 224 Sansome street, San Francisco.

METALS.

[WHOLESALE.

THURSDAY, M., Oct. 12, 1875.

American Pig Iron, ₱ ton	32 00	@	—
Scotch Pig Iron, ₱ ton	31 50	@	32 00
White Pig, ₱ ton	30 00	@	50 00
Oregon Pig, ₱ ton	31 50	@	32 50
Refined Bar	—	@	— 4¼
Soiler, No. 1 to 4	—	@	— 5½
Plate, No. 5 to 9	—	@	— 5½
Sheet, No. 10 to 14	—	@	— 5¾
Sheet, No. 16 to 20	—	5¼	@ —
Sheet, No. 22 to 24	—	5	@ —
Sheet, No. 26 to 28	—	6½	@ —
Horse Shoes, per keg	7 00	@	8 50
Nail Rod	—	10	@ —
Norway Iron	—	8½	@ — 9½
Rolled Iron	—	4	@ — 8
Other Irons for Blacksmiths, Miners, etc.	—	@	— 4¼
COPPER.—			
Copper Tin'd	—	37	@ — 40
Sheathing, ₱ lb	—	24	@ — 40
Sheathing, Yellow	—	21	@ — 22½
Sheathing, Old Yellow	—	10	@ — 11
Composition Nails	—	21	@ — —
Composition Bolts	—	24	@ — —
STEEL.—English Cast, ₱ lb	—	20	@ — 25
Anderson & Woods' ordinary sizes	—	—	@ — 15
Drill	—	—	@ — 16½
Flat Bar	—	15	@ — 20
Plow Steel	—	8½	@ — 9
TIN PLATES.—			
10x14 I O Charcoal	11 00	@	— —
10x14 I X Charcoal	13 00	@	— —
Roofing Plate I O Charcoal	10 00	@	10 50
Banca Tin	—	24	@ — —
Australian	—	23	@ — —
ZINC.—By the Cask	—	—	@ — 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₱ lb	—	—	@ — 11
dn do 7x3 ft, No 11 to 14	—	—	@ — 11½
do do 8x4 ft, No 8 to 10	—	—	@ — 12½
dn do 8x4 ft, No 11 to 10	—	—	@ — 12
NAILS Assorted sizes	3 60	@	3 75
QUICKSILVER, per lb	40	@	45 —

GENERAL MERCHANDISE.

WHOLESALE.

WEDNESDAY M., Oct. 11, 1876.

BAGS.

Eng. Stand Wht..	11¾	@	12
Neville & Co's..			
Hand Sewed....	11½	@	12
24x36.....	—	@	—
24x40.....	—	@	—
Machine do 24x40..	—	@	15¾
" " 23x40..	14¾	@	—
" " 22x40..	13	@	—
" " 20x36..	11¾	@	12
Flour Sacks ¼s	9	@	11
" " ⅛s	6	@	7
" " 1/16	4½	@	5
Hessian 8-in	12¾	@	14½
do 4-in	10	@	—
do 40-in	8¾	@	—
Wool Sacks, 3¼ lbs.	45	@	50
do 4"	50	@	52½
Stand. Gunnies	11¾	@	12
single seam do	—	@	—
Bean Bags	7	@	8

CANNED GOODS.

Asst'd Pie Fruits			
in 2½ lb cans	2 75	@	3 50
do Table do	3 75	@	4 25
Jams & Jellies	4 25	@	—
Pickles ¼ gl	—	@	3 50
Sardines, qr box	65	@	1 00
do hf box	30	@	—

COAL.—Shipping.

Anatralian, ₱ ton	8 75	@	9 00
Coos Bay	—	@	9 00
Bellingham Bay	—	@	9 00
Seattle	—	@	9 00
Gunnel'd	11 00	@	16 00
Mt. Diablo	5 75	@	7 75
Lehigh	—	@	22 00
Liverpool	8 50	@	10 00
West Hartley	—	@	14 00
Scotch	9 00	@	10 00
Scranton	13 00	@	16 00
Vancouver's Isl.	10 50	@	12 00
Charcoal, ₱ bsk	75	@	—
Coke, ₱ bbl	—	@	60

COFFEE.

Sandwich Island	—	@	21½
Costa Rica per ₱	20½	@	21
Guatemala	—	@	20
Java	—	@	25
Manilla	—	@	19
Ground in oe	25	@	—
Chicory	27	@	—

FISH.

Sac. Dry Cod, new	5½	@	6½
cases	6	@	7½
do boneless	8½	@	10
Eastern Cod	8	@	9½
Salmon in bbls.	6 50	@	7 25
do ½ bbls	3 75	@	4 00
do 2lb cans	2 40	@	—
do 1lb cans	1 40	@	—
do Col. R. ½ lb	4 25	@	4 50
Pick. Cod, bbls	22 00	@	—
do ½ bbls	11 00	@	—
Mack'l, No 1, ¼ bbls	11 00	@	—
" Extra	—	@	12 00
" in kits	1 90	@	2 25
" Ex mess	3 50	@	4 00
" Ex mess, ½ bbls	—	@	12 00
Pio'd Herr'g, bx	3 00	@	3 50
Sos. Sm'k'd Her	2 40	@	50

LIME, ETC.

Lime, S'ts Cruz, ₱ bbl	2 00	@	2 25
Cement, Rosendale, do	2 75	@	3 50
do Portland do	4 75	@	5 50
Plaster, Golden Gate Mills	3 00	@	3 25
Laod Plaster, ₱ ton	10 00	@	12 50

MISCELLANEOUS.

Pulu	—	@	7½

NAILS.

Assorted size, keg	3 75	@	4 00

OILS.

Pacific Glue Co			
Neat F't No. 1	1 00	@	90
Pure	—	@	—
Castor Oil, No. 1	—	@	95
Baker's & A	—	@	1 15
Cr. coanut	—	@	60
Olive Plagniol	5 50	@	5 75
do Possel	4 75	@	5 00
Palm ₱	9	@	—
Linseed, raw	—	@	62½
do boiled	—	@	65½
China nut in oe	65	@	—
Sperm, crude	1 60	@	1 65
do bleached	1 90	@	2 25
Coast Whales	47½	@	50
Polar, refined	—	@	50
Lard	—	@	1 20
Gierphine	—	@	37
Devoe's Brill't	38	@	39
Long Island	—	@	25
Kerosene	26	@	27
Devoe's Petr'm	—	@	41½
Barrel kerosene	23	@	25
Olive	—	@	80
Downer Kerose'e	—	@	37½
Elaine	—	@	42
Gas Light Oil	23	@	25

PAINTS.

Pure White Lead	9¾	@	11
Whiting	—	@	1¾
Putty	4	@	5
Chalk	—	@	1½
Paris White	—	@	2½
Ochre	—	@	3½
Venetian Red	—	@	3½
Red Lead	10	@	11
Litharge	10	@	11
Eng. Vermillion	—	@	1 25
Averill Chemical Paint, per gal. White & tints	2 00	@	2 40
Green, Blue & Ch Yellow	3 00	@	3 50
Light Red	3 00	@	3 50
Metallic Roof	1 30	@	1 60

RICE.

China No. 1	¼	@	5¾
Hawaiian, ₱ lb	7¾	@	8
Carolina, ₱ lb	10	@	—

SALT.

Cal. Bay, per ton	10 00	@	14 00
do Common	5 00	@	7 00
Carmen Island	12 00	@	15 00
Liverpool fine	15 50	@	14 00

SOAP.

Castile ₱ lb	10	@	10½
Common brands	4½	@	8
Fancy do	7	@	8

CANDLES.

Grant'e	16	@	16¾
Mitchell's	18	@	20

SPICES.

Cloves ₱ lb	45	@	47½
Jaesia	23½	@	26¾
Nitron	28	@	30
Nutmegs	95	@	97½
Whole Pepper	14¼	@	14¾
Pimento	15	@	17½
Grad Allsp prdz	—	@	12
do Cassia do	—	@	50
do Cloves do	—	@	50
do Mustard do	—	@	20
do Ginger do	—	@	00
do Pepper do	—	@	00
do Mace do	—	@	00
Sowen's Pure Ground ₱ lb	—	@	50

SUGAR, ETC.

Cal. Cube per lb	—	@	12¾
Circle A crushed	—	@	12
Powdered	—	@	12¾
Fine crushed	—	@	12
Granulated	—	@	11½
Golden C	—	@	10½
Hawaiian	10	@	11
Cal. Syrup in kegs	—	@	62½
Hawaiian Molasses	25	@	27½

TEA.

Oolong, Canton, lb	19	@	25
do Amoy	28	@	50
do Formosa	40	@	80
Imperial, Canton	25	@	40
do Pingsuey	45	@	80
do Moyune	60	@	90
Gunpowder, Cant.	75	@	90
do Pingsuey	50	@	90
do Moyune	65	@	1 25
Young Hy., Canton	28	@	40
do Pingsuey	40	@	70
do Moyune	65	@	85
Japan, ½ chests, bulk	30	@	75
Japan, lacquered bxs, 4½ and 5 lbs	46	@	67
Japan do, 3 lb bxs	45	@	90
do pl'n bxs, 4½ lb	35	@	65
do ½ & 1 lb paper	30	@	55

TURPENTINE.

Eastern	—	51½	@ 55

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, Oct. 11, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 92 to 92½. Silver 85@86.

Gold in N. Y., 109.

GOLD BARS, 889 to 890. SILVER BARS, 12@20 per cent. discount.

EXCHANGE on N.Y., 50@55-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, 2 per cent. discount.

LONDON — Consols, 95½; Bonds, 102¾

QUICKSILVER in S. F., by the flask, per ₱ 44@150

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Eagle Quicksilver Mining Co.—Location

of works, Santa Barbara county, Cal. Principal place of business, San Francisco, Cal.

NOTICE is hereby given, that at a meeting of the Board of Trustees of said company, held on the 30th day of September, 1876, an assessment (No. 9) of two hundred and fifty ($250) dollars per share was levied upon all the shares of said company, payable immediately, in gold coin of the United States, to the Secretary, at his office, rooms 5 & 6, No. 302 Montgomery street, San Francisco, Cal.

Any shares upon which said assessment shall remain unpaid on Wednesday, the 24th day of November, 1876, shall be deemed delinquent, and will be duly advertised on Saturday, the second day of December, 1876, for sale at public auction, and unless payment shall be made before, will be sold on Monday, the fourth day of December, 1876, as provided by the articles of agreement of said company, to pay the delinquent assessment, together with cost of advertising and expense of sale. By order of Board of Trustees. WM. H. WATSON, Secretary.

Cincinnati Gold and Silver Mining Co.

Location of principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, levied on the 29th day of August, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Boynton, A A W	117	1500	$ 150 00
Boynton, A A W	118	500	50 00
Gates, G A	86	100	10 00
Gates, G A	not issued	63	6 80
Kennedy, Frank	40	150	16 00
Kennedy, Frank	110	50	5 00
McIntosh, J, Trustee	161	500	50 00
McIntoeh, J, Trustee	162	500	50 00
McIntosh, J, Trustee	163	500	50 00
McIntosh, J, Trustee	164	500	50 00
M Intosh, J, Trustee	165	37	3 70
McIntosh, J, Trustee	166	1000	100 00
Melliss, R M, Trustee	138	500	50 00
Melliss, R M, Trustee	139	500	50 00
Peck, E T	122	600	60 00
Tenney, John, Trustee	141	100	10 00
Tenney, John, Trustee	142	100	10 00
Tenney, John, Trustee	143	100	10 00
Tenney, John, Trustee	144	100	10 00
Tenney, John, Trustee	145	100	10 00
Tenney, John, Trustee	146	100	10 00
Tenney, John, Trustee	147	100	10 00
Tenney, John, Trustee	148	100	10 00
Tenney, John, Trustee	149	100	10 00
Tenney, John, Trustee	150	100	10 00
Tenney, John, Trustee	151	100	10 00
Tenney, John, Trustee	152	100	10 00
Tenney, John, Trustee	153	100	10 00
Tenney, John, Trustee	154	100	10 00
Tenney, John, Trustee	155	100	10 00
Tenney, John, Trustee	156	100	10 00
Tenney, John, Trustee	157	100	10 00
Tenney, John, Trustee	158	100	10 00
Tenney, John, Trustee	159	100	10 00
Tenney, John, Trustee	100	138	13 80

And in accordance with law, and on order of the Board of Directors, made on the 29th day of August, 1876, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, No. 535 California street, San Francisco, Cal., on the 16th day of October, 1876, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. WM. SMALL, Secretary.

Office, room 2½, No. 535 California street, San Francisco, Cal.

Mariposa Land and Mining Company

of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa county, Cal. Notice is hereby given, that at a meeting of the Board of Directors, held on the seventh day of September, 1876, an assessment, No. 7, of one dollar ($1) per share was levied upon the capital stock of the Corporation, payable immediately in United States currency, to the Secretary, at the office of the Company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary at the office, No. 9 Nasean street, New York, N. Y.

Any stock upon which this assessment shall remain unpaid on the ninth day of October, 1876 will be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Monday the thirtieth (30th) day of October, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors

LEANDER LEAVITT, Secretary.

Office, Room No. 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal.

POSTPONEMENT.—The day for the sale of delinquent stock on above assessment is postponed till November 6th, 1876. By order of the Board of Directors.

LEANDER LEAVITT, Secretary.

Mariposa South Mining Company—Location

of principal place of business, San Francisco, Cal. Location of works, Spanish Belt Mining District, Nye county, Nev.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 1), levied on the eighth day of August, A. D., 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount
Buckley, Thos	143	500	$ 50 00
Buckley, Thos	144	500	50 00
Buckley, Thos	148	200	20 00
Caldwell, J A	113	500	50 00
Caldwell, J A	114	500	50 00
Caldwell, J A	115	500	50 00
Caldwell, J A	116	500	50 00
Caldwell, J A	117	500	50 00
Caldwell, J A	118	500	50 00
Caldwell, J A	119	500	50 00
Caldwell, J A	120	500	50 00
Caldwell, J A	121	250	25 00
Caldwell, J A	122	250	25 00
Caldwell, J A	123	250	25 00
Caldwell, J A	124	250	25 00
Caldwell, J A	125	250	25 00
Caldwell, J A	126	250	25 00
Caldwell, J A	127	250	25 00
Caldwell, J A	128	250	25 00
Caldwell, J A	129	100	10 00
Caldwell, J A	130	100	10 00
Caldwell, J A	131	100	10 00
Caldwell, J A	132	100	10 00
Caldwell, J A	133	50	5 00
Caldwell, J A	134	50	5 00
Caldwell, J A	135	50	5 00
Caldwell, J A	136	50	5 00
Cooper, A B	183	100	10 00
Cooper, A B	184	50	5 00
Cooper, A B	185	20	2 00
Cooper, A B	186	20	2 00
Flint, Benj	157	1000	100 00
Flint, Benj	168	500	50 00
Flint, Benj	169	500	50 00
Lewis, L J	159	500	50 00
Lewis, L J	164	100	10 00
Moore, S Grant	65	500	50 00
Moore, S Grant	66	500	50 00
Moore, S Grant	67	500	50 00
Moore, S Grant	68	500	50 00
Moore, S Grant	69	600	60 00
Moore, S Grant	70	500	50 00
Moore, S Grant	71	500	50 00
Moore, S Grant	72	500	50 00
Moore, S Grant	73	250	25 00
Moore, S Grant	74	250	26 00
Moore, S Grant	75	250	25 00
Moore, S Grant	76	250	25 00
Moore, S Grant	77	250	25 00
Moore, S Grant	78	250	25 00
Moore, S Grant	79	250	25 00
Moore, S Grant	80	250	25 00
Moore, S Grant	81	100	10 00
Moore, S Grant	82	100	10 00
Moore, S Grant	83	100	10 00
Moore, S Grant	84	100	10 00
Moore, S Grant	85	60	6 00
Moore, S Grant	86	50	5 00
Moore, S Grant	87	50	5 00
Moore, S Grant	88	50	5 00
Nicholl, Geo, Trustee	8	500	50 00
Nicholl, Geo, Trustee	9	500	50 00
Nicholl, Geo, Trustee	10	500	50 00
Nicholl, Geo, Trustee	11	500	50 00
Nicholl, Geo, Trustee	12	500	50 00
Nicholl, Geo, Trustee	13	500	50 00
Nicholl, Geo, Trustee	14	500	50 00
Nicholl, Geo, Trustee	15	500	50 00
Nicholl, Geo, Trustee	16	500	50 00
Nicholl, Geo, Trustee	17	500	50 00
Nicholl, Geo, Trustee	18	500	50 00
Nicholl, Geo, Trustee	19	500	50 00
Nicholl, Geo, Trustee	20	500	50 00
Nicholl, Geo, Trustee	21	500	50 00
Nicholl, Geo, Trustee	22	500	50 00
Nicholl, Geo, Trustee	23	500	50 00
Nicholl, Geo, Trustee	24	500	50 00
Nicholl, Geo, Trustee	25	600	60 00
Nicholl, Geo, Trustee	26	500	50 00
Nicholl, Geo, Trustee	27	500	50 00
Nicholl, Geo, Trustee	28	500	50 00
Nicholl, Geo, Trustee	29	500	50 00
Nicholl, Geo, Trustee	30	500	50 00
Nicholl, Geo, Trustee	31	500	50 00
Nicholl, Geo, Trustee	32	500	50 00
Nicholl, Geo, Trustee	33	600	50 00
Nicholl, Geo, Trustee	34	500	50 00
Nicholl, Geo, Trustee	35	500	50 00
Nicholl, Geo, Trustee	36	500	50 00
Nicholl, Geo, Trustee	37	500	50 00
Nicholl, Geo, Trustee	38	500	50 00
Nicholl, Geo, Trustee	39	250	25 00
Nicholl, Geo, Trustee	40	250	25 00
Nicholl, Geo, Trustee	41	250	25 00
Nicholl, Geo, Trustee	42	250	26 00
Nicholl, Geo, Trustee	43	250	25 00
Nicholl, Geo, Trustee	44	250	25 00
Nicholl, Geo, Trustee	46	250	25 00
Nicholl, Geo, Trustee	47	250	25 00
Nicholl, Geo, Trustee	48	250	25 00
Nicholl, Geo, Trustee	49	250	25 00
Nicholl, Geo, Trustee	50	250	25 00
Nicholl, Geo, Trustee	51	100	10 00
Nicholl, Geo, Trustee	52	100	10 00
Nicholl, Geo, Trustee	53	100	10 00
Nicholl, Geo, Trustee	54	100	10 00
Nicholl, Geo, Trustee	55	100	10 00
Nicholl, Geo, Trustee	56	100	10 00
Nicholl, Geo, Trustee	57	100	10 00
Nicholl, Geo, Trustee	58	100	10 00
Nicholl, Geo, Trustee	59	100	10 00
Nicholl, Geo, Trustee	60	100	10 00
Nicholl, Geo, Trustee	61	50	5 00
Nicholl, Geo, Trustee	62	50	5 00
Nicholl, Geo, Trustee	63	50	5 00
Nicholl, Geo, Trustee	64	50	5 00
Nicholl, Geo Trustee	167	250	25 00
Plumb, W J	89	500	50 00
Plumb W J	90	500	50 00
Plumb, W J	91	500	50 00
Plumb, W J	92	500	50 00
Plumb, W J	93	500	50 00
Plumb, W J	94	500	50 00
Plumb, W J	95	500	50 00
Plumb, W J	96	500	50 00
Plumb, W J	97	250	25 00
Plumb, W J	98	250	25 00
Plumb, W J	99	250	25 00
Plumb, W J	100	250	25 00
Plumb, W J	101	250	25 00
Plumb, W J	102	250	25 00
Plumb, W J	103	250	25 00
Plumb, W J	104	250	25 00
Plumb, W J	105	100	10 00
Plumb, W J	106	100	10 00
Plumb, W J	107	100	10 00
Plumb, W J	108	100	10 00
Plumb, W J	109	50	5 00
Plumb, W J	110	50	5 00
Plumb, W J	111	50	5 00
Plumb, W J	112	50	5 00
San Pedro M	158	500	50 00

And in accordance with law, and an order of the Board of Directors, made on the eighth (8th) day of August, A. D., 1876, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, on Tuesday, the seventeenth (17th) day of October, 1876, at the hour of two (2) o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Secretary.

Office, 418 California street, San Francisco.

Sierra Iron Company—Location of principal

place of business, San Francisco, Cal. Location of works, Sierra and Plumas counties, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, levied on the 8th day of August, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Wm Reed	24	50	$ 50 00
Sophia Day	28	100	100 00
Wm S Day	38	60	60 00
P N Lilienthal	101	100	100 00
Chas D Haven, Trustee	54	500	500 00
Geo S Ladd, Trustee	55	500	500 00
G Hilton Scribner	58	50	50 00
L E Pratt	62	300	300 00
Wm Reed	63	50	50 00
Wm R ed	64	50	50 00
G Hilton Scribner	66	145	145 00
Wm Reed	67	100	100 00
Ben Hurzthel	81	50	50 00
Ben Hurzthel	82	50	50 00
G Hilton Scribner	85	55	55 00
P N Lilienthal	100	1800	1800 00
Ben Hurzthel	86	60	50 00
H F Cutter, Trustee	91	100	100 00
H F Cutter, Trustee	103	50	50 00
H F Cutter, Trustee	104	50	50 00
P N Lilienthal	142	3713	3713 00
James D Hague	143	1	1 00
Edward Bosqui, Trustee	121	250	250 00
Edward Bosqui, Trustee	122	250	250 00
Edward Bosqui, Trustee	127	250	250 00
Edward Bosqui, Trustee	130	250	250 00
P N Lilienthal, Trustee	144	300	300 00
G Hilton & Straus	151	250	250 00
Chas Kohler	148	500	500 00
Jacob Benjamin	146	50	50 00
F S Spring, Trustee	154	300	300 00
P N Lilienthal, Trustee	140	50	50 00
F Weisenborn	163	700	700 00

And in accordance with law, and an order of the Board of Directors, made on the 18th day of August, 1876, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at room No. 9, Halleck Block, 318 Sansome street, San Francisco, Cal., on the 26th day of October, 1876, at the hour of 12 o'clock M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

CALEB T. FAY, Secretary.

Office, Room No. 9, Halleck Block, San Francisco, Cal.

Union Stone Company of California—

Location of works and principal place of business, the city and county of San Francisco.

NOTICE.—There is delinquent upon the following described stock on account of assessment (No. 4) levied on the 22d day of August 1876, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Miller, Wm J	5	50	$ 10 00
Miller, Wm J	6	500	50 00
Miller, Wm J	7	500	100 00
Miller, Wm J	8	500	100 00
Miller, Wm J	9	500	100 00
Miller, Wm J	10	500	100 00
Peter Dean	3	250	50 00
Dougine, J T	101	100	20 00
Dougine, J T	201	100	20 00
Dougine, J T	301	100	20 00
Dougine, J T	501	100	20 00
Dougine, J T	601	100	20 00
Dougine, J T	701	100	20 00
Dougine, J T	1301	100	20 00
Dougine, J T	1401	50	10 00
Edward Commins	1051	50	10 00

And in accordance with law, and an order of the Board of Directors made on the 22d day of August, 1876, so many shares of each parcel of said stock as may be necessary will be sold at public auction at the office of the company, No. 19 First street, San Francisco, California, on Tuesday, the 17th day of October, at the hour of three o'clock P. M., of that day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

R. F. KNOX, Secretary.

Office, No. 19 First street, San Francisco, Cal.

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GRAND OPERA HOUSE, Mission Street, near Third. Open every evening with first-class Dramatic Company. Box Office open from 9 A. M. to 10 P. M. Doors open at half past seven. Commence at eight o'clock. UNCLE TOM'S CABIN.

CALIFORNIA THEATER, Bush Street, above Kearny. Open every evening with the best Dramatic Company in the United States. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance. Doors open at half past seven. Monday, September 4th, EDWIN BOOTH.

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Steam Engines and all kinds of Mill and Mining Machinery.

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Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horse Power.

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24v17-qy

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24v22-3m JOSEPH MOORE, Superintendent.

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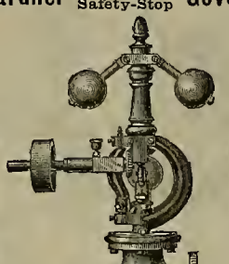

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Cost for 15 tons	$44.00
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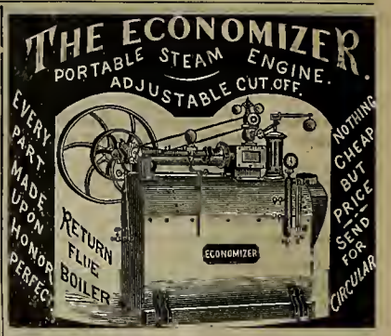

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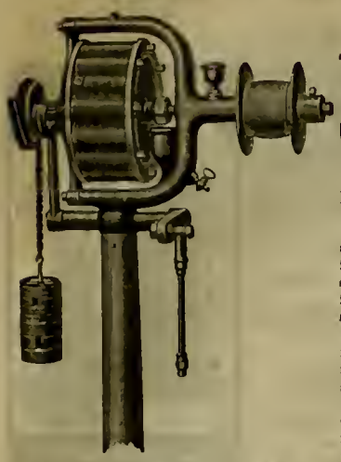

Fig. 1. For Variable Cut-Off Engine.

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Direct Saving of Fuel—Great Increase in Power of Engines.

The high rate of speed used acts advantageously in making the Allen Governor very sensitive; and all parts being inhricated, it works with the smallest amount of friction.

The speed of the Engine is maintained equally, without reference to the variations in amount of work being done.

The peculiar action of the Governor, which allows the use of a valve of large area, thereby admitting to the Engine cylinder the greatest possible boiler pressure at each stroke of the piston, has produced astonishing results by being attached to old engines, greatly increasing their power or effecting a direct saving of fuel, and in hundreds of instances doing both. In running an engine with the Allen Governor with high or low pressure of steam and with all variations of power, the throttle is opened wide in the morning and remains so until closed at night, thus relieving the engineer from all labor and care except keeping the engine oiled, and giving him a great deal of time for other duties.

Allen's Patent Governor Valve is constructed with a double disc in a tubular frame, and is perfectly balanced, there being no spindle as in the ordinary throttle valve to interfere with its equilibrium. The valve is moved by means of a lever, and is opened and closed by a rocking motion of a steel spindle, which is covered with brass, insuring the greatest possible durability.

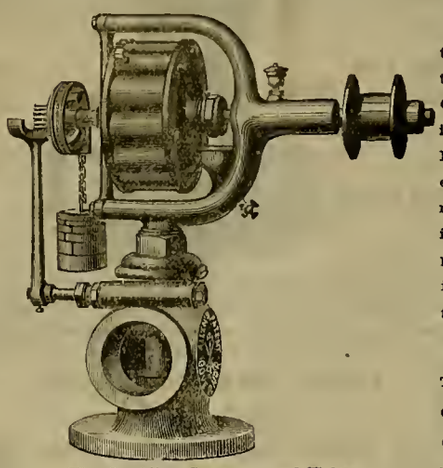

Fig. 2. Allen Governor and Valve.

We have Numerous testimonials from parties who have used this Governor, and watched its workings critically. In all cases the Governor has made the various engines to which it has been applied produce the most profitable results ever obtained.

Fig. 3. Section of Allen Governor.

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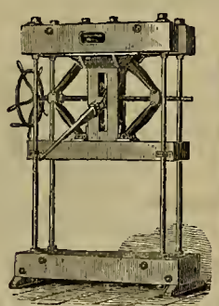

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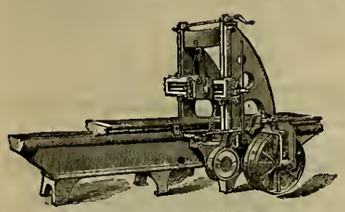

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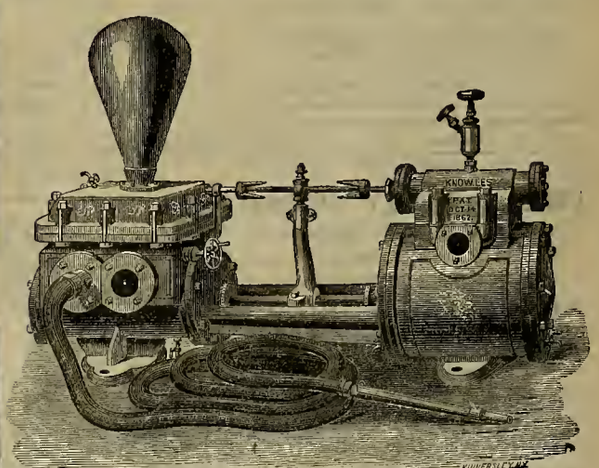

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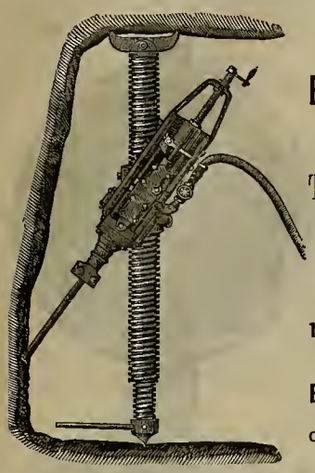

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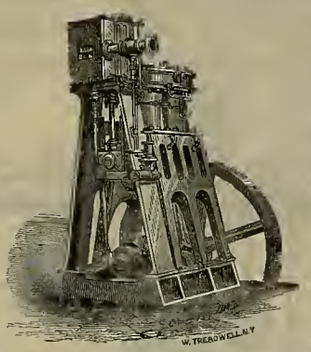

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SUTTER CREEK, February 26th, 1875

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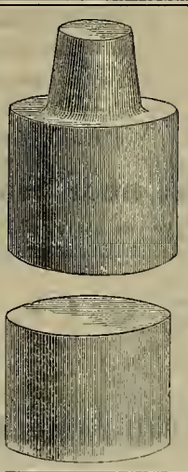

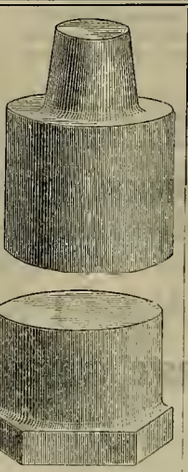

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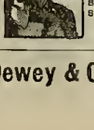

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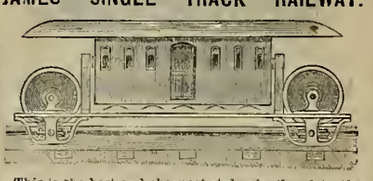

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SAN FRANCISCO, SATURDAY, OCTOBER 21, 1876.

VOLUME XXXIII. Number 17.

More of the Mines and Machinery of Eureka.

[From our own Correspondent.]

Before noticing the mines, a brief description of whet promises to be

A Very Valuable Improvemant

Is thonght advisahle, the invention of Captain T. J. Taylor, of Enreka. As it will probebly ba illuetrated and fully described in the colnmns of the PRESS, more than a mere mention would he ont of place. The improvement has reference to the construction of smoke-stacks for smelting and other fnrnaces, end consists mainly in the two following points: Firet, an angular chamber with the diameter of the center greetly in excese of the npper end lower ends of the steck. Second, an exit pipe projecting slightly downward into the chamber, by means of both which devices the weste prodncts of the fnrnace are effectnally arrested and thrown hack to he again snbjected to the action of the flames. Nor is this all. The finer particles are compelled to run the gaunlet the second time by coming in contact with a final exit pipe, provided with an annnlar deflecting piece, performing an office similar, and meking a nice supplement to the arresting chemher. It wes recently pretty thoroughly tested on 18 tons of dnst from the Alta's furnece and also on 92 tons of ore from the Matamoras mine on Prospect mountain, together with whet slag and refnse could he gathered np eronnd the fnrnaca which lately became the property of the Metemoras company. After a run of only 21 days, a clean-np was mede, which left a net prodnct over all expenses of ahout $14,000, the result heing attrihnted chiefly to the effective work of the dnst trap, as styled hy the patent office. The highest assay from the slag after working was only $3 per ton, while not a trace of metal of any kind was fonnd in the dnst.

A Large Undertaking.

As steted in my last letter, the Richmond and severel other large mines of the district are sitnated on a spnr of Prospect monntain. Owing to this and to the fact that rich croppings had heen fonnd not only on the snmmit, but also along both the eastern and western slopes, almost the whole mountain has heen located and prospected to some extent for several miles in length, the ledges, it is seid, dipping in either direction towards the center of the ridge. Indnced by facts such as these,

A Tunneling Company

Has heen organized and operations commenced in earnest hy some of the most snbstantial men of Eureke, numhering such men as Mr. H. Donnelly, snperintendent of the Eureka Consolidated, Dr. Bishop, Messrs. Shoenbar, Herruh, Haskel, Baker and many others, with Hon. T. J. Reed as superintendent. The ground was loceted under the mining lawe of 1872, and a claim made to 3,000 feet in length and to all the blind lodes that may be discovered. It ie looked upon here as one of the grandest enterprises of eastern Nevada. It is intended to he eight feet high and eight feet wide, with donhle tracke, and has already advanced from 40 to 50 feet, giving some indicetions of approaching ledge matter, and on the anthority of Captain Foley, who lives near the mouth of the tunnel, it will cut at leest ten different ledges in its coorse. The first reeched will he

Tha Tyndall,

The property of the Captain, and so designated ont of reepect to the celebrated English scientist of the same neme. This claim is situated near the western base of the mountain, has been opened by two shafts, 60 and 80 feet respectively, showing a very wide vein, and some ore that runs into the thousands, bnt giving an average working of ahout $300 per ton. It will he ent by the large tnnnel at the depth of 200 feet, others at 1,000 feet and some at 1,500 feet deep and npwards. In addition to the Matamoras and Tyndall that will be prospected by the tnnnel, a few more may he mentioned, that lie either on or not far from its line, snch as the

Kit Carson,

Which has made three shipments of ore, averaging $300 per ton; first class going neerly $400. Ore said to need no flux and running ahout 60 per cent. in leed.

The Cloud

Shows a ledge all tha way down to the depth of 170 feet, working as high as $200 per ton in silver and lead.

The Silver Brick,

The property of William Gillen and others, of Eureka, has been opened sufficiently by tunnel and incline from end of same to find a good chimney of ore from seven to eight feet in width, giving assays from $130 to $140 per ton.

The New Law,

Belonging to Mr. Shoenhar and others, adjoining the Matamoras on the north, hes a shaft 600 feet deep, showing ore represented to he rich both in gold and silver.

The Fourth of July, at the heed of New York canyon, owned by Mr. Driesbech end others of Carson City, has a tunnel 800 feet, striking tbe ledge at the depth of about 400 feet from surface, finding a large body of low grade ore, with a streak of high grade from 12 to 18 inches in thickness, estimated to go from $100 to $120 per ton.

The Diamond, one-fourth of a mile from above, P. McGinness proprietor, has an incline which hes followed tbe ledge from tha surfece 200 feet, meeting with good pay ore, some of it very rich, from $500 to $600 per ton. The ledge so fer small, from 18 inches to two end-a-half feet, the ore improving in depth. On the Eestern slope of the mountain are the Patriot, Bald Eegle and several others which are opening np finely.

The Elise,

In thie neighborhood and on the line of the large tunnel, hee been opened by shafts, drifts and a tunnel 300 feet, several good bodies of ore heing fonnd, peying from $70 to $250 per ton, the amount extracted thus far about paying for expenses of development.

Two or three milee in a southerly direction from the Richmond and the Enreka Consolidated, and supposed to he on or near the seme belt, there are several very good mines, the first being the Atlas, which ie eeid to have paid exceedingly well. It ie opened hy an incline 300 feet, and drift from foot of same 700 feet, to connect with a new sheft which is now down 250 feet, with 80 feet mora to sink to make connection with the drift.

The Connelly

Hes a tunnel 230 feet in length, this end connecting with snrface by a shaft 140 feet, the same extending below the tunnel level 150 feet. Two drifts have heen run from the 140-foot level, one of 70 feet and another 116 feet, from which a considerahle quantity of ore has heen taken thet milled on an averege from $80 to $120 per ton.

The company is now putting up machinery with capacity to sink 1,500 feet, everything in the most solid and snhstantial form. The snperintendeut, Mr. John Potter, was sent here by the British mining and milling company, of London, for the pnrpose of developing this mine, together with the Indnstry, the Page, the Corwin, and whet is known as the Meryland group. In connection with the property there is a fine 20-stamp mill, provided with Stedefeldt furnace and all the nsual and necessary appliances for effective work.

Still fnrther south, near the seme range, is

The Hamburg,

Covering 2,000 feet in length by 350 feet in width, the company owning in addition to this, on Prospect mountain, the Union, the Gelloway and Rohert Emmet. The Hamburg has been opened by what is known as the Friday shaft, 400 feet, and the deepeet, from which a drift is now heing run southeast to tap the ledge. There are two other shafts 320 feet epert, the Southern Pecific, 100 feet, and the South shaft, 100 feet, a drift from Southern Pecific, 40 feet.

The developments show a body of ore from surface down eight feet wide, mostly carbonate. Ninety tons of second class worked $104 per ton, and 220 tons of first cless went as high as $128. The ore is very easily smelted, requiring no flux, and there are at present on the dump about 1,000 tons, believed to be fully as good as the above. From the shepe of the hill and general surroundings, teken in connection with numerous cross-veins fouud at this point, indiceting at one time an immense internal force, tbe location was looked upon as one of the hest for encountering large chimneye of good ore ae the work progresses. A greet future may he safely predicted for this and probahly a number of other mines in this same vicinity.

A. C. K.

RYE PATCH.—A correspondent writes from Rye Patch district, Nevada, complaining that our correepondent vieited that locality, and promised to puhlish some notes of the mines, which, the writer saye, he failed to do. If our friend will look in the MINING ANN SCIENTIFIC PRESS of August 26th, he will see that Mr. KNOX complied with the promise he refere to, and gave some descriptions of the district and its mines. The writer of the letter must have overlocked thet issne of the PRESS.

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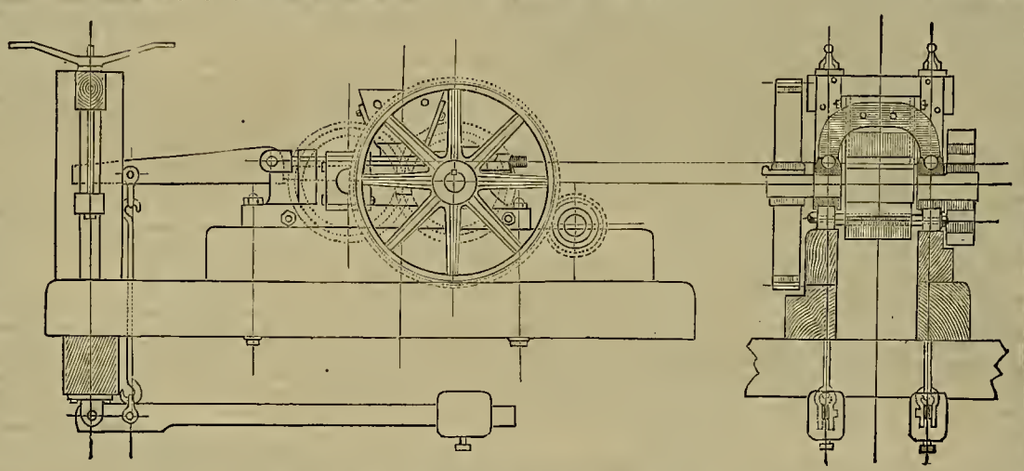
Mechanical Ore Concentration and Separation.—No. 9.

[Written for the PRESS by FRANCIS F. M. CAZIN, M. E. Santa Fe, New Mexico.]

Rollers.

In almost every case it will pey to separata the smaller sizes hy screening them from the coarser sizes, before pessing the latter to the rollers, because rollers not only work best hut also preserve their face in good order when fed with rock of nearly equal size. Rollers have been introdnced of a great many different patterns, differing essentially in the way in which they ere compressed, one against the other, when doing work. Lever power, hy single or a componnd lever, is the most correct, hecanse with an arrangement to arrest the motion of the lever, and by regnlating or removing the weight, especially if it is of the componnd description, the smallest veriation as to siza to be ohtained can be given at option. In using india rnhher buffers or steel springs, there is no way of accommodating the pressure to the reqnirements of the work.

The accompanying illnstration shows the rollers in the F shape recommended. The left hand figure is a side and the right an end view, on a scele of half an inch to the foot. Crusher and rollers will, in most cases, complete the rock hreaking arrangements, and only in those cases referred to, as where the metal or mineral is so finely disseminated in the rock that it is required to pulverize the same in order to lay metallic particles and rock particlee separate, the introduction of stamp mills will be needed the same as in the working of gold-bearing quartz.



ROLLERS WITH COMPOUND LEVERS FOR CRUSHING ORE.

Coal Fields in Western Wyoming.

In accordance with the reqnest of our traveling correspondent, Mr. Hnrd, of Elko, Nev., sends us tbe following hrief deecription of the vast coal fields in western Wyoming:

The Mammoth Sandstone ledge is situate in Uintah county, Wyoming Territory, directly north, 22 miles, from Carter station, on the U. P. R. R.,—eesy of access from said road. The mine is one of the largest (if not the largest) in the world. From actual measurement we find one vein 70 feet, one of 60, two of 50, one of 40, two of 24, and eight of 16 feet, in sandstone, free from any impurities. No iron or shale in the vicinity. The coal is bright and will not soil the finest cembric, snd is pronounced by experts—cannel coal. It hes been assayed by Professor Pontez of Omeha, Professor Britton, of Philadelphia, and Professor McVicker, of Salt Lake City. They find it to coke 53 per cent., and it leeves only 1½ per cent. ash. The company was incorporated May 16th, 1876, at Selt Lake City, with a capital of $4,000,000, and loceted 8,000 acres. The mine is in a bold bluff, and all the veins are above the surface of the surrounding country. They hope to induce capital to assist in building a railroad to the mines to connect with the C. P. road at Ogden or at Corinne. This road would lead through vast pine regions, and create an industry in the lumher trade. This, with coal, will revolutionize the northern part of Bro. Brigham's domiuione.

AT Gold Run, Placer county, the Miners Ditch Co. is having a new string of extra heavy large pipe made to convey water from the ditch down iuto the Indiana Hill claim.

CORRESPONDENCE.

Tybo District.

Its Growth and Metallic Productions.

EDITORS PRESS:—Following up the thread of my remarks of last week, I will now try to redeem the promise then made to your readers, by describing in detail the mines and reduction works of the Tybo Consolidated company, and by giving such other information as may be of intereat to the dear public for whose especial benefit I chronicle these matters. But before I plunge into the subterranean recesses of the Two G mines, I will first briefly sketch the history and geographical extent and location of the

Tybo Mining District,

And will also glance retrospectively at the Two G and its companion mines, which compose the series forming the property of the aforesaid company.

The word "Tybo" is derived from the Shoshone dialect, and signifies "White Man's district," according to the interpretation of those best skilled in that euphonious language. The camp, whose altitude is about 6,000 feet above tide water, lies embosomed amidst the northeastern slopes of the Hot Creek range of mountains. It is distant from Eureka 100 miles due south, 12 miles south of Hot Creek, 25 northwest of Reveille district, wherein is located the once famous Gila mine, and 35 miles southeast of Belmont, Nye's county seat. It is kept in communication with the outside world by a semi-weekly line of stages, run by T. J. Bell & Co. from this point to Eureka and Belmont. The fare to and from the former place is $20, and to and from the latter, $10. We have no regular mail service, which, considering the population and the importance of the locality, is a matter of some surprise. We are, therefore, indebted to the good offices of the stage company for the transmission of our letters from Eureka to here. But to return from this digression. This district was inaugurated in May, 1870, soon after the discovery of the mines now owned by this company. It was originally named

Empire District,

But it was subsequently given the name which it now bears, and by which it will be known in the mining annals of the State. The district has an area of ten square miles. Its geological formation is of limestone and porphyry. Between these two distinctive belts it is that the veins of the district are found encased; the former, in the character of a silicious lime, forming the banging wall, and the latter the foot wall. In many places below the surface a kind of slaty stone, much resembling schist in cleavage, is met with in the stratification. There is also much of the ferruginous matter found here, in the immediate vicinity of the argentiferous galena ores, that are so often found overlying in regular strata similar ore deposits in Eureka and elsewhere.

The Two G,

Which is the only one of the original locations that is now being worked, courses obliquely across the northeastern slopes of Pucipico mountain, whose shaggy crown rises 1,600 feet above the canyon, wherein stands the town and the works of the company. Its croppings, which are easily traceable above the surrounding formation, have been traced and located on for over 5,000 linear feet. Pucipico canyon, which courses east and west, runs through that portion of the property comprised in the Casket, Lafayette and Crosby. The main hoisting works of the Two G stand on the southern verge of the canyon. The whole property is opened both by shafts and tunnels. The three latter have penetrated the hill for several hundred feet along the course of the ledge, which developed finely as far as followed. The upper sections of the mine were successfully worked by means of these tunnels or adit levels. From No. 1, or lower tunnel, the mine was opened to the depth of 120 feet, of two levels, by means of winzes; but since this method of working and ore extracting was found to be both too slow and too expensive, the present shaft, of three compartments, was commenced about 160 feet northeast of the lode, which it has been calculated it will cut at or about a depth of 1,400 feet from the surface, at point where said shaft stands. Allowing for the inequalities of level in the configuration of the grounds, the apex of the lode has an elevation of nearly 250 feet above the shaft, whose dimensions are 10 by five feet in the clear, thus allowing sufficient space for two working and a pumping compartment. But the Two G mine alone will have paid to its shareholders, in dividends, many thousands of dollars ere the aqueous element becomes troublesome. A 1,000-foot shaft may probably cut a water channel, and the chances are that even greater depth will have to be reached before water is tapped. The

Hoisting Apparatus

Are in all respects first-class, and are considered ample for elevating from a depth of 1,000 feet or more. The engine has a capacity of 50-horse power; the cylinder has a 12-inch diameter and a 24-inch stroke, and the reels, of which there are two, are each 34 inches in the clear, and are provided with suitable brakes, etc. The whole are covered in by a substantial frame building, and in case of fire a plentiful supply of water stands in a tank hard by, which, from the great pressure, would do most effective service in drowning out an incipient blaze. We will now descend to the nether gloom of the Two G and see what we will discover therein.

At a depth of 130 feet from top of shaft, the first station occurs. It is quite roomy and cut out of the solid rock, as is the whole length of the drift which connects the shaft with the ledge. This drift, which is 140 linear feet, is denominated the

Fifth Level

From the out-crop of the lode, which, from this point, has an elevation of not less than 450 feet. On this level the ledge has been followed along its course to the east of south 740 linear feet, the entire extent being run through a fine grade of ore; and it is a noticeable fact that neither break nor dead space occurs in the whole distance, which is saying much for the character and uniformity of the vein. The ore encountered at this depth is not only rich in the precious metals, but it also carries more lead and finer and richer carbonates and oxides than were met with higher up the lode. The ore, in places, has a peculiarly solid and compact appearance, and shows neither waste nor other foreign matter that need to be separated from the metallic bearing earths. The vein has a uniform thickness of six feet, though, in some places, it expands laterally to 10 or 12 feet, and the spread is even greater wherever chimneys occur, and they are frequently met with in the process of exploration. There are

Eight Winzes

Now being sunk from this level towards the sixth. They range from thirty to eighty feet in depth, and they are all in first class ore, as is the southeast extremity of the drift. The walls maintain the same smooth, clean-cut character that has distinguished them from the very first, and the same angle of inclination, about 80°, is most remarkably preserved throughout, thus sustaining the opinions that were early expressed of the strength and permanence of the Two G vein. Its mineral characteristics are the same now that they were when it was first opened. There is no change, except what is for the better, and the greater the depth that is attained, the richer and more abundant becomes the ore, which, as on top, partakes of the dual quality of milling and smelting. These two classes course side by side in the vein, but the latter only is mined at present, the former being allowed to keep in place until the company's twenty-stamp mill starts up, which will be in a few weeks hence, and there are thousands of tons of this class of ore awaiting the action of its stamps.

The Sixth Level,

One hundred feet beneath, presents in all respects the same, if not more encouraging features than those which we have been glancing at on the level which we have just examined. This level is opened along the lode toward both its extremities, something over seven hundred feet, all through the finest quality of ore, and the same distinctive outlines, solidity, richness and uniformity of trend and descent are observable throughout as far as explored. The shaft is now in process of being sunk to the

Seventh Level,

And there are several winzes commenced, that are to be driven toward it and that will have reached it long ere the site of the station will have been touched by the drill of the miner. The vertical distance from the sixth level, between which and the fifth there is only ten feet of a difference in the angle of the dip to the top of the lode, is in the neighborhood of 575 feet. One hundred and sixty perpendicular feet by seven hundred longitudinally of this space is as yet nearly solid vein matter, very little stoping or raising having been accomplished, all the ore needed for reduction purposes having been taken from the drifting along the ledge. It will, from this statement, be readily seen that there are thousands of tons of first-class ore yet in place, waiting the pick of the miner.

The Furnaces,

Of which there are two, have a reduction capacity of about fifty tons each 24 hours. This large quantity, which takes the united labor of but two men and one horse to transport it from the dumps at mine to the feeders at the furnaces, costs less than thirty cents per ton for hauling it over a tramway of about one-third of a mile in extent. This is quite an item of saving which adds largely to the marginal profits accruing from the enterprise. The foreman of the mine, Mr. Frank Newell, whose efficiency is best demonstrated by the character and magnitude of the explorations that have been effected under his eleven months' administration, states that he works on an average eighty men per month. These, with the smelters and other employees, constitute an available force of 150 miners that are on the company's pay rolls. But this number is a mere bagatelle compared with the small army of swarthy, stalwart

Charcoal Burners,

Whose camps dot the mountains round, and who are paid indirectly by the company's Superintendent, M. D. Howell, Esq., late of the Richmond, at Eureka. He has now entered upon his second year as manager of the company's property. This is the strongest encomium that can be bestowed upon his worth and ability. Nature, in addition to her mineral tributes, appears to have anticipated the smelters' and miners' wants by clothing the mountains' sides with a plentiful supply of just the quality of wood best suited for charcoal; of which the company's furnaces consume about two thousand bushels per day. There are several thousand bushels of it now stowed away in the bins to meet the emergencies of the approaching winter, for these seasons are sometimes very rigorous in this latitude, especially at this altitude. The above branch of industry is almost exclusively absorbed by the Italians, who burn it for the contractors, who in turn receive about 28 cents per bushel for it delivered at the coal bins adjacent to the smelting cupolas. The furnaces are now running very successfully, to judge by the large quantity of

High Grade Bullion

That is molded in each shift of eight hours. The daily out-put of bullion, the manager informs me, aggregates seven or more tons. This bullion gives a return of from $440 to $460 per ton in the noble metals, and the value of the lead runs from $85 to $100 per ton, thus enhancing the price of the bullion per ton just these amounts. Figures and facts are stubborn things to get round. The first are always held to be indisputable and the second are no less reliable, hence the confidence with which I present to your readers the above data in support of my previously penned opinions regarding the high character of mines and ore resources of the Tybo Consolidated company, and of the long and brilliant future now opening for this camp and that enterprising corporation. There are many other things no less interesting than the foregoing that I would like to dwell on, but since this letter has already far exceeded my limits, but I hope not your space, I must let them rest in statu quo until another occasion. GOTHAM.

Tybo, Nevada.

Alpine County—its Mines and Resources, Past, Present and Future.

[Written for the PRESS by VICTOR HARLAND.—No. 10.]

Silver Mountain District.

Adjoining the Mountain mine on the north is the location held by J. J. Rice, Esq., and known as the Silver Creek location. This being but little prospected, though having its own natural recommendations as an extension of the first named mine, cannot, owing to its undeveloped condition, claim a present position of prominence. Its future value depends mostly upon the ultimate developments of the Mountain, together with that of the Occident, the adjoining on the north. Situated as it is, between the two thus named, and having the same outline and surface appearances, what future disposition may effect either or both, will effect this also. Mr. R., an old resident and stockholder in the Mountain mine, has great hope for the future value of his mine and it is the wish of the writer that he may realize and enjoy a plentiful remuneration for his long and arduous waiting and toil.

The Occident,

Formerly known as the Mammoth lode—Rippon company—is also upon the same lode and has a large area of surface. It is well adapted for a better system of developments than heretofore indulged in by the old company, viz.: a tunnel of about 600 feet in length. At a distance of 125 feet from the tunnel mouth a lode ten feet in width was cut, this lode not appearing on the surface, and therefore receiving the appellation of a "blind lode." Howsoever blind it may appear on the surface the appellation thereby ends, for a better defined lode never existed than this appears, being incased within two perfectly formed walls of porphyritic tendency, with separations of porphyritic clay. The ore contained in this lode is of the black sulphuret variety and equally distributed throughout the rock. It is of rather

Low Grade,

Assays of ore taken from different places in the lode ranging from $8 to $25 per ton. It has a general course in a northerly and southerly direction, and as far as developed shows an unusually strong and clear outline, the separation of both walls from the outer formation being perfect and the quartz firmly and perfectly formed. The lode being encountered so near the surface cannot reasonably exhibit the permanency looked for when a greater depth shall have been reached. The perfect characteristics of this lode at this short distance below the surface is, to say the least, remarkable, when the extensive disturbances of the surrounding country are considered, and this fact alone, although the ore now found is of a comparatively low grade, forms a good basis on which a further development from a shaft may reasonably rest. This, however, is not the only foundation on which the future of the present company rests.

Before reaching the culminating point in the present tunnel

Another Lode

Was encountered and penetrated for a distance of 14 to 16 feet. This lode, of a similar character to the first named, or Lode One as it may be termed, will undoubtedly prove one of considerable extent, as the east wall has not as yet been reached. The ore contained in this lode is also of a low grade, but like that found in Lode One, is well distributed throughout. At the time this development was being prosecuted this was popularly supposed to be the main lode sought, viz.: the north extension on the Mountain. Even at this time opinions differ as to its true connection with that lode, the majority ascribing the positions to be at variance when location and dip of both are considered.

The Old Company,

After prosecuting the work to the end of the present tunnel, was forced, from lack of funds, to suspend operations, as the expense necessary at that time for the reduction of ores by the common mill process then in vogue would exceed the total mill value of the ore to be treated. Before reaching the lode last described, an unexpected stratum was encountered and through which for some distance the tunnel passed. This was no less than

An Old Water Course,

Containing a large amount of river sand pebbles and huge boulders worn round and smooth by continuous action of water during an age of the past. Just when, or in what mysterious manner this old water course made its appearance between two lodes of quartz with their solid outlying formations, situated on the north side of a mountain that shows an otherwise unbroken slope at this particular point, I leave for the scientist to determine, but of its existence as stated there is no question of doubt. After the forced suspension of work which took place in 1867, efforts were made at various times to resume work, but with no success, and this mine, like many others in the district, remained in a quiescent state for a number of years, until under the acts and requirements of the U. S. mining laws, it became subject to relocation. Accordingly, in January, 1875, a relocation of the property was made under the name it now bears—the Occident. Soon after the

New Organization,

Which took place in San Francisco immediately after the relocation, the tunnel, which had become dilapidated through years of disuse, was thoroughly cleaned and placed in a condition for the inspection of the lodes. The mine has since been bonded by English capital for $50,000 and has undergone a thorough examination by E. G. Gaertner, Esq., a mining engineer and expert of your city, who has also surveyed the locations for the company for the purpose of obtaining a patent thereon.

The Superintendent, Mr. Brown, is deserving of great credit for his untiring efforts to place the mine upon a permanent working basis, and the company, cognizant of the evidences already shown, together with additional inducements that will follow when the main lode shall be reached from a depth worthy of mention below the level of the basin, are endeavoring to second his efforts toward a resumption and continuous prosecution of labor in the right direction.

THE Petaluma *Argus* of Saturday publishes the annexed: Superintendent Bean informs us that the freight and passenger business on the San Francisco and North Pacific railroad at present is fully as large as it has been at this season of the year at any time since the road was built. Considerable repairing is going on on the main line in the way of leveling and ballasting the track, and new culverts are being put in in places. The grading on the Guerneville branch is completed, and workmen are engaged in constructing bridges, trestle-work and culverts on the section between Korbel's and Guerneville, which is about two and one-half miles in length. The track will be laid as soon as the iron arrives, which was shipped from New York about two months ago. The expense of constructing the branch road has been very heavy, parts of it having cost over $75,000 per mile. The terminus will be one of the most lovely timbered districts in the State, and millions of feet of lumber will be shipped over the road within the next few years, also many thousand cords of fuel.

ARTICLES of incorporation were filed on Tuesday for the organization of the Los Angeles and San Diego railroad company. The corporation is formed for the purpose of constructing and maintaining a line of railroad and telegraph in Los Angeles and San Diego counties, the railroad to commence at the city of Los Angeles, and run through Anaheim to the city of San Diego, a distance of 140 miles. The corporation will exist for 50 years, and has the following directors: Leland Stanford, David D. Colton, Mark Hopkins, Charles Crocker and B. B. Redding. The capital stock is $5,600,000, of which each director takes 200 shares out of the 56,000 in the company, besides the 200 taken by E. H. Miller, Jr., and Nicholas T. Smith.

THE METRIC SYSTEM.—Certain persons have strenuously urged that the adoption of the international weights and measures would be a source of great inconvenience and expense to the machinists and manufacturers. The advocates of the system, having made inquiries of machinists and manufacturers in various countries of Europe, reply that the objection is one of theory and not of fact, as those who have actually tried the experiment testify. As the old machinery wore out it was replaced with the new, and a little time being taken the greatly dreaded confusion and expense were largely obviated.

SCIENTIFIC PROGRESS.

New Optical Experiments.

Mr. F. E. Nipher sends the following to *Nature:*

1. Fold a sheet of writing paper into a tube whose diameter is about three centimeters (an inch or so). Keeping both eyes open, look through the tube with one eye, and look at the hand with the other, the hand being placed close by the tube. An extraordinary phenomenon will be observed. A hole the size of the tube will appear cut through the hand, through which objects are distinctly visible. That part of the tube between the eye and hand will appear transparent, as though the hand were seen through it. This experiment is not new, but I have never seen it described. The explanation of it is quite evident.

2. Drop a blot of ink upon the palm of the hand, at the point where the hole appears to be, and again observe as before. Unless the attention be strongly concentrated upon objects seen through the tube, the ink-spot will be visible within the tube (apparently), but that part of the hand upon which it rests will be invisible, unless special attention be directed to the hand. Ordinarily the spot will appear opaque. By directing the tube upon brilliantly illumineted objects, it will, however, appear transparent, and may be made to disappear by proper effort. By concentrating the attention upon the hand, it may also be seen within the tube (especially if strongly illuminated), that part immediately surrounding the ink-spot appearing first.

3. Substitute for the hand a sheet of unruled paper, and for the ink-spot a small hole cut through the paper. The small hole will appear within the tube, distinguishing itself by its higher illumination, the paper immediately surrounding it being invisible. Many other curious experiments will suggest themselves. For example: If an ink-spot somewhat larger than the tube be observed, the lower end of the tube will appear to be blackened on the inside.

4. Look through a paper tube with one eye at green paper, and through another tube with the other eye at red paper. The paper should be illuminated by the direct solar ray. The two colors, at first vivid, are rapidly enfeebled. After half a minute transfer both eyes to either one of the papers, say red. To the eye fatigued by green, the red color is very brilliant, and the effect is the more striking on account of the simultaneous impressions now received by the two eyes.

PETROLEUM AS A LIGHTNING CONDUCTOR.—The destruction of oil by lightning this year has been remarkable, amounting to 242 412 barrels from January 1st to July 31st of this year, or rather from April to August; there were no fires from this cause in January, February or March, two in April, none in May, four in June, and five in July. It is scarcely necessary to inform our readers that the oil destroyed is in closed-top iron tanks, and the lightning, striking these, explodes the gas that collects in the space above the oil, scatters the oil and sets it on fire, and in this way often communicates to other tanks in the immediate vicinity. The theory most commonly received in the oil regions of the cause of such frequent lightning "strikes" is that the gas, which, it is well known, is continually escaping from the oil in these tanks, rises to some distance above the tanks, acts as a conductor, attracts the lightning and the damage is done. One peculiar feature in the history of these accidents is, so far as we have been able to learn, no iron-top tank has been struck, but in every case wooden-top ones. We have made special inquiries on this point, with the uniform result given. So far, attempts to protect tanks with lightning rods have been failures; at Dilks station a number of rods, supposed to be ample protection, were placed about the tanks, but they were no protection against this summer's bolts. It may be interesting to those not acquainted with the oil business to state that in case of losses occurring in this way all the oil in the pipe line to which the tanks belong is assessed pro rata for the loss; that is, the law of "general average," so well known in marine law, is applied in this case.—*Stowell's Petroleum Reporter.*

THE VERNATION IN OAK LEAVES.—The proceedings of the Academy at St. Louis contain a paper by Dr. George Engelmann on the oaks of the United States. The discovery is announced that oaks have different ways of having their leaves folded in the bud—vernation. In some the upper side of both halves of the leaves are applied together in the growing bud. In other species the upper surface of the leaf is convex—that is, the edges are turned a little down or back. Another class has the leaves revolute, or spirally rolled back toward the midrib. The discovery is of vast importance to students of quercology, as it enables them to decide whether certain forms are hybrids or not, and in other ways to fix the limit of species. Another interesting discovery of Dr. Engelmann is that those oaks that have lobed leaves when young, have more entire leaves as they become aged. On the other hand, those are the most lobed with age, which have entire leaves when young. It is a singular inversion of character. Dr. Engelmann has, also, for the first time in botanical classification, made use of the characters of old bark in oaks in determining the boundaries of sections. By the new light afforded by these discoveries, Dr. E. is enabled to make many things plain to us that have been mysterious for a long time, and he promises to do more for us in the future. He enters on the subject of hybridity in oaks, and thinks that, though often forms are mere "sports," yet there are hybrids, and he gives a list that he regards as such.

A SUBSTITUTE FOR THE METRIC SYSTEM.—At the late meeting of the British Association for the Advancement of Science Prof. Hennessy read a paper on new standards of measure and weight. Owing to the objections many persons still entertain to the metric system, the author brought forward for consideration the standard which he had proposed several years since, and advocated by the late Sir John Herschel. The standard of measure is a bronze prismatanic scale, which is the fifty-millionth part of the earth's polar axis. From this a system of weights is derived by taking a function of the standard of length as the side of a cube and finding the weight of an equal volume of distilled water. In this way a series of weights were constructed in bronze; a chain containing 50 links, each equal to the bronze standard, was also constructed, and this chain was therefore the millionth part of the earth's polar axis. The link or standard scale measures very nearly 10.0097 English inches, and its tenth part, therefore, was very little in excess of one inch. This, as well as the geometrical superiority of the axial standard over one derived from any meridian seemed to have influenced Sir John Herschel and others in preferring it to the meter. The author afterwards explained the manner in which the standard of weight was derived from that of measure. The temperature at which the latter was taken was 15 deg. Cent., or a little more than 59 deg. Fah. Geodesical measurement had, in fact, shown that the earth is a somewhat irregular spheroid, and, therefore, that its meridians are unequal, while the polar axis is necessarily unique, and corresponds to every meridian. On these ground, Prof. Hennessy thought that the new standards might be universally accepted by all nations if the objections to the meter should continue to prevent its general adoption. It was stated that the standards of measure and weight referred to are now exhibited in the Loan collection of scientific instruments at South Kensington.

COMBUSTIBLE EARTH.—While recently engaged in botanical exploration on the higher parts of the island of Reunion, M. de l'Isle heard of some caverns, the soil of which was combustible. The *Journal of Chemistry* says he visited one of them and found it a grotto about ten meters in depth and six meters broad. Entering by a small aperture you descend to the bottom by a rapid slope. The bottom is formed, more than an inch thick, of a substance of ocher-yellow color, soft to the touch, insipid, inodorous, dividing readily into very light fragments which leave yellow powder on the fingers; these are easily reduced to powder by pressure or friction. When a lighted match is applied to one of the fragments the latter burns, if dry, with a very short yellow flame, almost without smoke or smell. If a little moist it is consumed without flame, with abundant smoke, and a smell of burnt herbs. MM. Bureau and Poisson have studied this interesting substance with the microscope, and found it entirely composed of small bodies which must be spores or grains of pollen. After various comparisons they were struck with their resemblance to the spores of *Polypodeæ* in form and reticulation and color; and they found among the *Polypodeæ* of Reunion, sent home by M. de l'Isle, one whose spores are almost identical with the small bodies in question. From the cohesion of the spores, and the slit found in most of them, by which the contents have escaped, it is inferred that this accumulation has been caused by water and not by wind. It is probably the first time that a rock has been found of such composition.

A NEW VIEW OF GLACIAL ACTION.—Dr. Joseph Worster, of New York city, in a paper read at the August meeting of the American society for the advancement of science, at Buffalo, N. Y., proposes a new and very simple theory to account for the ice-fields supposed by Professor Agassiz to have covered the whole area of Brazil during the glacial period. His view is that at a very remote date the whole surface of central South America was a high table-land elevated more than 10,000 feet above the sea level. As this would be within the ascertained region of perpetual frost, such an elevated plateau, receiving and condensing the evaporation of the two contiguous oceans, and converting it into ice, would, in the course of ages, become loaded to a tremendous depth. This vast deposit, by constant pressure, would finally cause a gradual sinking of the table upon which it rested, to restore the disturbed equilibrium of gravitation; and if it may be supposed that the wave of depression commenced on the east coast and terminated on the west, the Andes range would be upheaved at the final termination of the wave. This view is in harmony with the ascertained comparative recency of the Andes as a mountain range, and brings a problem that has resulted in many crude speculations—the problem of the ice period—within the scope of very simple and well ascertained laws of meteorology. For example, the ice traces of North America are susceptible of explanation on the same hypothesis.

MECHANICAL PROGRESS.

Welding Iron.

In a paper read before the recent meeting of the British Iron and Steel Institute, Richard Howson endeavors to disprove a common misapprehension that a bar or plate made out of several pieces welded together is not so good as one made out of a bloom formed from a single puddled ball. We shall not follow him through the discussion of this point, but select a few paragraphs to show what he regards as the philosophy of a weld and how a good weld is possessed of great strength. We quote as follows:

There is an impending change in the manufacture of finished iron, as it is admitted on all hands that machinery will shortly entirely supersede hand labor in the puddling process. Along with this conviction there is a current impression that iron will have to be puddled in large masses, and not divided into small balls as in the ordinary practices—that the system of piling must be abolished—that piling means welding and that welding is a mistake—that homogeneity is the thing to be aimed at. Now, when the matter is fairly considered, it becomes evident that iron rolled from a puddled ball is in no case homogeneous, and that the larger the ball the more heterogeneous it is likely to be. The term homogeneous can only be strictly applied to iron which has been melted—such as the mild steel which is made in Sheffield, containing a low percentage of carbon. When a specimen of material of this class is treated with acid, the surface being first polished, there is usually no appearance of grain, and the action of the acid is slow. On the other hand, a piece of ordinary rolled bar, subjected to the same treatment, shows a fiber which stands out like whipcord. Even the best cable iron exhibits the same structure. Its tensile strength is nevertheless little, if any, inferior to that of a really homogeneous bar. If we examine the structure of a puddled ball by cutting it in two and polishing the section, we find it to consist of an immense number of metallic nuclei interlaced with cinder or with cavities which once contained cinder. When such a ball is compressed under a hammer or squeezer, it is as essentially a process of welding as is that of a mass of screp iron. Such being the case, the more perfectly the cinder is expelled the nearer we get to homogeneity. The conditions, however, are in all cases unfavorable to the complete expulsion of the cinder from the center of a puddled ball, and it is evident that the larger it is the more are the difficulties increased.

There is a good deal of misconception about the real nature of the process of welding, and it is well to inquire what it is, and what means we have at our command for securing efficiency. When we bend a piece of iron, or stretch, twist or compress it, we experience resistance to motion. The molecules of the mass will not change their relative positions except by the exertion of a considerable amount of force. If the metal were rendered gaseous, the atoms become perfectly mobile; when it is liquid the state is neutral; and when it is viscous the attraction predominates. It is this attraction which affects the weld. When two globules of mercury, immersed in liquid, are caused to approach, a slight concussion causes them to unite, and the liquid between the two is perfectly expelled. This is an example of a good weld. A smith of ordinary skill is able to unite two bars of iron so firmly as to give way in any other part rather than the joint, but to do this he has to take the proper precautions. He has to see that the iron is sufficiently heated, that the surfaces are protected from oxidation by means of a flux, and that the flux is, as much as possible, expelled in the act of closing up the ends. The natural flux is, of course, the oxide of iron which forms on the surface, but this is of an infusible character, and he therefore assists its fusibility by the addition of sand. A basic silicate is thus formed, which flows over the surface to protect it from further oxidation, and to be expelled in its turn when the union takes place. The essential properties required by a flux are—a readiness to combine with the oxide of iron and fluidity at moderate temperatures when so combined. There are, of course, better fluxes than silica; but sand is cheap, and it answers every purpose, provided it is used with judgment, and not in too large a proportion. Its influence is felt from the puddled ball to the finished bar, in every stage becoming constantly more and more extenuated, and so permitting closer metallic contact. If we trace its course in some processes, we meet with extraordinary results. An armor-plate, made at the Atlas works, Sheffield, was 22 inches thick, and weighed 31 tons. It was made from puddled balls of the ordinary size, rolled into puddled bars. These were cut, piled and rerolled, and the process was repeated to the extent of doubling six times. The entire mass thus comes to consist of no less than 11,448 distinct laminæ, and each inch contains 528 such laminæ. The area over which the cinder contained in the first pile is spread by such a process becomes enormous, and the metallic adhesion is proportionally perfect. A piece of this plate, when polished and treated with acid, showed a near approach to homogeneity, and affords a good proof of the efficiency of welding.

The 100-Ton Gun.

We have formerly made note of this great engine of war. There now come specifications which will enable the reader to obtain a more definite idea of the style of metal working which is involved in its construction. *Iron* says: As already intimated, the 100-ton gun is on the coil principle. Without drawings it is difficult to give a clear description of this weapon. We may, however, state generally that it consists of an inner steel tube enveloped by successive layers of wrought iron coiled cylinders, the total number of coils being 10, 6 or which refer directly to the rear half of the gun, the remaining 4 being placed singly end to end around the barrel of the gun from the front of the shot chamber and trunnions. The steel tube for a length of 13 feet from the rear end of the gun is surrounded by a coil 7 inches in thickness. Outside this is a coil 8 inches thick for a length of 9 feet 9 inches; then comes the trunnion coil, 11 inches thick and extending 2 feet forwards, beyond which again is a tapered coil, having an average thickness of 6¼ inches, and extending forward 3 feet 3 inches more. Outside the second long coil is another to the rear 9 inches thick and 5 feet 6 inches long, which reaches to the trunnion coil. Assuming that the trunnion coil terminates the powder chamber, or, to be exact, that portion of the bore assigned to the powder charge and projectile, the breech portion may be said to be enveloped in 3 coils. The 4 single coils commence midway of the length of the gun and terminate at the muzzle. They taper from 10 inches thick at the point first indicated to 2¾ inches at the point last named. All the coils interlock and overlap each other to a greater or less extent at their junctions. The extreme length of the gun is 32 feet 10¼ inches; the greatest diameter at the breech is 6 feet 5 inches; the diameter at the trunnion coil is 5 feet 4½ inches; the diameter at the point where the single coils commence is 3 feet 9 inches; the muzzle diameter being 2 feet 5 inches. The steel tube is 31 feet 3 inches long, and has a thickness of 6 inches in the powder chamber, diminishing to 3½ inches at the muzzle. The bore is 30 feet 6 inches in length and 17 inches in diameter. The gun is rifled on a form of polygroove rifling recently introduced for heavy muzzle-loading guns by Sir William Armstrong & Co., and the system has already been tested in several such guns. In this system the projectiles are not studded, but each has a copper ring or gas check affixed to its base which approximately fits the grooves, and, being expanded by the explosion of the powder, absolutely fills the grooves. By this means the gauge of the gas beyond the base of shot is entirely arrested, and at the same time rotation is imparted to the projectile. The copper ring has the further effect of centering the projectile at the rear, while in front the windage is reduced to an inappreciable amount by a copper band about 2 inches broad. The twist of the rifling is an uniformly increasing spiral, terminating at the muzzle in one turn in 50 calibers.

The precise powder charge has not yet been determined, nor will it be until the gun has been put through a course of experimental firing at Spezzia. It is probable, however, that it will be nearly 400 pounds of powder made with 1.5 inch cubes. The weight of the proof projectile will be 2,500 pounds, and that of the service shell 2,000 pounds. The powder charge will be ignited through an axial or rear vent, and will be exploded upon the central ignition system. It consists in a means of igniting the powder at a point as nearly as possible midway of the length and depth of the cartridge, and, therefore, in its center. This system has formed an especial study with Sir William Armstrong's firm and has been developed into successful practice by Captain A. Noble, F. R. S. By its means, as far as has been ascertained, the powder is uniformly and therefore usefully burnt, the whole of its resulting gases being made available upon the shot before it leaves the gun, no energy being uselessly expended upon the air after the exit of the shot. In other words, it renders the perfect combustion of the powder within the gun a possibility.

The 100-ton gun will be mounted on a special carriage fitted with hydraulic gear for maneuvering and for taking up the recoil after firing. The loading and sponging of the weapon will also be performed by hydraulic agency, the whole system having been carefully designed by Mr. G. Rendel at Elswick.

In the absence of experiments it would be idle to speculate on the probable performances of the 100-ton gun. There are so many conditions which modify results that it would be waste of time to do more than state what the theoretical work of the weapon is. What is anticipated in practice is that the gun will give a duty of not less than 30,000 foot-tons—that is, that the dynamic effect will be equal to lifting 30,000 tons 1 foot high, or 1 ton 6 miles high.

NOVEL MODE OF STRENGTHENING CAST-IRON.—The president, Mr. R. M. Daucroft, and members of the civil and mechanical engineers' society, when visiting Kirkaldy's testing and experimental works the other day, were shown a cast-iron bar which had been sent to him to test as a sample that had been treated with mysterious chemical mixtures, which were said to increase its tensile strength over 50 per cent. But as Mr. Kirkaldy's rule is always to break the specimen, or else his machine, he found it to contain, upon being fractured, a center core of wrought iron about two inches in diameter, and six smaller ones of the same metal spaced around it. He thus exposed the secret.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to Sept. 28.		1 W'k to Oct. 5.		1 W'k to Oct. 12.		1 W'k to Oct. 19.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	....	....
Advance	....	....	....	....	....	....	....	....
Alpha	42½	42½	47	44¾	46⅜	41	45⅜	42
Alta	2¾	2½	2⅜	....	....	....	2	1¾
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	....	....	....	....	1	....	....	....
Andes	2	....	2¼	2	2	1¾	2¼	1¾
Alps	87½o	75c	75c	....	....	....	5c	....
Amazon	8 c	75c	....	....	....	....	....	....
Balt'm'e Con	2¼	....	3⅛	2½	3¾	2¼	2½	3¾
Belcher	21½	21	22¼	21½	21	16⅜	19¾	18½
Belmont	2⅜	2	2¼	2	2	2	2	....
Beet & Bel	47	44	48⅜	46½	46	39¾	45½	42
Buckeye	....	....	....	....	....	....	....	....
Bullion	35½	31½	38	35	35½	33¾	31⅝	31
Caledonia	10	8¾	10¾	9⅞	9⅞	8⅞	11	9¼
California	61	59	62½	61½	61	58	59⅜	51½
Challenge	4¼	....	....	....	3½	....	....	....
Chollar-Potsi	85	63	89	81½	79½	71	83	78½
Confidence	18	15½	17	16¾	15	13¾	16⅛	15¼
Con Imperial	4¾	4½	4.40	4.60	4½	3¾	4.05	3.95
Con Virginia	55½	51	57	54⅝	51¾	46¾	51¼	47⅜
Crown Point	13	11¾	12	11¾	11⅝	10½	13	11⅜
Coco Con	25o	15c	60	20	....	....	....	....
Daney	....	....	....	....	....	....	....	....
Dayton	....	....	....	....	....	....	4½	....
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka(G V)	....	....	....	....	....	....	....	....
Enreka Con	13½	13	15¼	13½	17¾	12¾	14¼	13½
Exchequer	15	12¾	15½	14½	14¼	13¼	14¾	14
Enropa	....	....	....	....	....	....	....	....
Gila	60c	....	70c	....	75c	50c	50c	....
Globe Con	....	....	....	....	....	....	....	....
Golden Char	1¼	1⅛	1¼	....	1⅛	....	1⅛	....
Gould & Car	15¼	14¼	15	14¾	14¾	13	15	13¾
Hale & Nor	12	10¾	11¾	10¾	9½	7⅞	8¾	7½
Ida Elmore	....	....	....	....	....	....	....	....
Jefferson	....	....	....	....	....	....	50c	....
Julia	7⅞	7	7¼	6⅞	6¾	5½	7⅜	6⅞
Justice	18¾	17½	19¾	18	18½	16⅜	20⅞	17½
Jackson	3¾	....	4	....	3⅞	3⅝	4⅛	....
K K Con	....	....	2¼	....	3	3	3	2½
Kentuck	12	10¾	11¾	....	11¾	10½	11¾	11
Knickerb'k'r	....	....	....	....	50c	....	50c	....
Kossuth	1¾	1½	1¾	1½	2	1¾	2⅛	....
Lady Bryan	40c	27½c	30o	25c	30c	25c	75o	2°c
Lady Wash	3	....	3	....	3	2	3	....
Leo	....	....	....	....	....	....	....	....
Leopard	11¾	9¾	10¾	6⅝	8¾	8¼	8¾	6
Leviathan	87½o	75c	85c	80o	90c	80c	....	....
Mahoney	....	....	....	....	....	....	....	....
Mansfield	....	....	....	....	....	....	20c	....
Mesdow V'y	75c	....	62½o	50c	25c	....	27½o	20c
Mexican	33⅜	28½	30¾	27½	26	23½	28	25¼
Midas	....	....	....	....	....	....	....	....
Mine	....	....	....	....	20c	....	20c	....
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	37½o	....	....	....
New York	70c	65c	1½	1	1½	1	1½	....
Niagara	....	....	....	....	....	....	15c	10o
Northn Belle	24¼	22¾	25	18¾	21	19	25	20¾
New Coso	3	2¾	3¼	2⅞	....	....	2⅞	2¾
Occidental	3⅛	3	3	2⅞	2⅞	....	....	....
Ophir	59	55¾	56¼	51	47	40¼	55	43
Or Grant Hill	....	....	....	....	....	....	....	....
Overman	82	74½	81	77½	78¼	74	85	80
Pacific	....	....	....	....	....	....	....	....
Phil Sheridn	....	....	2⅜	....	2	....	3½	1⅝
Ploche	....	....	3 o	....	....	....	....	....
Poorman	1	75c	2	75c	20c	....	27½c	25o
Prospect	2	1½	....	....	1½	87½c	1	90c
Prnssian	....	....	....	....	....	....	....	....
Ray & Ely	6	5	6	....	5¾	5¼	5½	....
Rock Island	1⅝	1¼	1¾	1⅝	....	....	....	....
Rya Patch	....	....	....	....	....	....	....	....
Savage	19	17½	18¼	17½	16	12	16	13
Seg Belcher	79	75	....	....	....	....	75	70
Sierra Nev'da	14⅜	12⅞	14	11¾	11⅞	10	13¼	11⅞
Silver Hill	9	8	8⅞	8½	7⅜	7½	9¾	7½
Sth Chariot	....	....	....	....	....	....	....	....
Succor	....	....	20c	....	25o	10c	15c	....
Union Con	14⅜	12½	13¾	12½	11¾	10¼	13⅝	12¼
Utah	20	19	19	18	19	14	19½	16½
Wells-Fargo	20c	....	....	....	20c	15c	20c	15c
Woodville	1¼	1	1½	1	1⅜	1⅛	1½	1¼
Yel'w Jacket	26	23½	26½	25	24½	21	25¼	23⅜

Sales at S. F. Stock Exchange.

FRIDAY, A. M., OCT. 13.

125 Alta.....13¼@13
105 Andes.....1¾@1⅞
400 Alpha.....45½@45
100 Bullion.....3¼@3¾
60 Beet & Bel.....44
115 Belcher.....19@19½
1215 Baltimors Con...2½@2⅝
1830 Caledonia.....9⅜@9⅝
50 Challenge.....3
100 Brown Point...11¾@11¾
50 Confidence.....15¾
285 Con Imperial.....3 95
2755 California.....59@59⅛
50 Chollar.....19
500 Con Virginia...49@49½
210 Exchequer.....14
430 Gould & Curry.....14¼
610 Hale & Nor.....8¾
401 Julia.....7@7⅛
1020 Justice.....17¾@17⅞
480 Knsauth.....2
65 Kentuck.....1
725 Lady Bryan.....25@20c
100 Lady Wash.....3
765 Mexican.....26½@26⅞
100 Morning Star.....4¼
700 New York.....1⅛@1¼
70 North Con Vir...1⅜@1¾
1525 Ophir.....43¾@45¼
289 Overman.....81@81¼
445 Phil Sheridan...1⅛@1⅜
790 Prospect.....90@95c
540 Savage.....18¾@19
380 Sier Nevada...12@12½
200 S Hill.....7¼@7½
10 Sea Belcher.....70
200 Trojan.....60c
490 Union.....12¾@13
100 Utah.....16¾@17
10 Woodville.....1⅜
250 West Belcher...22¾@24
1110 Yellow Jacket.....24

AFTERNOON SESSION.

60 Bullion.....36
50 Best & Belcher...42@42½
100 Belmont.....2¾
750 Caledonia.....9⅝
315 California...58⅞@59⅜
530 Con Virginia.....48@49
65 Eureka Con.....14¾@14¾
280 Gen Thomas.....1⅞
600 Genesee Valley.....2.15
375 Golden Chariot.....1¾
10 Hale & Nor.....8¾
500 Bussey.....45c
40 Jackson.....4
60 Julia.....7⅞
100 Jefferson.....50c
275 Justice.....17¾@18⅜
20 K K Con.....2¾
550 Leopard.....8
365 Mexican.....25½@25⅞
900 Manhattan.....15½@15¾
800 Modoc.....5@4¾
520 Northern Belle...22¾@23
45 New Coso.....2¾@2¾
160 Ophir.....43@43⅝
100 Overman.....80½@80
100 Poorman.....27½c
20 Raymond & Ely...5¾
270 Savage.....19½@13⅝
255 Sierra Nevada...12@11⅞
180 Union.....12¾
10 Virtue.....2
110 Yellow Jacket.....23¾

SATURDAY, A. M., OCT. 14.

275 Alpha.....45½@46½
120 Best & Belcher.....42
25 Belcher.....19½
250 Baltimore Con...2⅜@2⅝
10 Bullion.....3
10 Caledonia.....9½
1003 California.....59½@59
600 Crown Point...11¾@12½
2165 Con Virginia...48½@48¾
4725 Con Imperial.....4
345 Confidence.....16@15½
450 Exchequer.....14¾@14¾
50 Eureka Con.....13¾
2 0 Gould & Curry...14@13¾
485 Hale & Nor.....8¼
5 0 Julia.....7¾@7⅜
1805 Justice.....16¾@15½
480 Kentuck.....1
100 Lady Bryan...22½@20c
785 Mexican.....26@26½
50 Meadow Valley.....20c
930 Ophir.....43¾@44¼
40 Overman.....81½@82
1155 Savage.....13¾@13¼
200 Sierra Nevada...12@12¼
120 Seg Belcher.....75
25 Sil Hill.....8
10 Utah.....17⅜@18
675 Un Con.....12½@13
1010 Yellow Jacket...24¾@24

MONDAY, A. M., OCT. 16.

510 Alpha.....46¾@46
150 Andes.....2@2½
680 Baltimore Con...2½@3⅛
165 Belcher.....19¾
175 Best & Belcher.....44¾@45
100 California.....58@58½
735 C Point.....12¾@13
1380 Con Virginia.....48@49⅞
1200 Con Imperial.....4@4.05
315 Caledonia.....10¾@10⅝
20 Chollar.....20
50 Confidence.....16
40 Exchequer.....14¼
120 Gould & Curry.....14¼@14¾
730 Hale & Nor.....8¾@8¾
150 Justice.....23¾@24
845 Julia.....7⅞@7⅝
200 Kossuth.....2
625 Lady Bryan.....75@22½c
755 Mexican.....26¾
100 Mint.....20c
300 Niagara.....10c
100 New York.....1⅛
1250 Ophir.....46¾@47
100 Overman.....82½@84
515 Prospect.....90c@
150 Phil Sheridan.....3
600 Savage.....14¼@14
575 Sierra Nevada...12½@12¾
650 Trojan.....15c
600 Unico.....13@12¾
160 Utah.....19¼@19½
10 Virginia.....2¾
400 Wells-Fargo.....15@15c
195 Woodville.....1¾
200 West Belcher.....2½
1680 Yellow Jacket...24½@25

AFTERNOON SESSION.

50 Belmont.....2
15 Belcher.....19¼
150 Baltimore.....2⅝@2¾
40 Best & Belcher.....44¾
190 Crown Point...12¾@12½
465 California.....57½@57⅝
235 Con Virginia...49@48¾
110 Caledonia.....10¾
200 Eureka Con.....13¾@14
165 Exchequer.....14½
30 Gila.....50c
20 Gould & Curry.....14¾
50 Genesee Valley.....2.20
1160 Hussey.....45c
470 Hale & Nor.....8¾
100 Jackson.....4¼
285 Justice.....24
210 Julia.....7⅜
5 K K Con.....3
590 Leopard.....8@8½
150 Lady Bryan.....40c
190 Mexican.....26½@26¾
100 Meadow Valley.....20c
880 Modoc.....6@5½
505 Northern Belle...23¼@23
590 New Coso.....2¾@2¾
880 Ophir.....43¾@44
600 Poorman.....25@27½c
50 Raymond & Ely.....5½
1 0 Sierra Nevada...12½@12¾
260 Union.....13@12¾
125 Yellow Jacket...24½@24½

TUESDAY, A.M., OCT. 17.

260 Alpha.....46@46¼
150 Bullion.....37½@37
460 Belcher.....19¼@19¾
550 Best & Belcher.....44½@44¾
800 Baltimore Con...2¾@2¾
1535 Caledonia.....10¾@11
2355 Con Virginia.....50¼@50¾
330 Crown Point...12¾@12¾
20 Chollar.....83
835 California.....58@58½
2800 Con Imperial.....4@4.05
20 Confidence.....16¼
720 Exchequer.....14½@14¾
760 Gould & Curry...14¾@15
1430 Hale & Nor.....8¾@8¾
2050 Justice.....24¾@2 5⅛
380 Julia.....7½@7⅜
30 Kentuck.....11¾
625 Lady Bryan.....65@10c
880 Mexican.....28@27¾
2200 New Coso.....3@2¾
520 Overman.....85@84
1095 Ophir.....43¾@43⅝
380 Phil Sheridan.....3¾@3
720 Savage.....15¾@14¾
865 Sierra Nevada...13@13¼
250 Succor.....15c
1115 Union.....13¾@13½
20 Utah.....19
435 Yellow Jacket...25¾@25

AFTERNOON SESSION.

440 Andes.....2⅝@2¾
110 Alpha.....4¾@46⅞
270 Belmont.....2¼
945 Con Imperial.....4⅞@4
50 Crown Point.....12½
160 California.....58⅝@58⅞
430 Con Virginia.....50@49⅞
15 Chollar.....82@82½
110 Caledonia.....10⅞
290 Eureka Con.....13⅝@13¾
260 Florida.....1¼
100 Gila Chart.....1⅞
80 Genesee Valley.....2.20
150 Gila.....50c
90 Gould & Curry.....14¾@14⅞
680 Gen Thomps.....1⅝@1
850 Hale & Norcross.....8½@8⅝
1125 Hussey.....45c
75 Jackson.....4⅜
165 Julia.....7⅛
1170 Justice.....26¼@26⅝
100 Kentuck.....11¾
450 Kossuth.....2⅝@2
440 Leopard.....8¾@8¾
50 Lady Wash.....3
3000 Lady Bryan.....62½c
500 Mexican.....27½@27⅝
330 Manhattan.....16@15¾
100 Meadow Valley.....21½c
250 Modoc.....5¾@5⅝
2000 Occidental Con.....2¾
950 Niagara.....15@16c
240 N Con Vir.....1⅞@1¾
85 North'n Belle.....22⅝
550 Ophir.....43¾@44
70 Overman.....84¾@85
1100 Poorman.....27½ 25c
125 Prospect.....95c@1
70 Ray & Ely.....5½
50 S Barcelona.....1
285 Sierra Nevada...12⅞@13⅛
600 Savage.....15@15½
400 Trojan.....60c
15 Utah.....19

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., OCT. 12.

270 Alpha.....44@44½
310 Bullion.....35c@35c
290 Best & Belcher.42¾@43½
115 Belcher.....18⅞@19
280 Baltimore.....2½@2⅝
290 Chollar.....17@18¾
2200 Con Imperial...3.85@3.90
130 Crown Point.....11¾
1100 Con Virginia.....48¾@49
965 California.....59@59⅝
585 Caledonia.....9½@9⅝
40 Challenge.....3
1115 Exchequer.....13¾@13⅞
120 Gould & Curry...13¾@14
620 Hale & Nor.....8@8¼
425 Julia.....6½@6⅝
370 Justice.....17⅜@17¾
45 Kennuck.....10¾
475 Kossuth.....1¾@2
280 Lady B.....26@27½c
1 85 Mexican.....25½@26
480 Manhattan.....15¾
500 New York.....1
335 N Con Vir.....1¼@1½
215 Overman.....77½@78
1760 Ophir.....42¾@44½
750 Savage.....12¾ 12½
180 Silver Hill.....7½
515 Sierra Nevada...11½@11¾
700 Succor.....10@12½c
5 25 Utah.....18½
640 Union.....11¾@11¾
100 Woodville.....1¼
950 Yellow Jacket...22¾@22¾

AFTERNOON SESSION.

70 Alpha.....43¾@43¾
210 Belmont.....2⅛
35 Belcher.....18½@19
20 Bullion.....34
130 Best & Bel.....4@0⅞
1200 Coo Virginia...48¾@47⅞
935 California.....59¾@58¾
180 Caledonia.....9¾@9¾
1215 Con Imperial...3.70@3.85
645 Eureka Con.....14@13¾
90 Exchequer.....13⅝@13⅝
210 Gould & Curry...14¾@14¾
200 Grass Valley...2.15@2.10
650 Hussey.....45@50c
50 Jefferson.....15c
50 Justice.....17⅝@17⅞
1120 Leopard.....8@7¾
50 Meadow Valley.....25c
145 Manhattan.....15¾@15⅝
260 Modoo.....3½@
220 Mexican.....28@27¾
470 Northern Belle.....22¾24
1100 Newark.....15c
100 Overman.....75
1390 Ophir.....43@43¾
300 Poorman.....30c@
175 Sierra Nevada.....11⅞
205 Savage.....12¾@12¼
405 Union.....12¾@12⅝
810 Yellow Jacket...23¾@23

AFTERNOON SESSION.

200 Alpha.....43¾
310 Alps.....50c
100 Belmont.....2
220 Best & Belcher...45@45½
40 Chollar.....19
240 Caledonia.....10⅜@10⅝
1135 California.....58¾@58¾
140 Con Virginia...50¾@50⅝
280 Eureka Con.....13¾@13½
1175 Gila.....60@62½c
20 Golden Chariot.....35c
100 Gen Thomas.....1⅝
503 Geddes & Bertram...1¾
180 Genesee Val...2.15@2.20
600 Hnsse'.....40c
40 Jackson.....4⅜@4¾
255 Julia.....7⅜@7⅝
135 Kentuck.....11¾@11⅞
755 Leopard.....8¾@8
30 Meadow Valley.....20c
30 Manhattan.....16
150 Modoc.....5⅜@5½
585 Mexican.....27½@27¾
570 Sierra Nevada...12¾@13
16 Savage.....14¾
50 Tybo.....1¾
110 Yellow Jacket...24¾@24

Pacific Board—Latest Sales.

WED'SDAY, A. M., OCT. 13.

195 Andes.....2¼
1500 Alta.....2⅛@2¼
100 Atlantic.....2¾
120 Best & Bel.....44½@44¾
10 Belcher.....18¾
25 Baltimore.....2¾
2000 City of Dost.....2½
35 Chollar.....80@80½
600 Con Imperial.....4@3
345 Con Virginia.....50@49¾
115 California.....58⅜
50 Exchequer.....14
30 Gould & Curry.....14¾
50 Gen Thomas.....1⅝@1½
145 Hale & Nor.....8¼@8⅜
340 Julia.....7⅛@7⅜
570 Justice.....25@24¾
100 Knicker.....50c
100 Lady Bryan.....20c
100 Leviathan.....3
270 Mexican.....27¾@27½
640 Ophir.....43¾@43¾
100 Prospect.....51½c
210 Rock Island.....1¾@1⅝
115 Sierra Nevada...12¼@12¾
190 Savage.....14¾@13½
200 Twin Peaks.....1.20
200 Trenton.....83½@8
30 Woodville.....1¾
200 Yellow Jacket...24½@24¾

AFTERNOON SESSION.

30 Alpha.....42½@42⅝
10 Belcher.....18¾
40 Con Imperial.....3.95
40 Chollar.....80@81
30 California.....57⅞@57⅞
5 Exchequer.....14
90 Eureka Con.....13¾
240 Genesee Valley...2⅛@2.10
200 Gt Eastern.....2
70 Gen Thomas...1½@1.95
10 Hale & Norcross.....8½
100 Hussey.....45@46c
30 Julia.....7⅜
100 Lady Bryan.....8½@8¾
100 Mexican.....27½
55 Northern Belle...22@21¾
10 N Coso.....2¾
653 Ophir.....49½@51
300 Phil Sheridan.....1¾
100 Poorman.....240
445 Union Con.....13@13½
50 Virginia.....2⅝
100 Wells Fargo.....19c
235 Woodville.....1½@1¾
250 Yellow Jacket...25¼@25

WED'NDAY, A. M., OCT. 18.

740 Alpha.....42@43
50 Andes.....2¼
425 Baltimore Con...2¾@2½
125 Belcher.....8¾@18
80 Best & Belcher.44¾@44¾
665 Con Virginia...49⅜@50⅛
495 Crown Point.....12½
40 Chollar.....60@80½
745 California.....58⅜@58⅝
1430 Con Imperial.....3.85@4
20 Confidence.....16
9 5 Caledonia.....10½@10⅝
700 Exchequer.....14@14¼
100 Florida.....New
30 G & Curry.....14¾@14¾
255 Hale & Nor.....8½@8⅜
245 Julia.....7⅛@7¼
720 Justice.....25¼@25¾
50 Kentuck.....12
25 Knickerbocker.....50o
220 Lady Bryan.....60@62½c
750 Monumental.....20c
420 Mexican.....27¾@27⅝
100 Maryland.....1½
20 Morning Star.....4¼
200 New York.....1⅛
50 North Con Vir.....1¾
150 Niagara.....15@16c
1020 Ophir.....48@47¾
420 Overman.....82@83
350 Phil Sheridan .....3@3½
100 Prospect.....90c
300 Savage.....14¾@14¾
300 Sierra Nevada...12¾@13
100 Silver Hill.....8¾
1020 Union Con.....12¾@12¾
200 Yellow Jacket...24¾@24½

AFTERNOON SESSION.

390 Alpha.....43½@44½
200 Alps.....50c
125 Belcher.....18⅜@19
210 Exchequer.....14¼
360 Caledonia.....10⅛@10¼
60 Crown Point.....12¾
395 Con Virginia...49⅝@49¾
100 Con Imperial.3.85@3.97½
25 Chollar.....80
399 California.....57⅝@58
130 Eureka Con.....13⅞@13¾
210 Exchequer.....14¼
110 Gould & Curry.....14¾
50 Gen Thomas.....1 87½o
100 Gila.....55o
300 Gold Chariot.....1
330 Hale & Nor.....8¼@8⅜
760 Hussey.....40c
170 Julia.....7⅛@7⅜
600 Justice.....24¾@24⅝
110 Kentuck.....11¾
50 Leopard.....8½@8⅝
475 Mexican.....27½@27¾
300 Mansfield.....200
435 Manhattan.....15⅝@16⅛
50 Northern Belle...24¼@25
325 New Coso.....2⅞@2⅞
1470 Ophir.....51¾@44¾
760 Poorman.....2 ⅜@2⅝
50 Ray & Ely.....5¾
30 Sierra Nevada...12½@12⅝
480 Savage.....14½@14⅜
330 Union Con.....12¾@12⅝
200 Yellow Jacket...24@24⅜

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Advance M Co	Cal	B Lingley	309 California st	Annual	Oct 26
Bullion Con M Co	Nev	W Easton	419 California st	Annual	Oct 24
Cascade Blue Gravel M Co		J M Buffington	311 California st	Special	Nov 20
Occidental R, R & M Co	Cal	A C Hammond	401 California st	Special	Oct 24

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	C D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	419 California st	1 00	April 10
Black Boar Quartz	Cal	W L Oliver	316 California st	40	Oct 11
California M Co	Washoe	C P Gordon	Nevada Block	2 00	Oct 16
Consolidated Amador	Cal	F B Latham	426 California st	25	Oct 9
Con Gold Hill Quartz M Co	Washoe	R Wegener	414 California st	25	April 17
Cons Virginia M Co	Washoe	A W Havens	Nevada Block	2 00	Oct 11
Comsnche M & M Co	Nev	W W Traylor	Nevada Block	25	Sept 25
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	2 00	April 11
Empire M Co	Sierra Co Cal	Chas Collishonn		50	Sept 26
Empire M & M Co	Washoe	W E Dean	414 California st	25	April 17
Imperial S M Co	Washoe	W E Dean	414 California st	25	April 17
Leopard M Co	Nev	R H Brown	426 California st	50	Oct 16
Manhattan S M Co	Nev	J Crockett	419 California st	1 00	Oct 19
Northern Belle M & M Co	Nev	W Willis	309 Montgomery st	1 00	Oct 15
St Patrick M Co	Cal	D F Verdenal	409 California st	30	Mar 10
West Comstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Feb 24

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Deling'nt.	Sale.	Secretary. Place of Business.
Andes S M Co	Washoe	7 25 Sep 15	Oct 21	Nov 8	M Landers 307 Montgomery st
Baltimore Con M Co	Washoe	12 1 00 Oct 6	Nov 8	Nov 27	C A Sankey 331 Montgomery st
Belmont M Co	Nev	9 50 Sep 18	Oct 24	Nov 21	W H McClintock 419 California st
Bullion M Co	Washoe	1 2 50 Sep 22	Oct 23	Nov 13	J S Kennedy 419 California st
Cherry Creek M Co	Nev	7 30 Oct 3	Nov 10	Dec 6	D F Verdenal 409 California st
Coso Con M Co	Cal	2 15 Aug 30	Oct 7	Oct 28	R H Brown 426 California st
Dardanelles M Co	Washoe	4 1 00 Sep 5	Oct 6	Oct 28	W S Duval 402 Montgomery st
Dayton G & S M Co	Nev	5 1 00 Sept 8	Oct 13	Nov 3	W E Dean 419 California st
Equitable Tunnel & M Co	Utah	13 20 Sept 7	Oct 12	Nov 1	C S Healey Merchants' Ex
Exchequer M Co	Washoe	11 *1 00 Sep 23	Oct 25	Nov 15	J S Kennedy 419 California st
Geddes & Bertrand M & M Co	Nev	1 50 July 24	Sept 23	Oct 23	J A Vance Stevenson's Bldg
Hale & Norcross S M Co	Washoe	52 1 00 Oct 10	Nov 14	Dec 5	J F Lighiner Nevada Block
Insurance M Co	Washoe	3 25 Aug 30	Oct 2	Oct 24	M Landers 309 Montgomery st
Jefferson S M Co	Nev	2 10 Oct 11	Nov 18	Dec 11	C A Sankey 331 Montgomery st
Julia Consls M Co	Washoe	1 1 00 Sept 11	Oct 16	Nov 6	A Noel 419 California st
Julia G & S M Co	Washoe	23 3 00 Sept 11	Oct 16	Nov 6	A Noel 419 California st
Justice M Co	Washoe	19 5 00 Sep 14	Oct 18	Nov 7	J S Kennedy 419 California st
Lady Bryan M Co	Nev	13 50 Sep 15	Oct 17	Nov 7	W H McClintock 419 California st
Mariposa Land & M Co	Nev	7 1 00 Sept 7	Oct 9	Oct 30	L L Leavitt 309 Montgomery st
Marlosa M Co	Barcelona, Nev	1 10 Sept 7	Oct 11	Nov 1	J P Moore 426 California st
Meadow Valley M Co	Ely Dist	13 75 Sep 23	Nov 6	Dec 4	T W Collahn 418 California st
Mexican G & S M Co	Washoe	2 50 Sep 5	Oct 11	Oct 31	L McCoy 419 California st
Mint M Co	Washoe	15 15 Oct 12	Nov 15	Dec 7	D A Jennings 401 California st
Mitchell G & S M Co		1 10 Sept 7	Oct 28	Nov 18	A C Hammond 401 California st
New York M Co	Washoe	10 25 Aug 29	Oct 2	Oct 21	D L Thomas 419 California st
Nisgara M Co	Washoe	3 25 Oct 3	Nov 4	Nov 24	W R Townsend 309 Montgomery st
North Carson M Co	Nev	5 10 Oct 3	Nov 6	Nov 27	W A Van Bokkelen 320 Sansome st
North Con Virginia	Washoe	5 25 Sep 21	Oct 25	Nov 14	J Maguire 419 California st
Pacific M Co	Washoe	1 20 Sept 11	Oct 14	Nov 3	J W Clark 418 California st
Panther M Co	Nev	3 25 Oct 4	Nov 8	Dec 5	F Swift 419 California st
Ploche S M Co	Ely Dist Nev	14 50 Oct 5	Nov 8	Dec 1	F V Smith 419 California st
Prospect M Co	Washoe	2 50 Sep 21	Oct 31	Nov 17	J P Moore 426 California st
Senator S M Co	Washoe	14 50 Sep 19	Oct 24	Nov 13	J H Sayre 320 Pine st
Silver Hill M Co	Washoe	9 1 00 Sept 18	Oct 24	Nov 14	W E Dean 416 California st
St Patrick M Co	Cal	12 50 Sep 18	Oct 23	Nov 15	D F Verdenal 409 California st
Succor M & M Co	Washoe	16 50 Sep 26	Oct 31	Nov 22	W H Watson 302 Montgomery st

*$12 50 old stock; $1.00 new.

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Aureola G & S M Co	Nev	2 10	Sep 23	Oct 30	Nov 21 T S Fitch 240 Montgomery st
Beach & Paxton G & S M Co	Nev	2 25	Aug 30	Oct 3	Oct 24 M Landers 309 Montgomery st
Cabinet M Co	Washoe	1 2	Sep 21	Oct 26	Nov 27 J F Sterling 330 Pine st
Carihoo Hydraulic M Co	Cal	3 15	Sep 29	Oct 30	Nov 20 Chas T Bridge 224 California st
Eagle Quicksilver M Co	Cal	7 250	Oct 30	Nov 29	Dec 4 Wm H Watson 302 Montgomery st
East Branch M Co	Plumas Co Cal	5 10	Sep 26	Nov 6	Nov 25 E P Sanford 514 Washington st
Emigrant S M Co	Cal	1 1 00	Sep 22	Oct 23	Nov 15 W H Chickering 426 California st
Glencoe Con G M Co	Cal	2 5	Aug 29	Oct 2	Oct 23 L Leavitt 309 Montgomery st
Gold Canyon Con M Co	Nev	10	Sep 15	Nov 13	Dec 20 A A Pardow 636 Clay st
Golden Crown M Co	Cal	3 5	Oct 20	Nov 12	Nov 10 D Bush 309 Montgomery st
Houston M Co	Nev	1 5	Oct 2	Nov 6	Nov 21 W Stairley 410½ California st
Low Range Ledge S M Co	Washoe	1 2	Sept 11	Oct 16	Nov 7 F E Luty 507 Montgomery st
Minietta Belle M Co	Inyo Co Cal	1 25	Oct 4	Nov 4	Nov 27 J G Riley 209 Sansome st
Monumental M Co	Washoe	2 15	Sept 7	Oct 9	Nov 1 W B Townsend Nevada Block
Morgan M Co	Cal	3 1 00	Sep 19	Oct 23	Nov 20 J H Wallace 108 California st
Moore's Flat Blue Gravel M Co	Cal	2 5	Sep 14	Oct 18	Nov 6 Wm Small 535 California st
National Prospecting & M Co	Cal	1 10	Sept 9	Oct 10	Nov 11 T L Wiswall Merchants' Ex
Nonpareil G M Co	Cal	7 1 00	Oct 13	Nov 16	Dec 4 A DuPrat 508 Jackson st
Oceanic Quicksilver M Co	Cal	4 50	Aug 26	Oct 9	Oct 30 A Funk 438 California st
Parly S M Co	Colorado	1 2 00	Sep 23	Nov 14	Dec 5 A J Bell 331 Montgomery st
Renton Coal Co	Washington Ter	3 50	Sep 7	Oct 16	Nov 23 T H Henderson 24 Sacramento st
San Francisco Sulphur M Co	Nev	1 10	Sep 29	Oct 30	Nov 21 J Roberts Jr 328 Montgomery st
San Jose M Co	Nev	13 50	Sep 12	Oct 21	Nov 13 A Carrigan 109 Front st
South Ophir M Co	Washoe	1 10	Oct 9	Nov 23	Dec 13 A C Gilbert 224 Montgomery st
Sierra Iron Co	Cal	1 1 00	Aug 18	Sept 30	Oct 26 Caleb T Fay 318 Sansome st
Valenoana M Co	Nev	1 10	Sept 11	Oct 13	Nov 11 J P Moore 426 California st
Welch Con Quick M Co	Cal	1 4	Aug 21	Sep 30	Oct 23 J P Forbee 408 California st
West Comstock G & S M Co	Nev	1 25	Sept 12	Oct 16	Nov 3 J H Thompson 401 California st
Young America M Co	Nev	5 20	Sep 29	Oct 31	Nov 18 R H Brown 426 California st

70 Prospect.....87½c
45 R & Ely.....5¾
5 Savage.....14¾

70 Sierra.....12¾
50 Union.....12¾
80 Yellow Jacket.....24¾

California Board—Latest Sales.

WEDNESDAY, A. M., OCT. 18.

60 Alpha.....45¾@46
100 Andes.....2¼
100 Baltimore.....2¾@3
200 Belcher.....19½@19¾
45 Best & Bel.....44@44½
20 Bullion.....3⅞
75 Caledonia.....10¾
60 California.....55¾@ 8½
105 Con Virginia...50@50½
385 Con Imperial.....4.05@4
200

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

ALPINE.

EXCHEQUER MINE.—Alpine *Chronicle*, Oct. 14: Good ore continues to be taken out and the mine never looked better. On Wednesday last, in the 400-ft level, 48 feet east of the engine shaft, the casing of the lode was struck.

EXCHEQUER SAW-MILL.—This mill is working night and day, getting out lumber for this Exchequer and I X L mines and the I X L mill. The Huntington shingle mill is about ready to commence work. A planing, molding, tongue and grooving machine is en route from the Vulcan iron works, San Francisco, for this mill. In a few days the saws and other appliances will be connected with the engine.

THE NUMBER.—Upwards of 200 men are employed at the Exchequer and I X L mines, mills and wood camps.

I X L.—Good ore is being taken from this upper tunnel. In the 200-ft level they are running on casing of lode to the ore shuts, from which the rich ore was taken in 1865, and it is expected that 124 feet more will reach it.

EXCHEQUER QUARTZ MILL.—The O'Harra furnace is ready for work, and is out waiting for this additional battery to be placed in position, which work is going on as fast as possible.

AMADOR.

MECHANICS' MINE.—Amador *Ledger*, Oct. 14: The owners of this mine have purchased a steam engine for hoisting purposes, and are now erecting it over the works. It is the intention to fit up the old Lincoln mill, situated on Sutter creek, within the town limits, for crushing the rock. This owners feel confident that they have a paying property. The rock is said to test well, but of course the actual worklng of ths ore will be necessary to settle whether the mine is likely to prove a profitable one or not.

CALAVERAS.

GWIN MINE.—Calaveras *Chronicle*, Oct. 14: The work of repairing the shaft in the Gwin mine is finished, and labor has been resumed in the levels. The 1100-ft atopea will furnish rock sufficient to keep the mills employed for six weeks or two months, by which time the 1200-ft level will be run and stopes opened. The mills started last Thursday, we believe, and there is nothing to prevent their being kept in constant motion for an indefinite period. The shaft is now in better condition than ever before, and it is probable that there will be no interruption of operations, no difference how severe the coming winter may prove.

VEITH'S HYDRAULIC.—If any one wishes to see lively mining operations, a visit to Veith's hydraulic, on Tunnel ridge, will well repay him. Work is not only prosecuted on a gigantic scale, but it is urged with a vim and steadiness that merits a rich reward. Piplog la prosecnted in both the upper and lower claims as steadily as circumstances will permit. In the lower claim the top has been stripped from a large area of ground, and the rich bottom deposit is now being washed. In the upper claim the great number of boulders uncovered by the hydraulic interferes with operations somewhat, but work is being pushed as vigorously as possible. Mr. Veith contemplates making a general clean-up of all his claims about the first of November, preparatory for the winter's campaign, and we expect it will be the largest ever made in the vicinity from a single washing.

THE DURYEA MINE AND MILL.—Active operations are in progress at the Duryea gravel mine, in Chile gulch. The mill lately put up for crushing the gravel performs admirably and is kept in motion day and night. The stamps, weighing upwards of 600 pounds apiece, are kept at a speed of 82 strokes a minute, developing a crushing capacity that permits the grinding and washing of a large quantity of gravel daily. The auriferous gravel is obtained from "breasts," opened at the extremity of drifts, several hundred feet in length, reaching into the hill, and is brought to the mill in cars drawn by mules. Nineteen men are employed in the mine and mill, everything proceeding with the regularity and precision of clock-work. Mr. Duryea is one of the most indefatigable miners in this section, and we are glad to know that his energy and perseverance is being well rewarded. Since putting the shove in type we learn that quite a quantity of water has been struck in the mine, which will necessitate a temporary suspension of operations.

THE LAMPHEAR MINE.—A visit to the Lamphear quartz mine, about a mile and a half from town, shows a very favorable state of affairs. Work is going steadily forward with the most encouraging results. The main shaft has reached a depth of 130 feet, and is being sunk rapidly. The ledge deflects so much from the plane of the incline of the shaft that no quartz is visible in the bottom, but drilling across to the hanging wall determines the presence of a wide lode of splendid ore. Rock is being stoped from the 100-ft south level, at a distance of 80 feet from the shaft. The ore mined is of a fair quality, the ledge showing from three to five feet in width. The pumping and hoisting machinery works splendidly, and all the appendages of the mine are first-class. The mill in connection with the mine—a 12-stamp battery—has been running steadily during the past two weeks, with the exception of an occasional interruption caused by scarcity of water. Rock is being crushed from both the Lamphear and Quaker City mines, the appearance of the plates indicating that the ore is of good quality and promising a healthy clean-up.

EL DORADO.

WOODSIDE.—El Dorado *Republican*, Oct. 12: We learn that the Woodside mine, at Georgetown, closed down on the 20th of last month, and it is doubtful about its ever being started up again. A large amount of money has been expended upon it during the past two years, and we are, with many others, disappointed in the result.

MINING matters about Garden valley are looking up, and everything looks hopeful for the future.

INYO.

KEARSARGE.—Inyo *Independent*, Oct. 14: The Kearsarge mill is pounding away to a good purpose on surface ores principally, but owing to the fact that the ores will soon become too wet for dry crushing, which is the process in use, it is likely that in a few weeks the mill will have to shut down for the winter. The tunnel heretofore referred to as being run to tap the Kearsarge mine proper at 180 feet below the bottom of the shaft, is now in about 50 feet, having some 250 feet yet to go. The ore in the bottom of this shaft is not only abundant but exceedingly rich. No ore can be taken out to advantage, if at all, until the air connections between tunnel and shaft are complete, which will require several weeks. There is no ore in the tunnel so far, nor is it likely there will be before reaching the ledge at the shaft. The Cliff mine, situated higher up on the mountain, is furnishing the principal supply for the mill, and is looking very well. The Bruckner roaster has been run constantly, giving satisfactory results, and without trouble, other than the clouds of dust it sends forth from its charge. It is quite likely that this dust also carries off quite a percentage of the precious metal, but if so there is still enough left from these ores to satisfy all reasonable expectations and desires.

FROM LIDA VALLEY.—L. Wick, who has stuck to Lida valley all this time, was in town this week after more goods. He says the future prospects of the camp appear to be about as heretofore for a year or so back—somewhat mixed, since the leading property became involved in litigation and contingent therenpon. The mill is kept running most of the time, the miners having it on lease to run themselves on their own ores. Nothing to being done at the once most promising camp of Gold Mountain, some 20 miles south. There is some probability, however, that a mill ere long will be built to work the ores from the somewhat famous State Line ledge, situate some five miles from the camp.

LOG SPRINGS.—Unless a "dicker" can be made by which to obtain ores from some other than its own mines to supply the Broder & Moffat furnaces, at Log Springs, the prospects are that all work in connection with that property will soon be suspended for the season. Ever since the furnace shut down a small force has been kept at work on the Uncle Sam, driving a tunnel to open the mine at a lower depth, where it was hoped a permanent body of ore might be found, and in sufficient quantities to justify running the furnaces. As yet no such strike has been made, though we are assured the indications are really encouraging, but still hardly sufficient of themselves to render a winter campaign advisable, all the surroundings and circumstances considered. There is, however, an abundance of ore in the adjacent district of Sylvania already on the dumps, and the owners are desirous of furnishing the furnace and keep it running. But as none of this is in the immediate vicinity, the cost of transportation and reduction, together with the purchase price, leaves no margin for profits, except upon first class ores. Whether a sufficient quantity of this kind can be obtained to justify starting the furnace is a question that will be determined in a week or two. Kincaid has about 200 tons of good smelting ore on his dump, but how much of it is of the kind that will pay to transport and reduce at the Log Springs furnace remains to be seen.

ANOTHER MINING COMPANY.—*Coso Mining News*, Oct. 14: Hon. H. W. Fortune, who came up from San Francisco several days ago to look at our properties, has purchased the Santa Rita mine conditionally, and if it should develop big enough, he thinks he will put up smelting works. He has no connection with the parties who purchased the Tyler property.

MACHINERY ARRIVING.—A No. 8 Sturtevant blower and some other machinery for Mr. Portois arrived a few days ago. The balance is now due, and we understand he expects to have his furnace—the Tyler—running within 60 days.

BULLION.—It is reported that the Modoc company have turned out 360 bars of bullion in the last four days ending Friday night.

MONOO MINES.—George Hearst, Mr. Tozier, Mr. Louis Williams and a number of other experts have been visiting the Modoc mines during the past week and witnessing the starting of that company's furnaces, and all express themselves highly gratified with all they have seen. The mines continue to improve with the rapid development and exploitation they are receiving, and the furnaces are starting much better than was anticipated. Mr. Barber, superintendent, informs us that they are running out five bars per honr, getting a ton of bullion from three tons of ore. This, for a new furnace and new ores, is good enough, but when run for a longer time, and on becoming more familiarized with the ores, the result will be much better. The success of the Modoc is the commencement of a new era for our whole mining section.

CERRO GOANO MINES.—Our mining interests are in *statu quo*—that is, the Union mine is the only one worked to any extent, and is turning out some very good ore, better than has been the case for some time past. The new hoisting works are in active operation, and the large building is presenting quite an imposing appearance. It will take, however, some time yet before the new shaft will reach the ore body, and then we hope for palmier days. The two furnaces are running and yielding a goodly number of bars daily. The only other mines worked is one of Ohris. Crohn, Esq., in San Lucas canyon, where that gentleman has five men employed, and where he has quite a flattering prospect. Dr. Hehner has given ont a contract to three men on his Belmont mines and will probably work more men shortly, as he has all confidence in his property. An offer has been made to him for one of his mines, but I do not know whether he will accept of it or not. Belmont is a very promising and rich silver camp, which has produced thousands of dollars, yet it is a wonder that it has remained so long without a mill, perhaps on account of the high freight charges and for want of proper representation in the local paper.

MARIPOSA.

ENCOURAGING.—Mariposa *Gazette*, Oct. 14: We learn from Bear Valley that a cross-cut has been started at the 2000-ft station to tap the vein, about 50 feet distant, and which will probably reach it to-day. This will prospect the lode at a depth of 900 feet from the surface. Developments of considerable importance may now be looked for.

MONTEREY.

QUICKSILVER.—Salinas *Index*, Oct. 12: The Salinas quicksilver mining company have a force of ten men employed at present, and are busily engaged in the erection of buildings at their mine. The tunnel is now in a distance of 55 feet on the ledge. A 50-foot shaft will immediately be sunk in the tunnel at a point 50 feet from the mouth. When completed a drift will be run on the ledge from the bottom of the shaft towards the surface, for the purpose of more thoroughly prospecting it. Private parties, who have just returned from a visit to the mine, report it as looking splendidly.

NEVADA.

RISING SUN MINE.—Grass Valley *Union*, Oct. 10: We are informed that a rich strike has been made in the Rising Sun mine, situated near Colfax, and that at the present time the mine is looking better than at any previous period of its history. And what is more important, the shute of rich ore promises to give profitable working for a long time to come. The Rising Sun has been worked for years, with varying fortunes, but during the past season has been doing very well, and the recent development gives assurance of a long prosperity. All the appointments of the mine, the mill and hoisting works, are first-class, and its management is excellent under the supervision of Superintendent J. H. Neff.

KENTUCKY RIDGE MINE.—Joseph Snydor, superintendent of the Kentucky Ridge mine, showed us some samples of decomposed ore yesterday, taken from near the croppings of the ledge, that were filled with fine gold. They were remarkably rich specimens, and presented abundant indications that the company's ledge is a true gold-bearer.

ANOTHER GOOD CLEAN-UP.—Grass Valley *Union*, Oct. 14: The Centennial mine has had another crushing and a big clean-up. The ore was put through John Smith's Orleans mill, which is one of the best gold savers on the coast. Fifty loads of ore, which was not selected with care, was crushed, and the yield was in the neighborhood of $5,000. The Centennial mine is looking better in stopes and drifts, and the ore now coming out will yield better than any from that mine heretofore worked. The Centennial has never levied an assessment, and looks now as if it never would need to do so.

MINING TALK.—There was more talk about mines yesterday afternoon than we have heard for many a long day. This talk was because of the fine appearance of most of the mines. The Idaho is going along in its usual dividend paying way; the Omaha is showing well; the Homeward Bound has splendid ore in sight; the Allison Ranch Franklin is far richer than any of the most sanguine stockholders had any right to expect. The fine prospects of the district make a talk, and the talk is justifiable in every respect.

BROKE THROUGH.—Nevada *Transcript*, Oct. 15: On Friday night, about eight o'clock, the whistle of the Gold Tunnel hoisting works sounded the call for the presence of the underground boss, Dave Hutchison. The occasion was that the workmen had tapped the old tunnel of the mine, which was 100 feet above them, by running a chute up from the lower level. Everything being in readiness for breaking through, a heavy charge of giant powder was exploded in the rock, which had the desired effect, and the water from the old tunnel came rushing down the chute in large volume, filling the lower level to a depth of 12 feet. The miners were all stationed at the foot of the ladder, and ascended the shaft, thus escaping a wetting.

WASHINGTON.—The two powder drifts in the Empire mine in Little York township were charged with 175 kegs of powder and exploded, doing good execution. The ditches and flumes belonging to this claim have been cleaned out and repaired, and the water turned on. Washing commenced as usual on Thursday. A large force of men are at work cleaning up the canyon belonging to the Council claim, which is turning out better than was expected. The other mines here are busy making preparations for winter.

A GENTLEMAN who was out hunting several days last week, informs us that the people here have no idea of the amount of prospecting for quartz and gravel mines that is going on. He thinks that there is more of that kind of work being done in this township than there has been for many years. If that is the case we soon shall hear of some valuable strikes. We do not know of a more inviting field for prospectors than there is in this county.

OWING to the scarcity of water, Mr. Berry, superintendent of the Nevada quartz mining company, informs us that he was able to run only five stamps of the mill, but the last rain has given him sufficient water to run ten stamps. The mine is looking first-rate.

PLACER.

MINING ITEMS.—Dutch Flat *Forum*, Oct. 14: Ditch cleaning and flume repairing is still progressing. Work on the South Yuba ditch is nearly completed, and it was the intention to resume running water to Chalk Bluffs yesterday. The branch leading to this place and Gold Run will be finished in a few days, but we are informed by the superintendent that it is not the intention to run any water in this direction until the rains commence, as the surplus in the reservoirs will not warrant it. The Cedar Creek company's ditches and reservoirs are being cleaned and repaired. The necessary work on them, however, is not extensive this season and the superintendent states they are now ready for water. The ditch of the Miners' ditch company is being cleaned and repaired, and will undoubtedly be in readiness before there is water to run in it. This company is building a storage reservoir on the South Yuba, near the Summit, which will extend its supply of water next summer. The various claims in this and Gold Run district, in which it is the intention to wash the approaching season, are being fitted up as fast as possible. In the Baker claim the incline passing under the gravel from the shaft to the rim rock is completed, and the claim will soon be ready for water. The Yankee tunnel is completed to a point opposite the Baker shaft, a distance of 2,100 feet from the mouth. The tunnelers have dropped back and are now driving a branch to connect with the shaft, which will be finished early next week.

NORTH FORK OF THE AMERICAN RIVER MINES.—At Euchre bar they are still busy washing in the Ross and Ford claim with good results. They are also sinking a shaft, which is now down 30 feet, and will have a pump at work in it in a few days, run by an overshot wheel. This is thought to be the old channel of the river, that has paid so big below, and never could be prospected here owing to the depth of the gravel and a large amount of water to contend with.

GREEN VALLEY.—The G. V. B. G. M. Co. tapped the bedrock in the shaft near the river this week at the depth of 68 feet, and have abandoned it, the prospects not being sufficient to guarantee pay. The shaft in the hill is down 58 feet in splendid looking gravel, with every indication of striking good pay.

SHADY RUN MINES.—North American mine, formerly known as Osp. Anderson claim, has been recently purchased by Mr. Devely, of San Francisco. The gravel in this claim is known to be rich. There are 12 men working at present, prospecting the width of the channel and the course it takes. As soon as the water can be had the working of this mine will be commenced on a large scale.

WILD YANKEE.—This mine continues to be worked steadily, and has paid over $20 per day to the man during the season. Several other mines will be worked during the winter.

LITTLE YORK MINES.—EMPIRE.—The two powder drifts in this mine were charged with 175 kegs of powder and exploded, doing good execution. The ditches and flumes belonging to this claim have been cleaned out and repaired and the water turned on. Washing commenced as usual yesterday. A large force of men are at work cleaning up the canyon belonging to the Council claim, which is turning out better than was expected. The other mines here are busy making preparations for winter.

PLUMAS.

ITEMS.—Plumas *National*, Oct. 14: The North Fork company have suspended operations for the present at Cumming's hill, on account of the scarcity of water. That claim has paid very richly this summer. Active operations will now commence on the Franklin company's shaft on Willow creek, and we shall report a big strike there before the snow flies. The Chinese owners of the English Bar claims are putting a large number of men to work. The Great Sensation mining company have let a contract for a tunnel 120 feet in length, to prosecute their gravel claim, which is located on the ridge east of Thompson's creek. The stock is all held in Quincy, and the owners, as the name indicates, have hopes of a big strike when they get to it.

FRANKLIN BLUE GRAVEL.—This company, whose claims are situated on Willow creek, near Nelson point, and who, last fall, sunk a large shaft to a considerable depth in search of the blue gravel lead developed in the Pierson claim, have recently made arrangements to resume active operations. Mr. E. T. Lacy, of the S. F. firm of Parke & Lacy, has been looking over the ground, and has made an agreement to furnish the necessary machinery for a certain amount of stock. Mr. Lacy started below last week, and the chances are that the engine and boiler are on the road by this time. The work will be pushed rapidly, and in two or three weeks we expect to hear that the shaft is down to gravel. We are glad to hear that the company is now in a shape to go ahead, for it is almost certain that the shaft will develop one of the richest mines in the State, and at the same time demonstrate that the lead is of vast extent.

SAN BENITO.

ANTIMONY.—Hollister *Enterprise*, Oct. 14: Few know that within the borders of San Benito county there lies perhaps the most extensive body of this ore in the world. We had heard of the big strike of this metal in the Stayton mines, and in order to ascertain the correctness of the report, went up Wednesday to investigate. There is no doubt that a mountain of antimony ore has been disclosed. The main lead has been stripped 75 or 100 feet, and shows a solid wall of first-class metal. The superintendent says he can extract from the body of ore in sight, with five hands, 80 tons per day. The company are supplying a San Francisco firm with 72 per cent. ore at $50 per ton on the ground, and can take it out as fast as it can be transported to the railroad. Several hundred tons of a lower grade lie on the dump to be carried to the furnaces when they commence operation, where it will be reduced into crude bullion for shipment. It is believed by experts that the ore produced will average 40 per cent. The company have erected two good furnaces at the bottom of the Stayton grade, one of which is completed and will start up on Monday, and the other will be ready for work in ten days.

TUOLUMNE.

RICH VEIN.—*Union Democrat*, Oct. 14: The Shawmut mining company, near Jacksonville, owned by Maurice Dore & Co., of San Francisco, have struck a rich vein of rock valued at $200 per ton. This mine has lain idle ever since the failure of the Bank of California. The Ollo mine, at Jacksonville, is being rapidly re-opened and two men are clearing away debris, etc., preparatory to driving a tunnel.

Nevada.

ELY DISTRICT.

MEADOW VALLEY.—Piochs *Record*, Oct. 11: There was some talk on the street yesterday about the Meadow Valley mine starting up again. Telegrams passed back and forth, but up to this time of going to press we heard nothing definite either way. If the foundations were put through during the present fine weather, they could be finished and the pumping machinery in place by the time the snow flies. The mine is there with as good a prospect to-day as any non-dividend paying mine on the coast. If it were in another locality the stock would be worth $50 a share. We hope the management will decide to start up again. The prospect justifies all necessary outlay. The value of the mine is one thing, the management of the mine quite another.

EUREKA DISTRICT.

TOO MUCH ONE.—Eureka *Sentinel*, Oct. 8: It is something hitherto unheard of for a mine to be troubled with too much ore, but such is really the case with the Richmond company in this district. They are capable of producing 300 tons of ore per day, if the furnaces could reduce that quantity; but, as that amount is beyond the smelting capacity of the furnaces, the ore has accumulated till it has come to be a sort of a welcome nuisance. The mine and dumps are full to overflowing, and the company have been obliged to discharge a number of miners on this account, and the mine will be shut down during the day in order to give the teams a chance to reduce the dumps. Mr. Potts, the foreman, to whom we are indebted for the above facts, informs us that unless means are taken to keep the dumps clear and stop the accumulation of the ore below, he will be obliged to discharge still more men. It is not often that an increased production of ore from a mine results in the discharge of miners; and for their sakes it could almost be wished that the company did not have quite so much ore. This trouble is only temporary, however, and will soon be remedied, when the usual working force will again be employed.

CHARCOAL AND CHARCOAL.—The average amount of ore daily delivered at the Richmond furnaces from the Richmond mine is 145 tons. About 7,000 bushels of charcoal are delivered each day, of which 4,000 bushels are consumed daily by the furnaces. A surplus of coal is being accumulated at the furnaces at the rate of 3,000 bushels per day, in order to provide against contingencies and prevent the necessity of shutting down the works when the roads become bad and hauling difficult. The Richmond mine and works are at present the mainstay of Eureka; but there are prospects that before next spring other mining companies in the district will be in a similarly flourishing condition.

REESE RIVER DISTRICT.

MANHATTAN MINES IMPROVING.—*Reese River Reveille*, Oct. 14: As developments progress in the mines of the Manhattan company, every day's work shows an improvement in the extent and richness of the ore bodies. At the 375-ft level of the Frost shaft, that remarkably rich vein, the Independence, shows a still further increase in the richness of its ore during the past few days, and the stope is now yielding a large quantity of ore of an extraordinary high grade. The chimney has been tapped by the 290-ft cross-cut, through which the ores can be taken out much faster, more conveniently and cheaper than heretofore. The 500-ft level still continues to produce largely, with no diminution in the size of the vein, which is very strong at this, the lowest point, as yet explored. There is no known limit to the extent of this bonanza downward; but as it extends in an almost unbroken line from the 290-ft level of the Frost shaft to the 500-ft level, and as it has continued to the lowest point yet worked, there is no valid reason why it should not again be encountered in any or all cross-cuts or side workings which may be run from any depth which the shaft may ever attain. In fact, the agent and superintendent are confident that this rich ore body will be found by all cross-cuts that may be run in the deeper workings of the shaft, and do not consider the possibility of such not being the case. The ores above and below the 600-ft level of the Bowman incline likewise show an extraordinary improvement in grade, and promise to yield a higher average in bullion during the present month than ever before, and they have always been "up in the figures."

WARD DISTRICT.

NEW MINING ENTERPRISE.—White Pine *News*, Oct. 14: The Steptoe Consolidated mining company, recently incorporated in San Francisco to operate in Ward district, have commenced active operations. The management of the company's affairs at the mines is under the immediate superintendency of Mr. Robert Briggs, for some time past connected with the Martin White company, and is a guarantee that the working of the mines will be conducted with economy and intelligence. There is included in the corporation some of the best mines in the district. Among the number is the Emily, Profit, Ready Cash and Light, all of which give promise of yielding large amounts of high grade ores.

WASHOE DISTRICT.

OPHIR.—Gold Hill *News*, Oct. 12th: Daily yield, 300 tons of ore, keeping the mills running as a mail. The ore breasts have shown a decided improvement during the past few days, the car samples to-day averaging $130 per ton. Timbering the main incline is nearly completed down to the 1700 ft level. It is expected that everything will be in readiness to commence sinking for the 1800-ft station by the first of next month. The ore-producing sections of the mine are all looking well, especially the east ore body on the 1600-ft level, which is widening out and growing richer as the stopes go southward. The north and south drifts from the winze 50 feet below the 1600-ft level are in very promising quartz. Both of those drifts have some distance to run westerly to cut the ore bodies on the 1600-ft level. The south drift is further advanced than the north drift and is evidently in close proximity to ore. The west cross-cut from the north drift on the 1600-ft level is in favorable vein matter, and is evidently approaching the ore body cut by the drifts farther south. On the 1700-ft level cleaning out and repairing the east drifts and cross-cuts preparatory to a renewal of the prospecting operations in that portion of the mine is making good progress. The north drift on that level is being pushed ahead, the face in very favorable vein matter, showing considerable improvement within the past few days. Cutting out the pump station for the lift pumps and water tanks, preparatory to putting in the new large pumps now at the mine, is making good progress.

CON. VIRGINIA.—Daily yield, 550 tons of ore. The ore breasts on the 1400, 1500 and 1550-ft levels are showing finely. Those being opened on the 1550-ft level are especially rich, opening, as the work advances, with as rich if not better prospects than any ever developed on the upper levels. The Consolidated pan and battery mill were both started into full working operation last Monday morning, everything working with the utmost perfection. The starting up of this mill makes an addition of 300 tons of ore per day to the crushing capacities of the mine, and will enable the management to easily increase the yield of bullion to the old figures of $2,000,000 per month if they so de-

sire. The drift south, on the 1600-ft level, running through the ore vein to connect with the north winze below the 1550-ft level of the California, is progressing four feet per day, the face still in ore of the richest and finest character. This body of ore so far as penetrated is of a hard, solid formation, that hetokens not only a continuation of the magnificent width of the vein on the level above, hnt also a huge, rich mass with no ordinary poor ores mixed in with the good. The diamond drills on the 1700-ft level are heing daily advanced to tap the body of watsr in the hottom of the south winzs helow the 1550-ft level. The 1700-ft station in the C. & C. shaft has heen opened and a drift started to tap the ore vein on that level. This drift is advancing at the rats of ahout nine feet per day.

Savage.—Ths heavy flow of water struck last week is being again gradually overcome hy the united efforts of the small pumps used in conjunction with those of the Hale & Norcross. A new Cameron pump was placed in position day hefore yesterday, which is doing splendid execution. A new air compressor has heen received at the mine, which will be placsd in running order in a very short time, and which will afford ampls power to run all the small pumps and feed the large 14-inch pump as fast as the pumping engine at the surface can hoist the water. The Hale & Norcross are preparing to put another force pump in their main incline, when it is helisved that the combined pumping machinery will handle the watsr with perfect ease. It should he understood that even while the water rises in the shaft the pumping goes steadily ahead without the least cessation or interruption. Every gallon of water raised lessens the amount of water contained in the large reservoirs tapped underground, and the causs of tho sudden rises is supposed to oome from the giving way of reservoirs of water on tho lower levels, the head or pressure heing so great as to rush a hody of water into ths shaft much greatsr than the capacitiss of the pumps.

Justice.—Daily yield, 155 to 160 tons of ore. The ore hreasts continue a good yield of ore of increasing valne. The yield of the mine for the past thres months under the present superintendency and management has heen steadily on the increass. For the month of July it amounted to only $56 000; in August, $75,000; and in September, $145,000; and will, if nothing unusual happens to prevent, reach $175,000 for the month of October. Arrangements are also heing made for the addition of still another mill in a short time, which will add still more to the hullion production of the mins. The prospecting drifts on the 800-ft level of the mine are heing driven ahead without any material changes during the week. All three of the cross-cuts are showing well. But littls has been done on the 1000-ft level during the week, owing to the shaft having heen used most of the week for repairing the pump rods, which were getting too old and worn for further use.

California.—Daily yield, 550 tons of ore, kesping ths mills running steadily as usual. The ore stopes on the 1500-ft level are yielding rich ore, and have never shown hetter in the past than thay do today. The mine in fact is now in hetter shape throughout and the ore developments in every portion of it showing more extensive and lasting than ever in the past. The character of the ores are such that if the managemsnt so desired they could without much effort raise the yield to $2,000,000 or $2,500,000 per month, without the addition of another stamp or the extraction of a ton more of ore than it now yields. The usual monthly dividend of $2 per share, aggregating $1,080,000, was declared on the 7th inst. Sinking the C. & C. shaft is making steady progress, the flow of water at the hottom heing still as strong as ever. The pumps continue to drain this flow of water, although kept running up to their fullest capacities.

Aurkola and Argentina.—The fine working shaft which is heing sunk to develop these two mines at the joint expense of the respective companies is getting along very well under the efficient managemeot of Supsrintendent Bennett. He found considerable hard work to do in trimming down the sides of the shaft and in enlarging it for timhering, hut he has made a most excellent joh of it.

Mexican.—The winze heing snnk helow the 1465-ft level is showing an improvement, the ore giving fair assays. Ths formation overhead in the upraise has every appearance of an approach to a good hody of ore above, and a cross-cut east has heen started on the 1300-ft level to cnt ths vein shove that point. The mine has not been prospected anywhere helow the 700-ft level, and a series of drifts will he started as soon as practicable to cross-cut the ledge on the several levels ahove the 1300-ft level, in order to ascertain the valne of that portion of the mine.

Chollar-Potosi.—Daily yield, 100 tons of ore, the assay valne of which is $32 per ton. The old ore stopes show no material change, and the ore extracted no difference in quality.

Pontiac.—Tnis mine is the wsll-known old Carl location, made in 1859. It is one of the oldest and best locations made in Devil's Gate mining district, and joins the St. Louis on the south. The principal tunnel, 400 feet in length, passed through a splendid ledge 150 feet wide, showing excellent streaks of ore. The mine has recently passed into the hands of a company of men of practical mining ahility and capital, and incorporated under the name of the Pontiac gold and silvsr mining company.

Twin Peaks.—The new working shaft is well commenced, and being sunk at a lively rate. This shaft consists of three compartments, two for cages, each four and ons-half hy five feet in the clear, and the other for the pump, is five hy six feet in the clear.

Yellow Jacket.—The drifts hoth east and west at the 2040-ft level are pushing ahead in favorable looking vein material. At the 1940-ft level the air pipes are in and drifting north is commenced, to meet and connect with drift coming south from the 2135-ft level of the Imperial.

Bullion.—The east cross-cnt from the north drift on the 1400-ft level is showing some very favorable prospects of soon reaching the main ledge. The north drift on the 1700-ft level is being steadily advanced, the face in very favorahle ground.

Solid Silver.—This is one of the earliest of the old mining locations in Cedar ravine, a short distance ahove the Sierra Nevada mine. It was formerly known as the Washoe, and having heen relocatsd and hrought into proper working shape, it will now he practically developed.

Crown Point.—Daily yield, 60 tons of ore, from the old upper levels of the mine. Cross-cuts are soon to he started at several points on the 1700-ft level to frnther settle the valne of the ledge, although enough is already known to satisfy the most incredulous that the mine must hs prospected deaper in order to find a renewal of the rich ore hodies found ahove.

Amazon & Glasgow.—The pump columns are being put into the shaft, and everything will soon he in full rnnning order again.

Baltimore and Amerioan Flat.—The face of the east cross-cut from the north drift on the 1050-ft level is showing some good ore prospects.

Cosmopolitan.—The Hope mill commenced running on ore from this mine yesterday morning. There is plenty of it in sight in the mine to keep the mill steadily rnnning for some time to come. The stopes from the upraise are showing and yielding well and the north drift from the winze below the adit level is in ore of a superior character, showing bunches of very rich ore occasionally.

North Carson.—Excellent progress has been mads during the past week or two sinking the main shaft. It has been passing through excellent streaks of ore, and the station at the 400-ft level will he opened shortly.

Florida.—The northwest drift at the 400-ft level is still advancing well, with its face at present in very hard rock of irregular stratification, which does not blast well.

Niagara.—The week has heen occupied in rssetting the hoisting machinery so as to place it on a hetter foundation and make it more serviceable in sinking another working compartment to the main incline.

Silver Hill.—Sinking the main incline is making fair progress. The east drift on the 650-ft level is also heing pushed rapidly forward, the face in good working grnnd.

Leviathan.—The facs of the north drift at the 600-ft level is showing even hetter than at last report, more streaks of ore, giving hetter assays, making their appearance.

Overman.—The north and south prospecting drifts on the 1200-ft level are each steadily advancing, the face of hoth still in very eocouraging vein matter.

Caledonia.—Sinking the main shaft is making somewhat hetter progress, although the flow of water at the hottom is still strong, and keeps ths pumps husy.

Belcher.—The new pumping machinery is working well. Daily yield, 300 tons of ore, keeping the mills steadily crushing ore from ths mine.

Lady Washington.—The station at the 850-ft level is cut out and drifting commenced eastward, cross-cutting the ledge at that point.

Sierra Nevada.—Ths prospecting drifts on the 1700-ft level are heing pushed rapidly ahead, and are looking much mors favorahle for some good ore developments than for some time past.

Trojan.—A station at the 300-ft level has heen cut out, and drifting sonth and east toward the good ore hody passed through hy the shaft and dipping in that direction, is now heing done.

Globe Con.—Work in the main drifts at the 300-ft level progressing well, and the incline is heing cleaned out and put in good working order.

Sutro Tunnel.—Total length of tnnnel, last evening, from mouth to face of header, 14,674 feet. Tne material now sncountered is easy working porphyry, with clay seams, allowing of a very good rate of progress.

Tahoe.—Sinking the joint shaft is making good headway, the bottom heing in soft ledge mattsr, carrying streaks of favorahls looking quartz.

Succor.—The erection of the new machinery is heing pushed to completion as rapidly as consistent.

North Con. Virginia.—Sinking the main shaft is being pushed downward at the rate of five feet per day, the hottom still heing in very favorahls ground. The new pumping machinery is doing good work, and is running as perfectly as it is possihle for it to do.

Herald.- The greater part of the past week has been spent in putting in improved hoisting gear for sinking the working shaft to a much greater depth.

Calcutta.—The diamond drill has heen discontinued, having penetrated to a depth of over 300 feet. Good prospects, sufficient to justify the sinking of a shaft, have heen obtained.

Kossuth —The opsning of the 600-ft station will he commenced, and a drift started for the ledge, in a very short time.

Imperial Con.—Owing to a breakage of the old pump rods in the main shaft, the progress on the lower levels has heen somewhat retarded during the week.

Rock Island.—Still pumping water from the 850-ft lsvel to the full capacity of the pumps.

Utah.—The large tank-pit and pump-station at the 750-ft level is about completed and ready to resume the sinking of the main shaft.

Continued on Page 276.

Hell Gate and the New Hallett's Point Channel.

Divsre are busy at work, eaye *Iron Age*, exploring the hottom of the new Hallet's point channel, and sonndings ars in progress dnring every moment of time during which it ie poesible to work. On account of the strong current running very little can be accomplished, except at the short intervals of slack water when tbe tide ie turning.

In soundings taken on tbe northeast eide of the ebaft, embracing a portion of the ehaft proper, and tbe reef within the radiue of 200 feet, it was found that a considerable amount of broken etone had been thrown into the ehaft by the explosion, but deeper water wae found on the other portione of the reef explored. Where there wae formerly a deptb of six feet of water only, from 12 to 18 feet were found.

Two eurveying parties are to be eet at work, and, shonld the weather prove favorable, it is thought that tbe snrvey can be completed in abont eix weeks. From 5,000 to 6,000 soundings about ten feet apart will bave to be taken.

The following official etatement hae bsen made by Gen. Newton in regard to the examination of the reef at Hallett'e point:

"Tbe reef at Hallet'e point hae been swept away, and the snmmary of facts is as follows: From 180 feet distant from the shore line to the line of buoys the bottom elopes gradnally from eight feet of depth at mean low water to 20 feet. Outside the line of bnoye nothing less than 20 feet of depth at mean low water was observed. The divere have been examining tbe reef, and report a thorough bresk-up."

The French World's Fair.—The programme for the next French international exhibition, 1878, hae been pnblished in the *Journal Officiel*. The reguletions are eubstantially the same as in former exhibitione. The building is to be a long parallelogram, and will be divided into rectangular etripes, two of tbese etripee being allotted to spscial divieions, one for France and the other for foreign conntries. Fine arts will enjoy the central etripe, and conseqnently be an exception. Right and left will be placed the two etripes allotted to ecientific indnstries, under the name, "education, teaching, methods and *materiel* of liberal arte." Amonget the principal attractions of the exhibition will rank a gigantic Giffard eteam captive balloon. It will meaeure 21,000 cnbic metere, and exceed by 10,000 the former captive balloon at Aebburnham park. The rope will weigh 20 ponnds per yard, and the elevation will be 500 yarde. The eteam engine will have 200-horse power; 30 pereons will aecend at once, and in calm weather 100. The new captive balloon will require no circus for protection, and will etand in tbe midst of a large equare fronting the bridge in the central alley of tbe gardene. Meteorological observations, with epecial inetrnmente, will be made dnring the ascente for the instruction of excursionists, and recorded for the benefit of scienoe.

In 10 years the screw hae entirely replaced the paddle in tranеatlantic navigation, the weight of marine enginee has diminished one-half, the eteam preesnre has quadrnpled, and the consumption of coal hae decreased two-thirds.

Gold Mining in French Guiana.

Consnl Wooldridge, reporting to ths Forsign Offics on ths trsde of Frsnch Gniana, noticse the gsneral abandonment of agricultural labor in ths colony in favor of the gold industry. The valne of the gold finds in tbe year 1875 ross to £64,300 more than in 1874. Of ths £252,925, the value of the total exports of 1875, the export of native gold enpplied no lsss than £227,568, statsd ae tbe value of tbe 113,118 ounsss exported. Tbe Consnl says: "Thers ie mnch capital now in the colony poesssed by natives who hsve mads enormous fortunse at tbe gold waebings, mostly oolored msn, soms of them quite hlack, who a few years ago belonged to the laboring classes, but wbo now count thsir france by millions (I do not sxaggerate) and kssp their carriages; but tbsse riches sre ssldom employsd by these "*enfans du pays*" for ths good of the country thsy should juetly cherish, and away from which they could not live. Tbe Administration psrseveree in cntting roads throngh the bush, but the sinews of war are wsak, and the high-roads to ths interior are still the rivere and cresks; and evsn from tbe banks of these, throngh their own land, to the placers which havs givsn them eucb immenee fortunes, these fortunate men do not think it necessary to make a reepectable pathway. The original tracks made by the explorers years ago with iheir sabere and hatchsts, lsaving just effiicisnt room for a man to pase, still exist, and to tbis day are kept opsn by the eeme means only."

Tbe Consul etatee that a company has engaged in an attsmpt to extract gold from the rivere themselves. It ie considsred that gold ie to bs found in tbs rivsre of Frenoh Guiana in much greatsr quantities than on the land; tbat the heavy particlss washed down from the monntains by tbe rains remain in the beds of ths rivsrs, while the lighter onee and ths duet bave bsen scattsred over ths plains. Thsee rivers are rapid snd deep, and the bede are interlaced oy roots of trees and encnmbsred by rocks; bnt it is thought that the difficultiee may be oversome, and mnch more gold be obtained than on the banke and in the plains. It may he that in some casss the watsrs must be turnsd ont of their natural cbannels and ehafts sunk; but it ie stated that an attempt will now be made to get at the treaenrs suppoeed to lie waiting for enterprieing eeskere. Tbe Conenl gives the following tranelation of instructione farnished to tboee engagsd in tbis work: "The first etreame to explore will be the Oyac, the Orapa and the Comte, whoee bede are known to be rich in gold, for placere abonnd along tbeir banks wbicb have been very enccessful. Their proximity aleo to Cayenne will emooth many difficultiee towards an eetabliebment.

"The prospection will be carried on as follows: A emall eteamer, abont 40 feet long, will be eent out to Cayenne, drawing not more tban two feet water when not working over the gold bede, eo that it may paee over everything. It will be furnisbed with powerful windlaeees to aseist in breasting the currents, and over the stern will be placed a eteam winch, witb drags for lifting the ore which may be displaced at the bottom of the river. At tbe steru there will also he another machine, with teetb, called a 'perforateur,' worked aleo by eteam, ite action on the bed of the river being of two kinde, viz: perpsndicular, where qnartz or rocks are met with, in order to crush them and penetrate; and horizontal and circnlar, ou the surface of soft earth or gravel. It will possees an inepiratory power like a pnmp, oepable of bringing up the ore, which will be emptied into an iron well in a barge towing astern of the eteamer. A diver, with apparatus complete, will aleo be attached to the expedition. On reaching that part of the river to bs prospected the diver will dsscend and examine the bottom of the river, and report upon the obstaclee in the way of tbe drage. No matter what tbey may be, wbether large etones or roots of treee, an attempt ehonld alwaye be made to remove them before einking the drage. When the bottom is clear, the drage ehonld be lowered and made to penetrate to tbe 'terrain vierge,' and the ore brought np mnst be cast into the well in the barge astern, while the eteamer shonld he worked from one eide of tbe river to the other in a zigzag manner. An iron grating ehould be placed over the well, through which the ore is to bs thrown. Should this trial of the nearer rivere to Cayenne turn ont snoceesful, the prospection of the larger onss of Sinnamary and Approuague will be attempted in a eimilar manner."—*London Times.*

Lead-Boring Insects.—M. Bode writes to *Dingler's Journal* that he bae several timee had occasion to obeerve it in lead chambers. Tbe culprit ie *Sirex spectrum*, an ineect with uncommonly powerful biting apparatus, and a prong-like prolongation of the after part of the body. In the trenches at Sebastopol lead balls were found perforated; the sheet lead on which M. Bode obeerved the ineect's action wae 3 and 5 mm. thick. From a forester's etatement it appears that tbe ineect boree its way especially into freeh pine wood. It therefore attacks the pine used for the outer walle of the lead chambere in eulphuric acid worke. On meeting the lead it continues its operations, producing a perfectly round hole, which ie contracted conically in front. When the lead plate is perforated tbe insect is, of conrse, killed by the ieening vapor and acid. Tbe insect doee not enter old or dry wood, apparently, eo that tbie ehould be ueed in constructing lead chambers.

The Engineer.

Water Power by the Pound.

At Hull, in England, the aeeociation formed eome time since to furnish water power to any one who wonld pay for it, bas completed ite arrangemsnte and ie rsady for businsss. In onr Englieh exchangee we find the following interssting facte concerning the enterpriee: In the year 1872 an act of Parliament was obtsined for tbe purpoee of eetablishing, at Kingeton-npon-Hull, what was termed in tbe prsamble of the act, "a syetem for applying motive power by hydraulic prsseure to watereids and land cranes, nsed for the pnrpose of raieing and landing goods, and for working dock gates and othsr mschinery." It aleo antborizsd tbe abstrsction from the old harbor at the river Hull, an amount of water, not sxceeding 1,000,000 gallons a day, for dietribntion within the company'e district, for which a paymsnt wae to be made to the corporation of £12 10s per annum for each quartsr of a million gallons, ths water to bs used for no otber purpose than as a motive power, except with the oonsent of the oorporation. A eix-inch pressure main hae been laid from the northern bonndary of the defined area, near the Cottingham drain, in a enutherly direction along Wincolmlse, Trippett, Dock Office row, under tbe old dook baein (whicb forms tbe esetern, or River Hull entrance to the Quesn'e dock), and crossing thie entrance it ie laid along the whole lengtb of Higb etrest, terminating close to the western approach of the Sonth bridgs aoroes tbe river. The length of prsesure main laid, exolueive of the dock croeeing, is altogstber 1,485 yarde, that on the nortb eide of the dock entrance bsing 673 yards in length, and that on the eouth eids 812 yarde. In laying this main many obstructions were met with, in tbe shape of old sewers, gas and water pipes, gullies, etc., all of which had to bs avoidsd. Thie involvsd much careful arrangement of bsnds and irregular pipes, and the difficulties wsre increassd, se the streete tbrough which the works were carried ont had a bsavy goods treffio over them, and in msny parte, sspscially in High strest, wsrs very narrow. An sngine house has bsen built to receivs, eventnally, four 60-borse power enginee. Ae the gronnd beneath thie site was silty and treachsrons, tbe fonndatione had to be carrisd down 24 feet before a good bottom wae reachsd on hard olay. Tbe footings of the walls are built ou a eeriee of arches carried on concrete piers, wbich made sonnd and economical work. Tbe engine house ie covered by a cast iron tank. Two paire of 60-horee power, high preesure, horizontal pnmping engines have heen erected, capable of pumping about 300 gallone per minute at 700 pounde preseure per square inch, with steam at 100 pounde preseure, supplied by two Lancashire boilere, fitted with the most approved appliancee. The water eupply from the River Hull ie filtered. One accumulator ie erected at the pumping etation in Machel etreet. It has a diameter of 18 inchee, and a stroke of 20 feet. The case ie loaded with 65 tone of slag and sand, wbich gives a preeeure of 600 pounds per inch in tbe main. Tbe accnmulator case and cylinder reet on concrete piere carried down to the solid clay, and ere enclosed in a brick tower. The snpply of water ie obtained from the River Hull, and is pumped throngh a 10-inch euction pipe into the tank over the engine honse. The distance from the river to the pumping eite ie 125 yarde, and the total hight of the lift from low tide level to top of tank ie 35 feet. A oentrifugal pnmp (in dnpliocate), fixed in the engine houee, raisee tbe water from the river to the tank. The water power eupplied by the company will he paid for by the ooneumer at ratee dependent on the amount of water used. The following tariff hae been issned by the company: One crane in one warehonse, £52 per annum; two cranes in one warehouee, £94 per annum; three oranee in one warehonse, £132 per annnm; and four cranee in one warehouee, £166 per annnm. Each orane will heve a counter attached to it to regieter the amonnt of work done. Hydraulic power ie alwaye and instantly available to meet the requiremente of the conenmer, and at a cost to him only in proportion to the power abeolntely coneumed, in the eame way that he paye for gas, or the ordinary dometio water service.

An Effort to Preserve the Main Exhibition Building.—Tbe Philadelphia *Ledger*, of the 3d inet., says: Yesterday, at the Board of Trade roome, the preliminary etepe were taken toward the permanent preservation of ae much as possible of the ntility and beanty of the Centennial exhibition buildinge and gronnds. Some euch undertaking wae foreehadowed in tbe *Ledger* of Monday. The meeting wae called at ehort notice, hy individual invitatione to ae many persons ae conld be easily reached within the time. The immediate enbject, as laid before the meeting by the Hon. Morton McMichael, who presided, was to consider the desirablenese of retaining permanently, by purchase, the main building, or eome characteristic portion of it. Reeolutions were adonted in favor of organizing a etock company for the pnrpoee and for the appointment of several prsparatory committees. The enggeetion has taken etrong hold of a nnmber of energetic and influential men, who have expreseed their readineee to give the undertaking both moral eupport and material aid.

Levee Building.

As is generally known, the United States is building a levee on the San Diego river to turn the water into False bay. There has arisen some controversy concerning the strength of the levee, and John H. Weeden writes to the San Diego *Union* upholding it. We do not propose to take part in that controversy, but quote from Mr. Weeden's letter some facts concerning the dimensions of certain levees which have proved effective in other localities. Levee building is one of the great questions with our engineers and agriculturists, and the collected information will be generally valuable. Under date of Washington, July 2d, 1874, a board of engineers was convened for the purpose of examining into and reporting upon the levee system of the Mississippi river. After a careful study of the whole problem they submitted their report in January, 1875. This report is exhaustive of the subject, and for accuracy of research and weight of authority is undoubtedly entitled to an equal place with any report that has ever been made. The following excerpts are from this report as printed in the "Report of the Chief of Engineers, U. S. A., for 1875:" "In 1851, the levees of Louisiana usually had the crown equal to the high, with slopes of 1 on 1. The present formula for cross-section is, the crown equal to the high, with slopes of 1 on 5. The levees of the State of Mississippi have crowns of 5 feet, with slopes of 1 on 6 toward the river and 1 on 2½ toward the swamps. Arkansas levee laws require for every foot in high 1 foot wide on top, and in addition 7 feet base. The section recommended in the 'Physics and Hydraulics of the Mississippi' for levees of moderate height is, the crown equal to the height, with slopes of 1 on 3 on the river side, and 1 on 2 on the land side. For the immense levees required to close old bayous it is important to distribute the weight, and a crown of 6 feet with a front slope of 1 on 3 and a rear slope of 1 on 4 seems to be sufficient unless the soil is very sandy. The last Yazoo pass levee was 40 feet high, its crown was 10 feet, with a front slope of 1 on 5, and a rear slope of 1 on 3. The Hushpuckana levee was 43 feet high, its crown was 8 feet with slopes of 1 on 3. Both of these levees resisted the flood of 1874."

Leaving the United States, the following from the "Physics and Hydraulics of the Mississippi," giving the dimensions of the principal levees in Europe, is interesting for comparison. "The French dikes on the Rhine between the Black Forest and the Vosges mountains, where the height is 7 feet, have a width of 10 feet, the slope toward the river being 1 on 2, and toward the land 1 on 1½. The dikes of the Rhine in Holland, when near the river bank and used as roads, have a width of 20 feet on top when 16 feet high, a slope of 1 on 3 on the river side and 1 on 1½ on the land side. The outer slope, when exposed to running ice, is reveted with brick or facines. When the dike is not near the river bank and is not used as a road, the width is 6½ feet. The dikes of the Po (those of the Adige are generally the same) are 2½ feet above the highest flood mark; usually the width is equal to the height with slopes of 1 on 2."

These examples might be continued almost indefinitely, but the foregoing are deemed sufficient for our present purpose. I add, however, that this board, as the result of its studies, recommended the following cross-section to be adopted where the levees are less than 10 feet in height: Width on top equal to the height, fore slope 1 on 3, rear slope 1 on 2.

The following table shows at once the comparitive dimensions in the cases cited, the levee in each case being assumed as 6 feet high, this being the case with the San Diego levee:

LOCALITY.	Width of top in feet.....	Width of base in feet.....	Area of cross-section, ft..	Weight of material per linear foot.
Mississippi River, Louisiana.....	6	42	144	14,400
Mississippi River, Mississippi.....	5	56	183	18,300
Mississippi River, Arkansas.....	6	48	162	16,200
Recommended in "Physics and Hydraulics of Mississippi River"...	6	36	126	12,600
River Rhine, French dikes.....	10	31	123	12,300
River Rhine, Holland.....	6½	33½	120	12,000
Po and Adige.....	6	30	108	10,800
Recommended by Warren's Board.	6	30	126	12,600
San Diego.....	23	41	192	19,200

NOTE.—The weight of earth is assumed in each case to be 100 pounds per cubic foot.

THE MARGUERITE BRIDGE.—The *Moniteur Industriel Belge* says of this bridge, which was opened in April last: The total length of the bridge is 570 metres, and its width 17 meters; this bridge is formed of six arches, three at each side of the river, of which the openings are respectively 74.83 meters and 88 meters. The centers have a radius of 135 meters; they are of wrought iron, and bear plates on which rest the macadam and the wooden pavements. The construction consumed 7,000,000 kilog. (15,400,000 pounds) of wrought and cast iron, 40,000 cubic metres of masonry, among which were 4,500 of granite, and 5,000 of other kinds of cut stone.

A BRIGHT LIGHT.—A remarkable lantern now in course of erection on Galley Head, a promontory of Ireland, will soon be completed. It will consume 1,300 feet of gas per hour, and will be visible during foggy weather. Its light will equal that of about 2,000,000 candles.

Good Health.

Pure Air.

Time was—a long time before Adam had birth—
When animals could not exist upon earth;
The plants then had plenty of light, heat and food,
But the air wanted power to vitalize blood.

In the time through which this world's mutations have ranged,
The conditions of air have essentially changed;
And the plants which were once so gigantic in size,
Have been dwarf'd down to what we behold with our eyes.

In our coal mines, extended such depths underground
The solidified growths of that period are found;
Light and heat were thus stor'd, on a provident plan,
For the future convenience and comfort of man.

Air now is a fluid all animals breathe,
From the insect above to the worm underneath;
And the deep-swimming fish, far remote from the sky,
Without air in its water would instantly die.

To draw in a full breath is the work of about
Two seconds of time, and the same to breathe out,
But, before it comes back, the air taken in
Has been changed by its contact with blood through the skin.

The skin I now speak of, adapted to line
The inside of the lungs, is a membrane so fine,
To and fro through its texture it suffers to pass
Components of air, by the learned called gas.

Thus the air in the course of the moment it dwells
Diffus'd through the lungs, in the millions of cells,
Loosing oxygen gas, in exchange, one may say,
Receives carbonic acid and takes it away.

When people stay long pent up close in a room,
Replacing what oxygen gas they consume
With carbonic, the blood, which requires to be fed
With oxygen, gets the carbonic instead.

Hence, alas! comes the typhus, our deadliest pest,
That steals on its prey while securely at rest;
Hence, chiefly, consumption, that scourge of the lung,
Which so often the human nest robs of its young.

Prevention of fever—beneficent phrase!
How to do it our statesmen seem still in a haze;
If they do mean to do it, I'll tell them a plan—
Prevent poverty, ignorance, crime, if you can.

There will always be very poor people, 'we know,
But don't you have to answer for making them so?
To the rights and the duties of labor give heed;
Promote self-reliance; help only in need:

Let the people themselves understand how it comes
That consumption and fever are rife in their homes;
The invisible air make them clearly discern,
And how they may breathe it in purity learn.

Abandon the fever nests known in your town,
Give more space in your street-ways by pulling them down; [dwell,
Purchase acres outside, build where workmen may
With their children and wives, in a home, not a hell.

For these homes they'll pay rent; but provide, at the charge
Of the public, a building, capacious and large,
Where men may resort for a lounge or a treat,
And the sexes on festive occasions may meet.

But, of all things, let all men have part of each day
For out-of-door exercise, study and play:
Supply proper means of so using their time, [crime.
And you'll keep them in health, and in freedom from

—*A. Power, in Sanitary Rhymes.*

PRESERVATION OF THE HAIR.—When the hair grows scantily, naturally, the following lotion may be used three or four times a week, in the morning: Eau-de-Cologne, two ounces, tincture of cantharides, two ounces; oil of rosemary and oil of lavender, of each ten drops. When the hair becomes thin from illness, or other causes, use the following recipe: Mix equal parts of olive oil and spirits of rosemary, add a few drops of oil of nutmeg, and anoint the head very sparingly before going to bed. When actual baldness is commencing, use the following pomade: Macerate a dram of powdered cantharides in an ounce of spirits of wine. Shake it well during a fortnight and then filter. Take ten parts of this tincture and rub it with ninety parts of cold lard. Add a little essence of bergamot or any other scent. Rub this pomade well into the head night and morning. In ninety-nine cases out of a hundred this application, if continued, will restore the hair. When the hair, after being naturally luxuriant, begins to grow thin, without actually coming out in particles, use the following recipe: Take of extract of yellow Peruvian bark, fifteen grains; extract of rhatany root, eight grains; extract of burdock root and oil of nutmegs (fixed), of each two drams; camphor dissolved with spirits of wine, fifteen grains; beef marrow, two ounces; beat olive oil, one ounce; citron juice, half a dram; aromatic essential oil, as much as sufficient to render it fragrant; mix, shake into an ointment. Two drams of bergamot, and a few drops of otto of roses would suffice. This is to be used every morning.—*Michigan Farmer.*

TO PREVENT THE SKIN FROM DISCOLORING AFTER A BLOW OR A FALL.—Take a little dry starch or arrowroot, and merely moisten it with cold water, and lay in on the injured part. This must be done immediately, so as to prevent the action of the air upon the skin However, it may be applied some hours afterwards with effect. I learned this when resident in France. It may already be known here, but have met with none among my own acquaintances who seem to have heard of it. Raw meat is not always at hand, and some children have an insurmountable repugnance to let it be applied. I always make use of the above when my children meet with an accident, and find that it keeps down swelling, and cleanses and facilitates the healing of scratches, when they happen to fall on the gravel in the garden.

Oatmeal in the Household.

In Great Britain children of all ranks are raised on an oatmeal diet alone, because it causes them to grow strong and healthful, and no better food can possibly be found for them. It is also quite as desirable for the student as for the laborer, and for the delicate lady as for her hard-working sister. Indeed all classes would be greatly benefited by its use, and dyspepsia, with all its manifold annoyances, can be kept at a distance. Oatmeal is most substantial food. It is said to be better than veal, pork or lamb, and quite equal to beef or mutton, giving as much or more mental vigor, while its great desideratum consists in one's not becoming weary of it. It is as welcome for breakfast or tea as is wheat or Graham bread. It can be eaten with syrup and butter as hasty-pudding, or with cream and sugar like rice. It is especially good for young mothers, upon whose nervous forces too great a demand has been made, and they lose the equilibrium of the system and become depressed and dispirited. Oatmeal requires to be cooked slowly, and the water should be boiling hot when it is stirred in.—*Baldwin's Monthly.*

MAKING BEEF TEA.—After removing all fat, cut up three pounds of the best beef into pieces the size of a small cranberry, put it into a stone china bowl and pour over it one pint of very cold water; let it stand in a cool place for an hour or so. This brings out the juice. Fit the bowl into a saucepan of water that will allow the bowl to rest in it without quite touching the bottom, and steam in this way for two hours. Do not strain the liquor, because this process will remove more or less of the little particles of beef, which are very essential to the value of the tea. Pour and press all the fluid from the beef. It may be salted and given hot or cold. Should there be any fat on the tea, set aside until perfectly cold, when it can all be removed from the surface in a flake. For a child use two pounds of beef; for a baby one pound, to same amount of water. If the patient's stomach is very irritable, so that large quantities cannot be borne, you may resort to beef extract for nourishment; it is a more concentrated article of food, but not near so palatable as rich beef tea. Beef extract is made of lean beef cut in small pieces, and put into a bottle without any water or anything else. Set it into a kettle of water, which is to be kept boiling for two hours. Remove the bottle, subject the meat to slight pressure to remove the fluids, and season with salt.—*Country Gentleman.*

FOR THE protection of workmen who are obliged to handle lead and mercury compounds, the French chemist Melsens, recommends daily but very small doses of iodide of potassium taken internally. Melsens affirms that this substance dissolves the lead or mercurial compounds that are absorbed in the system and effects their rapid removal.

Useful Information.

Heating with a Grate.

We find in the Boston *Journal of Chemistry* some suggestions concerning the use of grates and how they should be constructed: An ordinary room, say 15 feet square and 10 high, occupied for day use only, can be fairly warmed and ventilated by one open grate fire; but this grate must be so constructed and set as to have an air space behind and around it, and this space must be supplied with out-door air by a special shaft or an opening through the outside wall, in either case regulated by a damper. The direct radiation of the fire will heat the room and the occupants to some extent, and the cold air introduced at the back will be warmed and pass out through openings in the chimney breast to the ceiling level, where it will flow to the opposite side of the room and be drawn down to and across the floor, a part of it feeding the fire or passing up the smoke flue over the fire, and the remainder going up the face of the chimney breast and circulating as before. Thus the room will be fed with a constant supply of sweet air, and a corresponding portion of the vitiated air will be removed, while the whole atmosphere will be gently but effectually stirred, and the temperature kept evenly warm in all parts. Those who need most heat can sit near the fire and thus have a larger share of the direct radiation, while the warmer-blooded can remain near doors or windows without fear of being chilled on one side and overheated on the other. There are several grates patented in England which act in the way described, and their introduction here is only a question of time. In fact, the original Franklin stove was arranged on the same principle, though the modern one is like it only in name, being simply a portable grate with no supply of fresh air except such as is drawn into the room through doors and windows.

TO MAKE OIL-SKIN.—1. The manner of making oil-cloth is very simple. Place some good resin or gum-lac over the fire in drying linseed oil, till the resin is thoroughly dissolved and the oil brought to the thickness of a balsam. Spread this upon canvas, or any other linen cloth, so as fully and entirely to glaze it over; suffer it to dry perfectly, and it will be found impenetrable to wet of every description. To give a color to this varnish, grind the blue, green, etc., with the last coat that you lay on. 2. A better method than the above is first to cover the canvas, etc., with a liquid paste, made with drying oil in the following manner: Take spanish whits or tobacco-pipe clay, which has been completely cleansed by washing and sifting it from all impurities, and mix it up with boiled oil, to which a drying quality has been given, by adding a dose of lithargs one-fourth of the oil. This mixture, being brought to the consistence of thin paste, is spread over the cloth, etc.; when the first coating is dry, a second is applied. The unevenness occasioned by the coarseness of the canvas, or the unequal distribution of the paste, are smoothed down with pumice-stone, reduced to powder and rubbed over the canvas with a piece of soft serge or cork dipped in water. When the last coating is dry, the canvas must be well washed in water, to clean it; and when dry, a varnish composed of gum-lac dissolved in linseed oil boiled with turpentine is applied, and the process is complete. The color of the varnished canvas thus produced is yellow.

Hints for Practice.

ZINC may be hardened to any degree desired by introducing ammonium chloride into the zinc while in a state of fusion, 100 to 200 grammes to the kilo.

A VERY hard metal, suitable for cutting-tools, is made by adding tungsten to gray iron while in fusion, in the proportion of 28 grammes of the former to 4,077 kilos of the latter.

A GOOD cooling for ontside brickwork is made by mixing 20 parts clean river sand, one part quicklime and sufficient linseed oil to form a thin paste. This is also useful as a cement for broken stone, as when dry it becomes exceedingly hard.

A GOOD varnish for white wood may be made by dissolving three pounds of pure white shellac in one gallon of spirits of wine, then straining and adding one and one-half gallons more of spirits. If the shellac is pure and white this will make a transparent covering for white wooden articles.

A SPONGE may be bleached almost snow-white by the following process: Soak the sponge in dilute muriatic acid for 12 hours, wash well with water to remove the lime, then immerse it in a solution of hyposulphate of soda, to which dilute muriatic acid has been added a moment before. After it has bleached sufficiently remove it, wash it again and dry it.

THE following recipe for a beautiful red ink is given by Mstra, of Paris: Dissolve 25 parts, by weight, of saffranine in 500 parts warm glycerine, then stir in carefully 500 parts alcohol and an equal quantity of acetic acid. It is then diluted with 9,000 parts water, in which is dissolved a little gum arabic.

THE following jeweler's alloy was not long since patented in France: Copper, 720 parts; nickel, 125 parts; bismuth, 10 parts; zinc, 90 parts; soft iron, 20 parts; tin, 20 parts. This is said to form a fusible, malleable metal, easily worked by a silveramith. It resists the oxidizing action of the air and is capable of being soldered.

ARTIFICIAL ivory is produced as follows: Boil one pound of ivory dust with water to a jelly; to this add one ounce each of zinc oxide and shellac dissolved in alcohol. Pour the pulpy mass into forms and allow it to become dry in the air, after which it is subjected to hydraulic pressure. The finished material may be cut, sawed and turned as well as natural ivory or bone.

AN adhesive which, as far as color and durability is concerned, is affirmed to surpass that made from gum arabic, is made according to the following recipe, viz: Milk is curdled by the addition of acetic acid (vinegar) and the precipitated casein, after being thoroughly washed with fresh water, is dissolved in a cold, saturated solution of borax. The result is a clear solution of syrupy consistence, possessing, upon drying, a fine luster and highly adhesive qualities. This adhesive is recommended for a variety of uses.

NEW USE FOR PETROLEUM.—A new use to which petroleum can be put is found in the preparation of the beds for the growing of tobacco. Hitherto it has been the practice to burn off the remnants of the old crop before setting in the new by means of cordwood, as much as 30 cords of wood being necessary to a bed of 1,000 yards square. It has now been found that the work can be more quickly and better done by means of refined oil, one gallon being sufficient to treat 100 square yards with. The way to use the oil is described thus: The bed is first to be cleared off as if for burning by wood in the old way. After this is done the oil must be applied evenly and uniformly from a watering pot. As soon as the oil is thus applied, the match is to be touched and the job is done. The latter part of the work must be done quickly, in order to avoid danger to person. If it be desirable to burn deeper, before applying the oil, hoe up the bed, and then proceed as above directed. The oil will penetrate the soil as far as it is worked by the hoe, and will burn as deep as the oil penetrates. It is thought that the oil can be used with equal value in the preparation of ground for early vegetables, by warming it and giving the stimulus supposed to be given by guanos, besides being destructive to worms and insects—*Titusville Herald.*

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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Our latest forms go to press on Thursday evening.

San Francisco:

Saturday Morning, Oct. 21, 1876.

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SOUTH AMERICAN MINES.—The following, concsrning some new mines in which several residents of San Francisco are interested, we take from *La Republica* of August 11th: "Yesterday there waa taksn to the mint for examination some samples of gold from Catapilco, from the works recently established there. From the analysis made it waa decided that the gold waa of the highest grade. The samples shown were very numerous and some of the nuggets were larger than an almond. The works have been started with great activity at Catapilco, and from calculations made, each laborer produces from $40 to $60 in gold per week. When all the machinery is in place and the whole work thoroughly organized, it is expected that the yield will be from two to three times as great."

THE WATER COMMISSIONERS.—Major Mendell, engineer of the board of water commissioners, s still engaged with a party of engineers in locating reservoir sites in the foothills of the Sierras. The party are now at work in the vicinity of Anburn, and expect to complete their work in a few weeks. A line of levels has been run across the intervening country toward the city to determine the best route for a pipe line and get the pressure at various points. The figures of this survey will be made the basis for specific proposals from each of the parties having sources of water supply, or water rights for sale.

MACKEY & FAIR are building a new tailing flume from the point where it atarts in Gold canyon to the Ophir mill.

Pacific Coast Coal Mines.

The Reduction in Wages.

There has of late been considsrable dspression in our coast coal mines, which, though advantageous to purchasers, has been detrimental to the local coal mining interests and to the miners. The largs number of vessels from England and Australia which have been arriving for some time to carry off the wheat, came with cargoes of coal. This coal was bronght in most instances merely as hallast. Under these circnmstances of conrse the forsign coals flooded the market here and were sold at reduced rates, so that local coals were in no dsmand. Prices fell slowly until Angust and Septsmber, when they came down more suddenly. The mines at Mount Diablo and those at Seattle and thereabouts, after coming down in price a little, ceased production instead of reducing pricea further. Of conrse after they stopped sending the product to market they had to cease work on the minee to a great extent, and many men were thrown out of work.

The customary price for cutting coal on this coast haa been one dollar per yard, thongh in a few minee where unusual obstrnction existed, the price haa been one dollar and twenty-five cents. Not long since the coal companies at Mount Diablo, comprising the Black Diamond and Pittsburg, notified the men that from the first day of Octoher the price of cutting coal wonld he reduced twenty-five cents. The companies claimed that with the dull market and extremely low nrice of coal, by reason of great competition, they could not afford to keep up the old estahliahed ratea of one dollar per yard for cutting.

The minera demnrred to this proposal, and several meetings wsre held by the miners of Somersville and Nortonville to consider the proposition. At last it was determined to inform the auperintendenta that they wonld resume work at a reduction of twelve and one-half cents per yard, that being one-half the reduction demanded hy the companiea. Accordingly, a formal proposition was made by a committee selected hy the workingmen, bnt they were informed that no compromise whatever would he made.

This state of things lasted for a few days, when both companiea decided to close down the mines. Both companies removed their lower level pnmps and were proceeding with preparationa to remove the other pumps and underground machinery. We nnderstand now, however, the miners have finally consented to the reduction proposed hy the compaaies, taking into consideration the fact that the mines have been running on only ahout half time for a year or more past, and it waa probsble that the owners wonld be compelled to cheapen coat of prodnction if they kept their coal in the market at all.

Under the circumstancsa it seems mnch more reasonahle for the men to consent to the redno tion rather than to have heen stnbborn and had the minea close down altogether. Hnndreds of poor families would have been thrown ont of employment at a had season of the year. Moreover, most of the men are unaccnstomed to other kinds of work and there are plenty of miners out of employment already. Neither the Renton ncr Talhot companies, in Washington Territory, are at work, and the Seattle coal company haa for some time heen redncing the number of ita employees, discharging the nnmarried msn and retaining those of family.

Coal is now as cheap in this city as it ever has been. The foreign coala are preferred to our own at equal prices, and as long as the wheat ships continue to come, prices will hardly recover. The local mining companiea hope for an advance after the firat of January which will result in a reaumption of work. Probahly, if the market warrants it, the old pricea for coal cutting will he paid and the miners have shown better aense in accepting the situation than they would had they kept up a strike and compelled the companies to lose more money hy letting the mines lie idle altogsther. Cheap coal has long been the need of thia coast, and purchasers have now no cause whatever to grumhle, although the immediate reault of the reduction in price worka hardship to mining companies and miners.

The present prices of coal in San Francisco are about as follows: Australian coal, $7.75@$8.00, to arrive; Liverpool steam, $7.00; Cannel, $13; West Hartley, $9.00; Scotch splint, $7.50@$8.00; Pittsburg lump, $14; Cumberland, $13@$14; Lehigh, $14. From ship, the pricea are quotable as follows: Scotch splint, $11.50@$12; Lshigh, $15; Egg Hard, $17@$18. Prices for Pacific coast coals are aa follows: Coos Bay, $9.00; Mt. Diahlo, $5,75@$7.75; Bellingham Bay, $8.00; Nanaimo, $8@$9; Wellington, $9@$9.50; Seattle $9@$10.50. These are of course wholesale pricea, those charged at the small yarda for domeatic conaumption heing considerably higher.

IMPORTANT MINING SUIT SETTLED.—The conflicing claims to the Dolores mine, which have been in litigation for the past five years, were a short time since finally aettled by a compromise and a consolidation of all the conflicting titles. This mine is situated in the Wilson mining district, Esmeralda county, and is believed to he a rich and valuahle piece of mining property.

THE Amador *Ledger* underatands that the last clean np of the Amador Consolidated mine, of Sutter Creek, realized $27,000.

Water for Boilers From Mines.

Too great care cannot bs observsd by mill owners and enginssrs, especially in new mining locations, in carefully examining the water which they propose to introduce into their hoil'ers for making steam. Boilers are vsry soon estsn away hy some waters, often leading to disastrous sxplosions, hut more frequsntly causing a rapid deterioration of its valus, which soon involves the cost of a new one. Watsr from mines whsre coppsr pyrites are present evsn in smsll quantities, usnally contain more or less sulphats of copper in solntion, which causes no little corrosion of the boiler plates, and ia attended with a deposition of spongy metallic copper. All who are acqnainted with the usual wet process of assaying copper must he especially aware of thia action.

Mine waters are rarely free entirely from aaline or acidnloua constituents such aa will produce more or less corrosion upon boilera. Soft waters from the surface also often carry a oonsiderahle amount of organic matter, free alkali or carhonic acid in solution, which produces a degree of corrosive action.

The perishahle nature of iron when in alternate contact with air anu water, used in any connection, is known to every one, and no engineer shonld fail to keep a watchful eye npon hoth the never ceasing deterioration of the boiler and the kind of water used for making steam. A careful analysis of the usual supply of water from time to time could scarcely fail to be of use in gniding the engineer to the proper corrective agents for rendering the water employed as harmless as possihle. Hard water containing bi-carbonate of lime may be readily precipitated, throwing down the lims as a nsntral carhonate, and leaving clear water, which will no longer form an incrnatation when hoiled. Soft waters acting corrosively when boiled may be corrected hy the addition of a little lime, and acidulous waters may he as readily corrected by addition of alkali. An analysis of any water which acts corrosively on hoilera will almost alwaya enable the chemist to point out some simple method of correcting it, and at a nominal expeuse.

In the Eastern States and in Enrope persons are employed whose exclusive duty is to make analyses of the water used in locomotives along the routes of the principal railroads, for the purposes referred to above. In the mining districts where the water is apt to change from time to time the more care should he taken, and we have no doubt it wonld pay in the long rnn.

Gems and Precious Stones.

[Written for the PRESS by HENRY G. HANKS.]

T. Axinite.

This mineral ia sometimes used as a gem. It crystallizea in the triclinio system. Hardness, 6.5-7; specific gravity, 3.271; lnster glassy; color clove hrown, plum blue, pearl gray; exhihits trichroiam, that is, shows three colors when seen in different directions; streak uncol ored; trsnsparent, subtransparent; fracture conchoidal; hrittle, pyro-electric, donbly refractive. The following analysis will reveal its composition: Silica, 45.00; horacic acid, 2 00; alnmina, 19.00; aesquioxide of iron, 12.25; oxide of manganese, 9.00; lime, 12.50; msgnesia, .25,=100.

B. B. axinite fnsea readily and imparts a pale green color to the oxidizing flame (boracic acid); when perfectly fnsed it becomes a dark green or hlack glass; with borax in the oxidizing flame givea an smethystine head (manganese), which in the redncing flame becomes yellowish green (iron); fused with a mixtnre of finor spar and bisulphate of potash, colors blowpipe flame green (horacic acid). It is not decompoaed hy acids, hnt when first ignited gelatinizea with muriatic acid.

Axinite ia a rare mineral. It is fonnd in the primitive rocks. At Dauphiny it occura associated with quartz, feldspar, epidote and asbestos. Thia minsral takes a high polish, and when of nniform color makes beautiful jewelry. Owing to its scarcity it is not mnch known.

Axinite takes its name from a Greek word signifying an axe, from the form of its cryatals.

CASSIAR MINES.—Dispatches from Victoria state, in relation to the Casaiar minea, that the Discovery company have made a new strike on McDame'a creek. The weather was cold and clear, with indications of an early winter. Abont 150 minera will winter at Cassiar. It is estimated that abont 100 persons have left the city dnring the past few days for Deception gulch, on Leech river, where the late gold discoveries were made.

SOME OF THE DUMPS of the Comstock minea are so large that they have to run tnnnels through them. Sets of timhere have been put in at the place where the C. & C. side-track goes through the Chollar-Potosi dnmp. As the working of the mine bringa more debris to the surface and it falls down upon these timbers and their covering, the cut will become a tunnel. Other dumps are being treated in the same manner.

THE Pioche *Record* understands that the mine in San Francisco district, Utah, recently sold hy John C. Lynch of Pioche, is proving a great bonanza. The owners are Cullen, Green, Ryan and Byram. They have refnsed $300,000 for the property.

Items of Interest from the Mines.

We give below items of interest from prominent mines, most of which are collated from the letters of ths respective supsrintendents, on file at the offices in this city. Considerable of the news is later than that procured from the interior jonrnals.

In the Con. Impsrial mine the w ater coming in at the 2000-foot level, in drift running north, has a heat of 150 dsgrses. Ths temperature in the drift is 108 dsgrees. Greater heat is expscted.

The furnaces at the Modoc mins, Inyo county, started up on the 9th inst.

In the Manhattan mine guides and tnrn-tables are completed in the center shaft; a cage is abont to be put in nse. This will enable them to run a cross-cut to the Paxton ledge and make connection with the 700-foot incline of the Panamint. When thia is completed hoisting can he commenced through the shaft from the fine hody of ore.

At the Glasgow the pump columns are being placed in the mine.

The September receipts of the Lsopard mine were $77,342, and a dividend amounting to $25,000 waa paid on the 16th.

Justice ia shipping daily 156 tons of ore to the several mills, to wit: Douglass, Woodville, Boston, Pioneer, Sherman and Excelsior, extracted from ths ore-producing atopea and drifts of 400, 500, 600 and 800-foot levels.

The superintendent of the Wells-Fargo mine is hulkheading and damming the ravine to the westward of the company'a works, by which means he is enabled to carry enough water thia winter to supply the run for the entire year. If this is successful it will save about $4,000 next yèar.

In the Consolidated Impsrial the new hlower is a success, doing splendid work—giving plenty of air in all working parts of mine. The miners now can have no excnae, and must do good work. The air from the Bullion ia gradnally working down to the 2000-foot level of the Consolidated Impsrial, cooling drifta and winzea in its course.

The object of the Emigrant assessment ia to pay off $14,000 now due, to hring water from the company's aprings to the mine, a distance of nine miles, and to remove the company's five stamp mill at the springa to the mine. On the 16th inst., Northern Belle paid her seventeenth dividend—$50,000, making $850,000 divided among atockholders altogether.

In the Empire they have connected No. 6 south crosa-cut with the raise from No 7, and commenced to drift on the ledge south and north.

A set of machinery for a 10-stamp qnartz mill, with all the pulverizing and amalgamating machinery for Panl'a dry procesa, was shipped Saturday, for Roseburg, Oregon.

The Gila letter says: I do not think from recent dev-lopments there is any question bnt the quartz helt is bottomed, and the only hope of an ore hody being fonnd is to the south of our present worka undsr the porphyry hills.

Prospecting is being pushed with energy in the Raymond & Ely. They now have a good circulation of air on the tenth level. The superintendent says: The smelting furnsce at Bullionville will be completed in a few days, and if it provea a success we can have onr hase ore reduced here inatead of shipping it to Sacramento, and save transportation on the waste material.

The water in the Hale & Noroross mine is very hot—140 degrees Fah.

Consolidated Virginia has disbnrsed in dividenda to date, $24,840,000, nr $46 per share.

In the Mansfield, south level from atation No. 1 is producing some very rich ore in fine gold and sulphnrets.

In the Genesee they are doing well; a run of 18 daya with the hatteries gave a clean-up of 432 onncea of hard amalgam retorting 150 onncea of coarse gold.

In the east drift 1800-foot level of the Julia, work has been suspended for the present, until the water is drawn off.

INCORRECT.—In justice to Mrs. J. R. Hardenherg, regarding whom a statement was made in our "Comstock Paper No. 7," we would atate that we have been shown the decree of divorce of the District Court of the 14th Judicial District of Nevada, which shows that Mrs. Hardenherg was divoroed from Hastinga in 1858, or before the Washoe excitement, and that the grounds upon which the divorce was granted was, "that the defendant, J. W. Hastings, has not provided the necessaries of life for his family during the last three years, he having the ahility so to do." Mrs. Hardenberg conld not, therefore, have received any portion of Hastinga' wealth which he accumnlated from Washoe apeculation. Mrs. Hardenberg did not marry Mr. Hardenberg nntil 1863, about five years after ahe waa divorced, so that there is very little likelihood of Mr. Hardenherg having henefited from Hastinga' wealth. Our correspondent was evidently misled in the matter, and it is no more than strict jnstice to Mrs. Hardenberg that we make thia statement.

THE Seattle coal company shipped 3,995 tons of coal during Septemher. Neither the Renton nor the Talbot companies are at work, owing to "faults" and water.

Academy of Sciences.

Remedy for the Phylloxera.

The California Academy of Sciences held its regular meeting on Monday evening last. Among the donations to the cabinet was a collection of over 100 specimens of minerals from R. H. Stretch, to whom a special vote of thanks was passed.

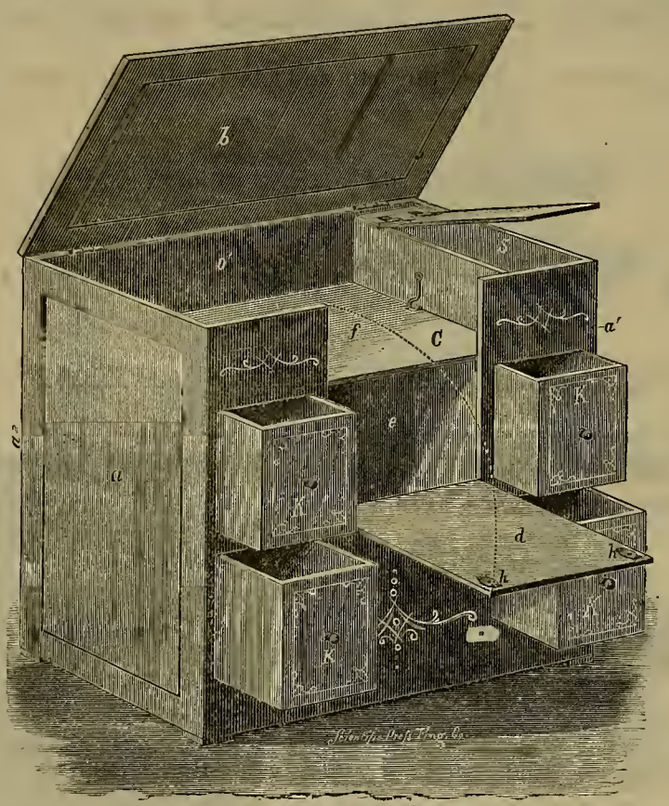
Mr. Guerin, engineer, read a paper on the mathematical determination of the minimum thickness of conduit pipes consistent with strength required to resist the hydraulic and hydrostatic pressures, etc.

Dr. James Blake read the following important paper on the phylloxera:

My attention having been directed some months ago to this new pest which so seriously threatens the destruction of our vineyards, a series of experiments was undertaken under my direction at one of our largest vineyards in Sonoma county, with the view of discovering some means of checking the progress of the disease, as it has already almost destroyed some of the most promising vineyards in that locality. At the time of commencing my investigations I was aware that the subject had occupied the attention of some of the most distinguished scientists in France for the last three or four years, nor should I have entered on the investigations with any hope of success, had I not known that the efforts of these gentlemen seem to have been directed to the destruction of the insect without having acquired sufficient knowledge of its natural history. So far as known the insect is one which goes through a series of generations without changing its form, during which many thousands of insects can be produced from a single impregnated ovum (75,000,000 have been calculated), but after a certain number of these parthenogenic generations the power of non-sexual reproduction ceases, and the development of a new form becomes necessary for the continuation of the species. This alternation of generations takes place in many of the lower tribes of animals; the different generations of the same animal being in some instances so dissimilar as to have been mistaken for different species. In the phylloxera the forms usually met with, or, at least, that had been described when I commenced my investigations, were two non-sexual forms, the nymphs and nurses, the former being a small insect with legs which allow a certain degree of locomotion, the latter being a form in which the legs are so slightly developed as to be hardly visible, so that the insect can move but a very short distance from the spot where the ovum is deposited. Besides these two non-sexual forms, whose life is entirely subterranean, there is a winged form in which the two sexes are developed, and which passes the greater part of its existence above ground. Within the last few months it has been discovered that this winged insect deposits its eggs on the leaves and bark of the vine, and from these eggs it is probable that a new generation of nurses and nymphs arises which, at least for many generations, propagate themselves on the roots of the vine without any males being produced. There were two important questions relating to this winged form of the insect which had not been decided, viz.: whether they deposit any eggs on the root or bark of the vine under ground, and the form of the insect that is first produced from the impregnated ovum. These questions have an important bearing on the means to be taken for the destruction of the insect, but unfortunately neither of them had received a satisfactory answer. In the spring of this year I presented some specimens at the microscopical society, of a form of the insect that had not been described. In my frequent examination of the roots of diseased vines during the winter, the insect was only met with under the form of nurses, which remained in a dormant state from the beginning of November to April. The first sign of a renewal of activity in the insect was the appearance of a form much resembling the nymph but rather larger, with a sort of gelatinous body, and so transparent that from ten to twenty ova could readily be distinguished in the abdomen. It was much more active than the nymphs, running about the roots with agility. My own opinion is, that it was a form of the insect directly developed from the impregnated ovum, but whether it had been hatched above the ground and had traveled down on the root, or whether any impregnated eggs had been deposited beneath the surface from which it had been produced, is not known. The same form of insect was described by Mr. Balbiani at a meeting of Academie des Sciences at Paris, about two weeks after I had exhibited it at the microscopical society. On seeing this form of the insect, the idea at once struck me that this was the phase of its existence in which it could most readily be destroyed, and believing that this form was one which was necessary for the continuation of the species, its destruction would necessarily be followed by the disappearance of all the other forms.

The Bisulphide of Carbon

Seemed to present the only agent likely to be efficacious against the insect. Owing to the extreme volatility of this substance, its vapor, when it is introduced at some distance beneath the surface, would permeate the earth in all directions over a considerable area, and thus would have a chance of reaching even the distant rootlets of the vine. Although it had been reported in France that the substance was not destructive to the insect, yet I believed that the soft, apparently undeformed, which I had just discovered, would not resist it. In order to introduce the substance beneath the ground, an iron tube was taken with a sharp steel point at one end, the sides being pierced with a few small holes near the bottom, and a piston was made which could be forced down the tube. The tube was driven into the earth for a distance of one or two feet, near the root of the vine; some bisulphide of carbon was poured into the tube, which was then filled with water, and the contents of the tube forced out into the ground with the piston. The tube was then drawn out and the hole filled up. The quantity used on each vine was about an ounce and a half of the bisulphide. This was introduced into the ground through two or three holes. The substance was applied in the end of April and early part of May, only one application being made, and in every instance to plants that were evidently suffering from the disease. The result has been, on the vines so treated the insect has almost entirely disappeared, whilst on vines that were in the same condition last year as those to which the bisulphide had been applied, but which were not treated, the roots swarm with the insect, so that none of them are likely to survive this season, at least of those that were most affected.



FELTER'S PASTRY BUREAU.

In the early part of the season no great difference was noticed between the foliage of the vines that had been treated and the others, but within the last six weeks the vines on which the insect had been destroyed present a decidedly healthier appearance. A more marked difference is observable in the roots, specimens of which I submit for inspection. It will be seen that whilst the roots of the vines to which the bisulphide has been applied present a comparatively smooth and healthy appearance, the roots of the untreated vines are rough and covered with dead and decaying bark. In both sets of roots the lower portion is generally dead, the result of the ravages of the insect during the last season; but whilst in the plants which are still infested with the insect this process is still going on and will continue until the vine is destroyed, the other roots are throwing out quite a number of healthy rootlets and are covered with a new and smooth bark, so that they will be prepared in the ensuing year to throw out a new crop of rootlets.

As regards the

Practicability of the Treatment

This presents no obstacle, as the bisulphide of carbon can be obtained now in a comparatively pure state at about 50 cents per pound; and I am confident it can be produced in a form quite suitable for use in the vineyard at a third of the price, so that the cost of the material for each vine would not exceed two or three cents. The process of applying it is simple, and can be carried out by any ordinary laborer. The time for applying it should be during the month of April, as at this season the insects that have survived the winter have not begun to lay their eggs, and experiments that have been carried on during the summer show that whilst the bisulphide is a certain poison to the insect in all its forms it does not destroy the egg. This is the reason of its reported failure in France, where probably it was not applied at the right season. By using it in the spring, at the time that the winter eggs at the surface are being hatched and before the hybernating form has commenced laying, we have the insect entirely in that phase of its existence in which it can be killed by the bisulphide; and experience has shown that at this time its destruction is completed by one application of the poison. The only place where the insect has been found on some few of the vines treated has been near the surface, where the vapor became too much diluted with the air to prove fatal, and one patch of the insect was found at a depth of more than four feet, where it was possible the vapor had not penetrated. In the course of my experiments I have discovered that the refuse lime from the gas works will kill the insect for some distance beneath the surface when it has been applied round the roots, and from what we know of the natural history of the insect it is almost certain that it will shortly die out at any great depth, when it cannot be renewed by fresh nymphs developed from the winter ova. The

Plan of Treatment

I have advised for the diseased vines is, during the winter, and as late as possible before the cessation of the rains, to apply three or four pounds of the lime refuse round the stem, drawing the earth away from the stem to the depth of two or three inches, at the same time brushing the stem for six or eight inches above the ground with train oil. Then about the middle of April to the first week in May use the bisulphide of carbon under ground in the way I have pointed out, making three holes round each vine at a distance of 18 inches from the stem, and using about two-thirds of an ounce to each hole, the holes when the tube is withdrawn being well filled with earth and stamped down.

When the vine is so far diseased as to have suffered materially in its foliage, the better plan is, I think, to pull it up. But a careful examination will detect the presence of the insect on the roots of vines the foliage of which appears quite healthy and which are bearing a full crop of fruit. In this stage of the disease the insect is not in sufficient numbers to so completely absorb the descending sap as to have prevented the formation of new rootlets, and whilst this is the case the vine can readily recover itself. Whatever may be the case in other countries, I am convinced that here the destruction of the lower portion of the roots is not caused by the direct attack of the insect, as I have found the roots dead two or three feet beyond where any trace of the insect could be discovered. Owing to the peculiarities of our climate the vines send their roots much deeper here than in Europe, and although in the older vines in the vineyard where I investigated the disease, the roots derived their principal supply of nourishment at depths from six to ten feet, I have not found the phylloxera at a greater depth than four feet, although the roots were dead as far as they could be traced, and far beyond any part that had been directly attacked by the insect. Where the vines are pretty badly diseased, I think the application of the bisulphide at the beginning of the winter, say in November, would more than repay the expense, as thousands of insects would be thus destroyed that otherwise would be feeding on the joices of the vine during the next five months. This, however, must not supersede the use of the poison in the spring at the time when the winter eggs are developed.

In the roots shown this evening the healthy appearance of the new rootlets on the treated vines is a sufficient proof of the absence of the phylloxera, although I would state that after a careful examination I have not detected a single insect. The roots that were not treated have not thrown out a single rootlet. It is needless to remark that the vines that were treated all showed evidences of being attacked by the disease last season, as is evident from the appearance of the roots, although not an insect is to be found on them at present.

Where the vines have not been already attacked, I believe the application of train oil to the stem and the gas works lime to the surface round the top of the root will protect them, or a small quantity of the bisulphide introduced near the root a few inches beneath the surface in the spring, would certainly save them from the attack of the insect.

Improved Pastry Bureau,

We illustrate on this page a "pastry bureau," recently patented through the Mining and Scientific Press Patent Agency by J. R. Felter, of San Bernardino, Cal. The invention consists substantially of a cupboard constructed with side drawers or compartments and a centrally located flour chest, the top of which constitutes a pastry bureau, whereon pastry, etc., may be conveniently manipulated.

In the cut a a^1 a^2 represent the end and rear sides of a cupboard which is provided with a hinged lid, b, in the usual way. A portion of the front part, C, of this cupboard, consists of a hinged board, d, which serves both as a lid for the flour chest, e, which is centrally located within the structure, and as a cover or door for an opening formed in the front, C, of the cupboard, just above the flour chest. The object of the opening is to provide means for easy access to a pastry board, f, which will be exposed after the lids, d and b, are opened. The board, f, is denominated a pastry board by reason of its special fitness as a table or board for the reception of the several ingredients to be kneaded together in making the cake, etc. It forms a horizontal division in said cupboard, located at a suitable distance below the top of the cupboard, and also constitutes the top of the flour chest. The depth of the flour chest may be raised according to the depth of the cupboard, its front opening being of sufficient size to permit convenient access to the flour.

The lid d, which is hinged to the side C, is of such dimensions that when swung into a vertical and closed position its upper edge shall be flush with the upper edge of the front part C, of the cupboard. The lid d, is secured by buttons h, or any suitable means. K K, are drawers arranged between the sides of the flour chest and cupboard and will be found exceedingly useful for the reception of various articles. S, is a spice box with hinged lid and temporarily connected with the pastry board by a hook, so that it can be removed when desired. To use the pastry board, the top lid, b, is swung open and held in suitable position by means of a hook, and the side lid d, swung open and down upon the front side of the cupboard.

This article of furniture for the kitchen department of a house is intended to lessen domestic labor. In using it the housewife has the articles for pastry work conveniently, and does not have to take two steps to get the things used in making pie, cake, bread, etc. Everything used for this purpose is kept free from dust, the "bureau" being specially arranged for this purpose. It has also other advantages, having four drawers, each of an average capacity of 25 pounds, in which can be placed various groceries in quantities suitable for kitchen use. It occupies no more room than an ordinary sink. The kneading board is under cover and out of the way. The flour compartment holds a barrel of flour, and the till will hold the roller, yeast powder, cake cutters, etc. Those desirous of further information can address the inventor as above.

Bullion Shipments.—Since those mentioned in our last issue, bullion shipments have been made as follows: Ophir, Oct. 11th, $33,343; Virtue, Oct. 10th, $4,492; Arizona, Oct. 11th, $1,349.82; Northern Belle, Oct. 10th, $12,015.11; California, Oct. 12, $58,053.61; Con. Virginia, Oct. 12th, $68,938.62; Leopard, Oct. 13th, $13,550.92; Northern Belle, Oct. 12th, $12,120.41, Comanche, Oct. 10th, $7,919 30; Con. Virginia, Oct. 14th, $85,755.57; Leopard, Oct. 8th, $4,576.60; Ophir, Oct. 13th, $27,673.46; Washington (Mariposa Co.), 470 ounces from 375 tons of ore; Arizona, Oct. 15th, $3,688; California, Oct. 17th, $73,210.85; Northern Belle, Oct. 15th, $16,180.11; Leopard, Oct. 17th, $12,380; Con. Virginia, Oct. 17th, $101,343 73.

Our Agent in Idaho.—Mr. B. Goodwin, an old and reliable agent of this paper, will soon visit Idaho Territory and take items of its mines and other rich resources. Circumstances beyond our control have prevented our giving full correspondence heretofore from this important portion of our mining field. We invite local correspondence from all parts of the Territory.

The Boston mill was started crushing Justice ore last Friday. Six mills are engaged grinding this ore, and it is expected that the yield for the current month will be $200,000,

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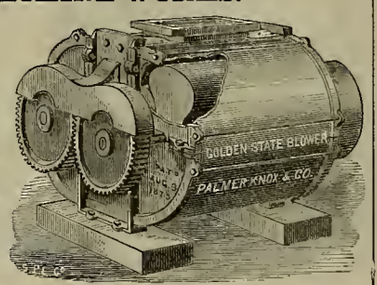

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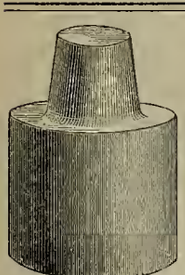

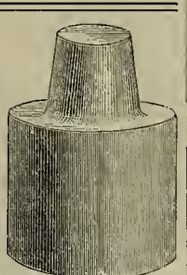

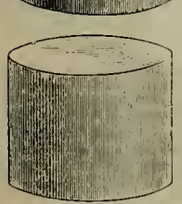

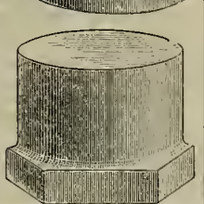

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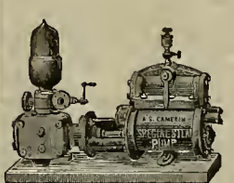

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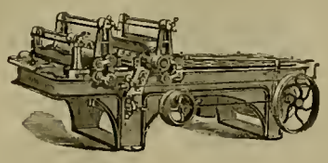

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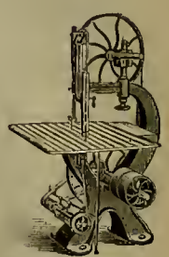

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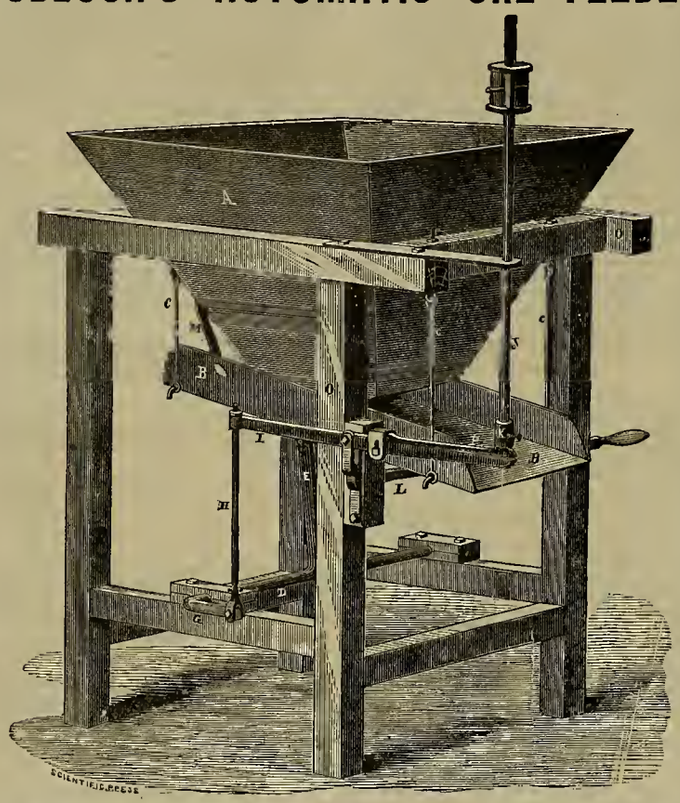

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We append a few extracts from the many testimonials which we have received from mill men and practical mining men, of the effectiveness and positive action of the Tulloch Feeder. We do not depend solely upon these testimonials, as we are aware that testimonials are easily secured for almost any machine, but the high character of the parties certifying to those herewith given, will establish their value and genuineness:

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Continued from Page 270.

Arizona.

LOCAL NOTES.—Arizona *Citizen*, Oct. 14: On the 10th Joe Herring took $162 out of his claim, at the Santa Rita placers, from one pan of dirt; hut one piece of the gold was worth $150. The Trench mine and smelting works are now employing 60 men, and smelting goes on night and day. Mr. Gardner, who came in on Thursday, says they are now smelting ore which yields all the way from 50 to 750 ounces of silver to the ton. Mr. Gardner says the owners of the Santa Rica mine brought one ton of their ore to the Trench works, smelted it and obtained 151 ounces of silver; also that D. T. Hershaw and partner recently discovered a vein of silver ore near the Trench, took one ton of the ore and smelted it at the Trench works, and got 92½ ounces of silver. Everything in the neighborhood of the Trench looks encouraging.

Idaho.

THE MINES.—Idaho *Avalanche*, Oct. 14: The Poorman continues to yield a splendid quality of rock, a considerable quantity of which is now being crushed at the Ellmore mill. The indications are very favorable for a promising return. The prospects of the Empire mine are improving daily. From a recent test of the rock it was ascertained that the pile about to he crushed will make such an average yield as will fully justify the continuance of operations in the mine for the coming winter. A bar of bullion from the Potosi crushing at the Ellmore mill, weighing 93 pounds, was melted by A. L. Simondi recently. This is the first treasure that has been taken from the Potosi for over six years. The value of the brick was $2,855.46, of which about one-third is gold and two-thirds silver. The rock averages about $32 to the ton, which, though not quite up to the expectations of the owners, will pay handsomely. Our Wagontown correspondent, under date of 12th instant, writes: The new quartz mill is rapidly approaching completion. The building is enclosed and roofed over, the engine bed in place and the boilers ready to he placed in position, so that there is nothing to hinder its being placed in position by the first proximo. The Last Chance mine is running a full crew of men and is turning out a considerable quantity of good ore.

Utah.

ALTA MINES.—Cor. Salt Lake *Tribune*, Oct. 10: The tramway is doing a big business in the freight line, as our miners and merchants are laying in their winter supplies. The frame for the tramway sheds has nearly reached this place, and all the mills here and along the line of the road are busy sawing lumber to cover them. A large body of rich ore has been struck in the Crown Prince and Frederic mine, now under lease to Messrs. Brough, Tucker and Johnson. The company are preparing to drive their tunnel ahead with steam drills another season. The Flagstaff mine is the mainstay of this camp. It works a large force of men, keeps wages at the highest notches, and the result is they are making the largest shipments of ore of any mine in camp. In fact, they are shipping nearly as much as all the mines together. They hire the most skilful laborers and are willing to pay for them. What a contrast to two other mines in camp, once leading mines, which have adopted the plan of cutting down wages to the lowest figure for which a laboring man is willing to wear away a day of his life. As a natural consequence, the work is poorly done, the ore badly sorted from lack of experienced labor, and carelessness of cheap laborers. The mines do not pay, the forces are cut down and now they are little more than a cipher to what they "might have been."

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

WEST JUSTICE M. Co.—Oct. 11. Location: Nevada. Trustees—M. White, J. C. Ballinger, A. G Kinsey, A. F. Main and E. J. Moore. Capital stock, $4,000,000.

DONALD G. & S. M. Co.—Oct. 13. Location: Nevada. Directors—C. B. Jillson, F. H. Fanley, Daniel Hanlon, D. H. Percy and John Ward. Capital stock, $10,000,000, divided into 100,000 shares.

COOK ANN GRAY G. & S. M. Co.—Oct. 13. Object: To miue and mill ores from the Midas and Flora Temple mines, Lyon and Storey counties, Nevada. Directors—S. Heydenfeldt, J. G. Riley, D. B. Francis, J. Phelan and W. B. Murdoch. Capital stock, $10,000 000.

LORD & ROBINSON G. & S. M. Co.—Oct. 13. Object: To mine and mill ores from the Cook and Gray and Little Giant mines, Storey county, Nevada. Directors—S. Heydenfeldt, J. G. Riley, D. B. Francis, J. Phelan and W. B. Murdoch. Capital stock, $15,000,000.

LOYAL G. & S. M. Co.—Oct. 13. Location: Washoe. Directors—B. B. Taylor, Frank L Kreider, R. C. Singer, Geo. H. Bradshaw and W. J. Pilcher. Capital stock, $10,000,000.

CALIFORNIA CRYSTAL OIL CO.—Oct. 14: Directors—J. B. Ford, Hiram Tubbs, B. Wellman, T. M. Dawson, W. H. Murray, W. O. Quinby and A. Rogers. Capital stock, $100,000.

WASHOE WATER AND GRAVEL CO.—Oct. 14. Directors—C. W. Carter, W. H. Duryea, C. H. Light, D. B. Coffin and J. H. Wilson. Capital stock, $2,500,000.

GEN. ROBERT ALLEN S. M. Co.—Oct. 16. Location: California. Directors—Robert Allen, J. D. Wilson, W. H. Duryea, J. Y. Wilson and Samuel Locke. Capital stock, $6,000,000.

OCCIDENT M. Co.—Oct. 16. Location: California. Directors—A. Erickson, J. E Englestrom, Robert Sloan, C. E. Joy and N. Leigh. Capital stock, $10,000,000.

EQUATOR G. & S. M. Co.—Oct. 17. Location: Nevada. Directors—Benjamin Lake, E B. Clement, James H. Wilson, E. E. Potter and N. Curry. Capital stock, $10,000,000.

PLUTUS G. & S. M. Co.—Oct. 17. Directors—A. Peck, John Brunner, M. Freudenberg, William Jay Smith and H. A. M. Thee. Capital stock, $12,500,000.

Meetings and Elections.

EUREKA CON. M. Co.—Oct. 16. Trustees—George S. Dodge (President), S. Heydenfeldt (Vice-President), F. Zeile (Treasurer), Frank Locan and John W. Shaw. W. W. Traylor, Secretary and H. Donnelly, Superintendent.

EXCHEQUER M. Co.—Oct. 16. Trustees—S. Heydenfeldt (President), J. T. Hill, Henry Von Bargen, W. A. Schultz and Geo Schultz (Vice-President). J. S. Kennedy was elected Secretary and E. A. Schultz, Superintendent.

SAN FRANCISCO AND NORTH PACIFIC RAILROAD CO.—Oct. 16. Trustees—Peter Donahue, Michael Reese, T. J. Bergen, Edward Martin and F. H. Gerdes. Peter Donahue was chosen President; Michael Reese, Vice-President; E. Martin, Treasurer; P. Dougherty, Sec'y.

SOUTH CHARIOT M. Co.—Directors—Geo. L. Perine, E. Kenely, F. A. Roe, J. Naphtaly and W. H. McClintock.

NORTH CARSON M. Co.—Trustees—J. M. Gitchell, W. O. M. Berry, D. L. McDonald, N. D. Chamberlain, J. I. Ayres. Mr. Ayres was elected President, D. L. McDonald, Vice-President; W. A. Van Bokkelen, Secretary; A. S. Gould, Superintendent.

MINT M. Co—Mr. John Landers has been elected a Trustee to fill the vacancy caused by the resignation of J. K. S. Latham.

THE MCCRACKEN CONS. M. Co. have re-elected their old officers.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

Remarks on Quicksilver.

[Written for the PRESS by SAMUEL PURNELL.—No. 2.]

Chemistry of Mercury.

The chemistry of mercury is simple. It is a white metel, flnid at temperatures between 40 deg. and 675 dsg. F., at which latter point it becomes vapor. The proper ore of mercury is cinnahar, consisting, when pure, of sulphur, 13.79, and of qnicksilver, 86.21 per cent. The density of mercury vapor, referred to sir as nnity, is 6.7. Mercury is slightly soluble in boiling water. It amalgamates with nearly all metals, except iron.

No operation in modern metallurgy is so simple as the extraction of quicksilver from cinnebar. The ore is heated, with or without a flnx, in a close chamber, the metal is snblimed, and condensed in a cold chamber. There are two processes—one, by distillation with flnx; the other, hy rossting with air without flux. The latter is now alone nsed with profit on low grade ores, and is practically universal. In the process of distillation with flux in retorts the powdered ore is mixed with hydrate of lime and heated to a red heat; the snlphur combines with the lime, forming sulphide of lime (with some sulphate), and the qnicksilver vapor passes off to a condenser.

Sulphur combines with most other snbstances more readily then with mercury, consequently mercurial compounds are readily decomposed. Sulphur has a very decided affinity for oxygen. Therefore, when cinnshar is heated with free access of air the snlphur is oxidized, uniting with the oxygen to form sulphurous acid, according to the equation $Hg\ S + O_2 = S\ O_2 + Hg$, and metallic mercury is left behind, which sublimes nearly pure. The residue is mostly silica, clay, lime, iron, etc. Cinnahar is itself volatile, and may he distilled, nnaltered, at a red heat. In the condeneere there ie also deposited along with the mercury a peculiar tarry snbetance called "soot." It is composed of flonr of mercnry, nndecomposed cinnabar, soot from the fuel, ore dust, and sometimes a little calomel. Thie eoot ie reworked for the mercury it contains. The sulphide will fuse if too much heat is applied at the beginning of the roasting.

Quicksilver Furnaces.

The most ancient manner of working cinnahar with which we are acqueinted, is the Aludel furnace, of Peruvian origin, hnt which has long been superseded by better forms. Its description may be found in all the metallnrgical hooks. The modern form of continnous roasting furnace ie that of a square or round stack, receiving the ore at the top, discherging the epent meterial at the bottom by meens of a movable grate, edmitting cold eir below, and having a fire-place on one or more sides from which the flemes are drawn across the column of ore, thus heating it, eubliming the quicksilver and taking off the vapors neer the top of the column on their way to the condenser. These furneces are made of various shapes and sizes, hut the principle of ell of them ie the same. Such furnaces cen work only large pieces of ore, as the fine earthy orea, or "tierras," would speedily choke it. At the Redington mine a new continuous furnace for fine oree is working successfully. It consiste, essentielly, of a reverberatory with an inclined hearth, with terraces to prevent the ore from falling towards the fire too rapidly, with projectione on the roof to deflect the flamee more strongly on the hearth, and ie provided with a speciel feeding apparatus. It roasts a class of oree which previously conld not be worked without being made into bricks celled "adohes." Until a few years ago there were no continuous quicksilver furnaces; the old process having heen to charge them with ore, increase the fire for three or fonr daye till all was bright red, air heing freely admitted all the time; in a week the dietilletion was completed, the furnace was cloeed, allowed to cool, and the spent ore wae removed. As may he imagined, ench a procees was costly, elow and nnhealthful. The principal modern forme of continnone furnaces are the Haehner, used in Europe, and the Knox & Oshorne, nsed in California, but hoth are based on the eame general principles. At New Almaden a Haehner continuoue furnace ia used, patterned efter that of Idria. At the Redington mine the furnacee are those of the Knox & Oshorne petent, and the fine ore style ahove referred to. The Knox & Oeborne furnace is of hrick, and has a eingle fire drawing straight across the colnmn of ore. The Idria furnace hae three fire placee, drawing through three-fonrths of the colnmn. The walls are thin linings of fire brick, surrounded hy an air epace, then another hrick wall enclosed in iron. The charging apperatus is of the hell and hopper style, modeled after tbat of the hot-blaet iron furnace. In these shaft furnaces it hee been found impracticable to mix the ore end fnel together, aa ie usual in burning limestone, so separate fire places are always provided. At the Buckeye mine, in Colusa connty, a Knox & Oshorne furnace was erected at a cost of $11,000. From ores moderately rich the yield from the condenser wae from 80 to 100 flasks a month. In this furnace it was claimed that the ore wae kept red-hot for 60 hours, and that perfect redncticn conld not take place in less time. The latter claim is no doubt an error, there being good reason to suppose that so little as one-tenth that time would answer in a continuous furnace of different pattern, working fine ores, and having the heet at all times under complete control. A disadvantage to the usual shsft furnace is the fact thst the heat is under very little control; the furnace gets entirely too hot, consnming more fuel then is neceasery, and expanding the mercnrial vapors to so high a degree that it ia elmost impossible to condense them. Unfortunately for the shaft furnaces, the bnlk of the ores rsised from cinnabar mines are fine, and until the introduction of the Livermore fine ore furnece at the Redington mine these ores hed been nesrly always handled without profit and mostly at a loss. In 1873 more then one-half the ores worked at New Almaden were these "tierras," yielding two per cent, and which had to he mixed with cley into bricks and dried before being charged into the shaft furnace.

General News Items.

THE British government has apent abont £17,000,000 in irrigstion works in India.

A RENEWAL of the feud hetween the Chinese companies in Virginie, Nevade, is expected.

THE rumor of the Czar's contemplated abdication is officially denied.

THE Baldwin hotel on Msrket street will probahly be opened to guests in about six weeks.

EUROPEAN affairs are fast approeching a crisia, and it looks now as if war wonld shortly commence.

THIRTEEN States of the republic of Mexico are now nnder martial law, and fighting is going on at nearly all points.

THE Italien residents of this city celebrated the 384th anniversary of the discovery of America, on Sunday last.

THE British ship *Rydal Hall* went ashore on Pigeon Point during the fog on Sunday last. The ship is likely to breek np.

THE average nnmher of passengers crossing the Oekland ferry each dey during the year 1875 was 11,200, or 4,088,000 during the year.

A TELEGRAM from Medrid states that the Bishop of Minorca has iesned a new circnlar, enjoining on the masters of primary schools not to admit the sone of Protestants and other dissenters.

THE first snow of the season fell at New York, Boston, Washington, etc., on the 15th inst. The first good rain fell in San Francisco last Sundey night.

THE Englieh middle claeses are going through e time of greet financial depression, one which tenda to render the times there almost as bad ae in the Eestern States.

DURING the 24 hours ending at 1.30 Wednesday afternoon, .91 of an inch of rain fell, meking the total fall for the month to date 1.45 inches, and for the season 1.85 inches.

FIVE cadets have been dismissed from the Naval Academy for refusing to tell who hazed the "plebes." The expelled stndents refneed to teetify to save other etudents from heing expelled for hazing, for which there is the additionel penalty of heing cashiered.

IN this city the total number of emell-pox casea since the epidemic hegan, nearly five months ago, is 964; deaths, 265. The type continnes to he melignant, especially those nnprotected hy veccination, although fewer cases are reported than last month. Very many of the new casee are persone from ahroad and the interior of the State.

THE new iron steemship *City of Chester*, hnilt hy John Roach & Sons, to run hetween San Francisco and Portlend, Oregon, mede a satisfactory triel trip up the Sonnd on Sunday, paseing through Hel Gate. Thie ie the firet ocean steamer that hes made the ventnre since the explosion. Among the gneste were Captain Ottendorf and Mr. Henderson of San Francisco.

THE *Tribune's* Washington speoial says: The Chief of Engineers has decided upon the distribntion of the remaining portion of the river and harhor appropriation. While the details are not yet published, the eelection of the work to he prosecnted was determined in each case aolely by its commercial importence, aud generally those items which were introduced into the bill as the resnlt of log rolling by members of each political party, have been ignored.

THE agent of the New York Asaociated Prese received a dispatch signed hy Dr. Cherlee T. Deems, announcing the death of Commodore Vanderhilt, at 10 20 A. M. After thie news hed heen telegrephed all over the United States, it was ascertsined that the dispatch waa a forgery, and that the Commodore is hetter than he hae been for many monthe. The stock exchange is endeavoring to ascertain the anthor of this and other hogus telegrams, with a view to securing his punishment.

THE Southern Cross and Polar Star claims have shut down, and it is stated on good anthority that washing therein will not be resumed for at leaet one year and perhaps longer. The proprietors assign ae a reason that wages are so high there that they cannot be worked with satisfactory profit.

THE work on the Summit coal mine, near Livermore, is progressing finely. The coal is improving as the workmen progress.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING OCTOBER 10TH, 1876.

GRATES FOR LIME KILNS.—William Gwynn, Sacramento, Cal.

SHOES.—Cheang Hne, S. F.

BOTTLE COVERING MACHINES.—Alois L. Becker and Frederick W. Volkman, S. F.

*AIR CHAMBERS FOR FORCING WATER FOR OPERATING ELEVATORS, ETC.—Philip Hinkle, S F.

WOOD PAVEMENTS.—Henry F. Williams, S. F.

RE-ISSUES.

*IMPROVEMENT IN UNDERGROUND TUBES FOR PROPULSION OF CARS, PATENTED JUNE 20TH, 1876.—Andrew S. Hallidie, S. F.

*COAL SCREENS AND GRATES.—Martin R. Roberts, S. F.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

WATCH CHAIN.—John J. Rohrhach, San Francisco. This invention relates to certain improvements in the construction of link watch chains, and it consists in a novel formation of the links, which are united so that when either of two opposite sides are presented to view it will give the appearance of a heevy ber-link gold chain, hut when turned so that the other sides are exhibited the appearance of a quartz or other ornamental setting will be given. The invention also relates to a novel construction of the link and an ornamental hand, so that the link mey have an opening at the side for the convenient introdnction of the small joining links.

OPERATING ELEVATOR VALVES.—Philip Hinkle, San Francisco. Thie invention relatee to a novel device which may he employed to operate elevator and other velves when it is necessary to open one and close another valve at the seme time. It consists of a slotted segment formed on different curves, and the steme of the valves are moved hy this slot. The outer edge of the segment is provided with teeth, and a pinion mounted upon the axle of an operating rope pulley seema to turn the segment in either direction as the case may require.

THE Duke of Westminster, a wealthy English nobleman, has fallen into the hebit of admitting the workingmen on Sundeye to the picture galleries and mnsenms of his magnificent residence. He eenda tickete to all the workingmen's clubs and tradee nniona, which distribute them as they please.

ARRANGEMENTS have been made to take out only 1,100 tone of ore daily from the Califernia and Conaolidated Virginia mines, thus giving a combined monthly yield of $3,000,000, which it is eeid can be increased to $4,000,000 if found desirable, hut the idea is not to overstock the silver market.

THE sheft of the El Dorado coal mine, Nevada, ie down 530 feet. The last 30 feet has been passing through fine clay containing streaks of carbon. This is an immense body of clay and the indications are thet a stratnm of fine coal lies under it.

CONTRACT work for the completion of "Lick avenue," the great highway from San Jose to Mount Hemilton, hae been reenmed in earnest, and is to he done by the 1st of Janusry, when bnilding is to hegin at the summit on the site selected for the Observatory.

THE California mill consumes monthly 30,000 pounds of qnicksilver that never finds ite way heck again. The Consolideted Virginie mill will use np abont ae much more, and the two will certainly make away with $1,000 worth a day.

W. H. ARMSTRONG, who wae Superintendent of the Consolidated Virginia mill before the fire, hae been appointed Superintendent of the new mill just finished. Mr. Armstrong is aleo Superintendent of the California mill.

THERE is still a good heed of water in the Carson river, end all the mille are running on fnll time. with the exception of thoee already mentioned ae having shut down for repairs.

THE Nevada qnartz mill at the Centennia hae heen awarded a premium.

VICTORIA, B. C., is full of Cassier miners, selling duet and buying ontfits.

A GOOD domestic snlphur hath' can he instantly prepared by taking a cake of GLENN'S SULPHUR SOAP into the hath tnh. Such an expedient will, to use a slang phrase, "knock the spots off" any victim of cntaneous blemishes. Sold everywhere.

METALS.

[WHOLESALE.]

THURSDAY, M., Oct. 19, 1876.

American Pig Iron, ₱ ton	32 00	@	— —
Scotch Pig Iron, ₱ ton	31 50	@	32 00
White Pig, ₱ ton	40 00	@	50 00
Oregon Pig, ₱ ton	31 50	@	32 50
Refined Bar	— —	@	6¾
Boiler, No. 1 to 4	— —	@	— —
Plate, No. 5 to 9	— —	@	5¾
Sheet, No. 10 to 14	— —	@	5¾
Sheet, No. 16 to 20	— 5¾	@	— —
Sheet, No. 22 to 24	— 6	@	— —
Sheet, No. 26 to 28	— 6½	@	— —
Horse Shoes, per keg	7 00	@	8 50
Nail Rod	— 10	@	— —
Norway Iron	— 8½	@	9½
Rolled Iron	— 4	@	5
Other Irons for Blacksmiths, Miners, etc.	— —	@	4¾
COPPER—			
Copper Tin'd	— 37	@	40
Sheathing, ₱ lb	— 24	@	30
Sheathing, Yellow	— 21	@	12½
Sheathing, Old Yellow	— 10	@	11
Composition Nails	— 21	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ₱ lb	— 20	@	25
Anderson & Woods' ordinary sizes	— —	@	15
Drill	— —	@	16½
Flat Bar	— 16	@	20
Plow Steel	— 8½	@	9
TIN PLATES—			
10x14 I C Charcoal	11 00	@	— —
10x14 I X Charcoal	13 00	@	— —
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	— 24	@	— —
Australian	— 25	@	— —
ZINC.—By the Cask	— —	@	11
Zinc, Shaat 7x3 ft, No 7 to 10 ₱ lb	— —	@	11
do do 7x3 ft, No 11 to 14	— —	@	11½
do do 8x4 ft, No 8 to 10	— —	@	12½
do do 8x4 ft, No 11 to 14	— —	@	13
NAILS Assorted sizes	3 50	@	3 75
QUICKSILVER, per ₱	40	@	45 —

LEATHER.

[WHOLESALE.]

WEDNESDAY M., Oct. 18, 1876.

Sole Leather, heavy ₱ lb	25@	28	
do do light ₱ lb	20@	25	
Jodot, 8 Kil., per doz	43 00@	50 00	
Jodot, 11 to 13 Kil., per doz	58 00@	70 00	
Jodot 14 to 19 Kil., par doz	82 00@	94 00	
Jodot, saoond oboice, 11 to 16 Kil. ₱ doz	57 00@	74 00	
Cornallian, 12 to 16 Ko	57 00@	67 00	
Cornallian Famaina, 12 to 13	63 00@	67 00	
Cornallian Famales, 14 to 16 Kil	71 00@	78 50	
Simon Ulmo Famales, 12 to 13, Kil	58 00@	62 00	
Simon Ulmo Famalos, 14 to 15, Kil	66 00@	70 00	
Simon Ulmo Famales, 16 to 17, Kil	72 00@	74 00	
Simon, 15 Kil., ₱ doz	51 00@	63 00	
Simon, 20 Kil. ₱ doz	65 00@	67 00	
Simon, 24 Kil. ₱ doz	72 00@	74 00	
Robert Calf, 7 and 9 Kil	35 00@	40 00	
French Kips, ₱ lb	1 00@	1 15	
California Kip, ₱ doz	40 00@	60 00	
French Sheap, all colors, ₱ doz	8 00@	15 00	
Eastern Calf for Backs, ₱ lb	1 00@	1 25	
Sheap Roans for Topping, all colors, ₱ doz	9 00@	15 00	
Sheep Roans for Topping, ₱ doz	5 50@	10 50	
California Russett Sheap Linings	1 75@	4 50	
Best Jodot Calf Boot Legs, ₱ pair	5 00@	5 25	
Good French Calf Boot Legs, ₱ pair	4 00@	4 75	
French Calf Boot Legs, ₱ pair	4 00@	—	
Harness Leather, ₱ lb	24@	32½	
Fair Bridle Leather, ₱ doz	48 00@	72 —	
Skirting Leather, ₱ lb	33@	37½	
Welt Leather, ₱ doz	30 00@	50 00	
Calf Leather, ₱ foot	17@	—	
Wax Side Leather, ₱ foot	17@	—	

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & Co.]

SAN FRANCISCO, Oct. 18, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 90 to 90¾. Silve 5⅛ @5¼.

GOLD IN N. Y., 111¼.

GOLD BARS, 880 to 890. SILVER BARS, 12@20 per cent. discount.

EXCHANGE on N.Y., 50@55-100 per cent. premium for gold; on London bankers, 49; Commeroial, 49¼; Paris, five francs per dollar; Mexican dollars, 7 per cent. discount.

LONDON — Ounoh, 96¾; Bonds, 102¼

QUICKSILVER in S. F. by the flask, per lb, 45c

PACIFIC RURAL PRESS,

A first-class 16-page Agricultural Home Journal, filled with fresh, valuable and interesting reading. Every farmer and ruralist should take it. It is immensely popular. Subscription, $4 a year.

DEWEY & CO., Publishers.

No. 224 Sansome street. SAN FRANCISCO

Much Obliged, Etc.

PORTLAND, OGN., June 26th, 1875.

DEWEY & Co., Patent Solicitors, S. F.—*Gents:* I am much obliged to you for courtesy shown me, and am well pleased with the manner in which you have done my business, and assure you, will cheerfully recommend you to my acquaintances needing such services. Hope to have a case again before long, of my own. I have been an inventor all my life, but let others reap the benefit, or bad work stolen from me. Please have the extra copies of my patent, etc., mailed to me direct, and oblige Yours truly, J. H. WOODNUM.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Office Cascade Blue Gravel Mining

Company—NOTICE:—A meeting of the stockholders of the Cascade Blue Gravel Mining Company will be held at the office of the company, 311 California street, rooms 3 and 4, second floor, San Francisco, Cal., on Monday, November 20th, 1876, at two o'clock P. M., for the purpose of disposing of the company's stock, and authorizing the sale of the entire property of the company, with any other business that may come before said company. R. F. KNOX, President,
J. M. BUFFINGTON, Secretary.

San Francisco, Oct. 13th, 1876.

Cincinnati Gold and Silver Mining Co.

Location of principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, levied on the 29th day of August, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Boynton, A A W	117	1500	$ 150 00
Boynton, A A W	118	500	50 00
Gates, G A	86	100	10 00
Gates, G A	not issued	63	6 80
Kennedy, Frank	40	150	15 00
Kennedy, Frank	110	60	5 00
McIntosh, J, Trustee	161	500	50 00
McIntosh, J, Trustee	162	500	50 00
McIntosh, J, Trustee	163	500	50 00
McIntosh, J, Trustee	164	500	50 00
McIntosh, J, Trustee	165	37	3 70
McIntosh, J, Trustee	166	1000	100 00
Melliss, R M, Trustee	138	500	50 00
Melliss, R M, Trustee	139	500	50 00
Peck, E T	122	600	60 00
Tenney, John, Trustee	141	100	10 00
Tenney, John, Trustee	142	100	10 00
Tenney, John, Trustee	143	100	10 00
Tenney, John, Trustee	144	100	10 00
Tenney, John, Trustee	145	100	10 00
Tenney, John, Trustee	146	100	10 00
Tenney, John, Trustee	147	100	10 00
Tenney, John, Trustee	148	100	10 00
Tenney, John, Trustee	149	100	10 00
Tenney, John, Trustee	150	100	10 00
Tenney, John, Trustee	151	100	10 00
Tenney, John, Trustee	152	100	10 00
Tenney, John, Trustee	153	100	10 00
Tenney, John, Trustee	154	100	10 00
Tenney, John, Trustee	155	100	10 00
Tenney, John, Trustee	156	100	10 00
Tenney, John, Trustee	157	100	10 00
Tenney, John, Trustee	158	100	10 00
Tenney, John, Trustee	159	100	10 00
Tenney, John, Trustee	160	138	13 80

And in accordance with law, and an order of the Board of Directors, made on the 29th day of August, 1870, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, No. 535 California street, San Francisco, Cal., on the 16th day of October, 1876, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. WM. SMALL, Secretary.

Office, room 2½, No. 535 California street, San Francisco, Cal.

Eagle Quicksilver Mining Co.—Location

of works, Santa Barbara county, Cal. Principal place of business, San Francisco, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 30th day of September, 1876, an assessment (No. 9) of two hundred and fifty ($250) dollars per share was levied upon all the mines of said company, payable immediately, in gold coin of the United States, to the Secretary, at his office, rooms 5 & 6, No. 302 Montgomery street, San Francisco, Cal.

Any shares upon which said assessment shall remain unpaid on Wednesday, the 29th day of November, 1876, shall be deemed delinquent, and will be duly advertised on Saturday, the second day of December, 1876, for sale at public auction, and unless payment shall be made before, will be sold on Monday, the fourth day of December, 1876, as provided by the articles of agreement of said company, to pay the delinquent assessment, together with cost of advertising and expause of sale. By order of Board of Trustees. WM. H. WATSON, Secretary.

Mariposa Land and Mining Company

of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 7), levied on the seventh day of September, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

COMMON STOCK.

Names.	No. Certificate.	No. Shares.	Amount.
Adams, Thomas	A 4	50	$ 50 00
Brumagim, J H	unissued	550	550 00
Brumagim, J H	426	25	25 00
Brumagim, J H	427	25	25 00
Brumagim, J H	1112	100	00 00
Brumagim, J H	1113	100	100 00
Brumagim, J H	1114	100	100 00
Brumagim, J H	1117	100	100 00
Brumagim, J H	1118	100	100 00
Brumagim, J H	1119	100	100 00
Brumagim, J H	1121	100	100 00
Bound & Co	unissued	600	600 00
Brumagim, Linda Queen	A 1	1	1 00
Brumagim, Stuart	A 2	1	1 00
Brumagim, Frad P	1270	100	100 00
Brumagim, Fred P	1271	100	100 00
Brumagim, Fred P	1272	100	100 00
Brumagim, Fred P	1273	100	100 00
Brumagim, Fred P	1274	100	100 00
Brumagim, Fred P	1275	100	100 00
Brumagim, Fred P	1276	100	100 00
Brumagim, Fred P	1277	100	100 00
Brumagim, Fred P	1278	100	100 00
Brumagim, Fred P	1279	100	100 00
Brumagim, Fred P	1280	100	100 00
Brumagim, Fred P	1281	100	100 00
Brumagim, Fred P	1282	100	100 00
Brumagim, Fred P	1283	100	100 00
Brumagim, Fred P	1284	100	100 00
Brumagim, Fred P	1285	100	100 00
Brumagim, Fred P	1286	100	100 00
Brumagim, Fred P	1287	100	100 00
Brumagim, Fred P	1288	100	100 00
Brumagim, Fred P	1289	100	100 00
Brumagim, Fred P	1290	100	100 00
Brumagim, Fred P	1291	100	100 00
Brumagim, Fred P	1292	100	100 00
Brumagim, Fred P	1 93	100	100 00
Brumagim, Fred P	1294	100	100 00
Brumagim, Fred P	1295	100	100 00
Brumagim, Fred P	1296	100	100 00
Brumagim, Fred P	1297	100	100 00
Brumagim, Fred P	1298	100	100 00
Brumagim, Fred P	1299	100	100 00
Brumagim, Fred P	1300	100	100 00
Brumagim, Fred P	1301	100	100 00
Brumagim, Fred P	1302	100	100 00
Brumagim, Fred P	1303	100	100 00
Brumagim, Fred P	1304	100	100 00
Brumagim, Fred P	1305	100	100 00
Brumagim, Fred P	1306	100	100 00
Brumagim, Fred P	1307	100	100 00
Brumagim, Fred P	1308	100	100 00
Brumagim, Fred P	1309	100	100 00
Brumagim, Fred P	1310	100	100 00
Brumagim, Fred P	1311	100	100 00
Brumagim, Fred P	1312	100	100 00
Brumagim, Fred P	1313	100	100 00
Brumagim, Fred P	1314	100	100 00
Brumagim, Fred P	1315	100	100 00
Brumagim, Fred P	1316	100	100 00
Brumagim, Frad P	1317	100	100 00
Brumagim, Fred P	1334	100	100 00
Brumagim, D Walton	A 9	2	2 00
Castelano & Co, A V	60	100	100 00
Castelano & Co, A V	65	100	100 00
Close, David	346	100	100 00
Colhron, W T	473	100	100 00
Colbron, W T	474	100	100 00
Dunnell, T L	unissued	25	25 00
Govanter, J A	44	100	100 00
Holmes, A B, Jr	unissued	100	100 00
Hallgarten & Co	unissued	50	50 00
Holmes, P W	432	1	1 00
Hamburger, J G	438	50	50 00
Hoyt, E P	1223	100	100 00
Hoyt, E P	1224	100	100 00
Hoyt, E P	1225	100	100 00
Kennedy, Hutchinson&Co	476	100	100 00
Kcunedy, Hutchinson&Co	1207	100	100 00
Kennedy, Hutcainson&Co	1208	100	100 00
Loth, M	411	50	50 00
Loth, M	412	50	50 00
Moore, Silas H	1215	100	100 00
Moore, Silas H	1216	100	100 00
Rodwell, C M	1132	100	100 00
Rodwell, C M	1133	100	100 00
Rodwell, C M	1134	100	100 00
Rodwell, C M	1135	100	100 00
Rodwell, C M	1135	100	100 00
Rodwell, C M	1137	100	100 00
Rodwell, C M	1138	100	100 00
Rodwell, C M	1139	100	100 00
Rodwell, C M	1140	100	100 00
Rodwell, C M	1141	100	100 00
Rodwell, C M	1142	100	100 00
Rodwell, C M	1143	100	100 00
Rodwell, C M	1144	100	100 00
Rodwell, C M	1145	100	100 00
Rodwell, C M	1146	100	100 00
Rodwell, C M	1147	100	100 00
Rodwell, C M	1148	100	100 00
Rodwell, C M	1149	100	100 00
Rodwell, C M	1150	100	100 00
Rodwell, C M	1151	100	100 00
Rodwell, C M	1152	100	100 00
Rodwell, C M	1153	100	100 00
Rodwell, C M	1154	100	100 00
Rodwell, C M	1155	100	100 00
Rathborne, R Wm	117	100	100 00
Rathborne, R Wm	110	100	100 00
Rathborne, R Wm	120	100	100 00
Rathborne, R Wm	121	100	100 00
Rathborne, R Wm	123	100	100 00
Rathborne, R Wm	124	100	100 00
Rathborne, R Wm	125	100	100 00
Rathborne, R Wm	126	100	100 00
Rathborne, R Wm	127	100	100 00
Rathborne, R Wm	128	100	100 00
Rathborne, R Wm	129	100	100 00
Rathborne, R Wm	130	100	100 00
Rathborne, R Wm	131	100	100 00
Rathborne, R Wm	132	100	100 00
Rathborne, R Wm	142	100	100 00
Rathborne, R Wm	143	100	100 00
Rathborne, R Wm	144	100	100 00
Rathborne, R Wm	145	100	100 00
Rathborne, R Wm	146	100	100 00
Rathborne, R Wm	424	25	25 00
Rathborne, R Wm	158	100	100 00
Rathborne, R Wm	159	100	100 00
Rathborne, R Wm	160	100	100 00
Rathborne, R Wm	174	100	100 00
Rathborne, R Wm	177	100	100 00
Rathborne, R Wm	181	100	100 00
Rathborne, R Wm	182	100	100 00
Rathborne, R Wm	183	100	100 00
Rathborne, R Wm	184	100	100 00
Rathborne, R Wm	185	100	100 00
Rathborne, R Wm	186	100	100 00
Rathborne, R Wm	187	100	100 00
Rathborne, R Wm	188	100	100 00
Rathborne, R Wm	189	100	100 00
Rathborne, R Wm	190	100	100 00
Rathborne, R Wm	195	100	100 00
Rathborne, R Wm	203	100	100 00
Rathborne, R Wm	206	100	100 00
Rathborne, R Wm	238	100	100 00
Rathborne, R Wm	240	100	100 00
Rathborne, R Wm	247	100	100 00
Rathborne, R Wm	248	100	100 00
Rathborne, R Wm	249	100	100 00
Rathborne, R Wm	250	100	100 00
Rathborne, R Wm	251	100	100 00
Rathborne, R Wm	252	100	100 00
Rathborne, R Wm	263	100	100 00
Rathborne, R Wm	287	100	100 00
Rathborne, R Wm	288	100	100 00
Rathborne, R Wm	307	100	100 00
Rathborne, R Wm	310	100	100 00
Rathborne, R Wm	311	100	100 00
Rathborne, R Wm	312	100	100 00
Rathborne, R Wm	313	100	100 00
Rathborne, R Wm	314	100	100 00
Rathborne, R Wm	315	100	100 00
Rathborne, R Wm	316	100	100 00
Rathborne, R Wm	378	100	100 00
Rathborne, R Wm	381	100	100 00
Stern, Philip	unissued	100	100 00
Stern, Joseph	unissued	200	200 00
Smith, Morris H	unissued	200	200 00
Stons, Geo. F	unissued	200	200 00
Stern, Chas	unissued	100	100 00
Sistars, Geo K	48	100	100 00
Sistars, W H M	115	100	100 00
Thorps, William	431	1	1 00
Thorps, Louise E	A 7	1	1 00
Thorpe, Louis W	A 8	1	1 00
Thorps, Carolins A M	A 12	1	1 00
Thompson, Andrew L	1220	100	100 00
Thompson, Andrew L	1221	100	100 00
Thompson, Andrew L	1222	100	100 00
Van Schaick & Co	unissued	1000	1000 00
Van Schaick & Co	69	100	100 00
Van Schaick & Co	70	100	100 00
Van Schaick & Co	71	100	100 00
Van Schaick & Co	1333	100	100 00
White, Morris & Co	unissued	100	100 00
Weed, Ed H	1255	100	100 00
Wollberg & Co	unissued	100	100 00
Weeks, W A	unissued	100	100 00
Watson, A A	468	15	15 00
Weil, Henry	1245	100	100 00
Weil, Henry	1246	100	100 00

PREFERRED STOCK.

Ambleman, Edgar M	unissued	100	100 00
Baldwin, J C	A 13	16	16 00
Bloomingdale, M	unissued	202	202 00
Bernheimer, I & S	unissued	135	135 00
Brumagim, J H	unissued	100	100 00
Brumagim, Mark	3	1	1 00
Block, Henry	55	100	100 00
Block, Henry	A 31	67	67 00
Block, Henry	A 32	63	63 00
Block, Henry	A 33	5	5 00
Block, Henry	A 34	1	1 00
Block, Henry	1243	100	100 00
Block, Henry	1244	100	100 00
Block, Henry	1245	100	100 00
Block, Henry	1246	100	100 00
Block, Henry	1247	100	100 00
Block, Henry	1248	100	100 00
Block, Henry	1249	100	100 00
Block, Henry	1250	100	100 00
Block, Henry	1251	100	100 00
Block, Henry	1252	100	100 00
Block, Henry	1253	100	100 00
Block, Henry	1254	100	100 00
Block, Henry	1255	100	100 00
Block, Henry	1256	100	100 00
Block, Henry	1257	100	100 00
Block, Henry	1258	100	100 00
Block, Henry	1259	100	100 00
Block, Henry	1260	100	100 00
Brumagim, Lily White	A 1	1	1 00
Brumagim, Fred P	1276	100	100 00
Brumagim, Fred P	1282	100	100 00
Brumagim, Fred P	A 50	3	3 00
Brumagim, Fred P	1286	100	100 00
Brumagim, Fred P	1287	100	100 00
Brumagim, Fred P	1288	100	100 00
Brumagim, Fred P	1289	100	100 00
Brumagim, Fred P	1290	100	100 00
Brumagim, Fred P	1291	100	100 00
Brumagim, Fred P	1292	100	100 00
Brumagim, Fred P	1293	100	100 00
Brumagim, Fred P	1294	100	100 00
Brumagim, Fred P	1295	100	100 00
Brumagim, Fred P	A 52	70	70 00
Brumagim, Fred P	1296	100	100 00
Brumagim, Fred P	1297	100	100 00
Brumagim, Fred P	1299	100	100 00
Brumagim, Fred P	1300	100	100 00
Brumagim, Fred P	1301	100	100 00
Crawford, Geo R	unissued	100	100 00
Connett, W H	128	100	100 00
Clarke, J P	A 36	50	50 00
Copp, B A	1285	100	100 00
Davis, Geo F M	1283	100	100 00
Eigenbrodt, Wm E	A 3	1	1 00
Eigenbrodt, Wm E	A10	15	15 00
Ford, Augustus	unissued	270	270 00
Girdler, Chas A	unissued	100	100 00
Greenleaf, Norris & Co	A14	10	10 00
Greenleaf, Norris & Co	A15	35	35 00
Greenleaf, Norris & Co	1202	100	100 00
Greenleaf, Norris & Co	1203	100	100 00
Greenleaf, Norris & Co	1204	100	100 00
Greenleaf, Norris & Co	1205	100	100 00
Greenleaf, Norris & Co	1207	100	100 00
Greenleaf, Norris & Co	1208	100	100 00
Greenleaf, Norris & Co	1209	100	100 00
Greenleaf, Norris & Co	1210	100	100 00
Hollins, Harry B	unissued	100	100 00
Harriot & Noyes	A37	25	25 00
Harriot & Noyes	A38	25	25 00
Hoyt, Ann A	A11	14	14 00
Hoyt, E P	1216	100	100 00
Homans, E C	1108	100	100 00
Homans, E C	1212	100	100 00
Joy, Joseph F	unissued	135	135 00
Litchfield, Edwin C	unissued	405	405 00
Landon, Chas G	unissued	161	161 00
Loring, James B	135	100	100 00
Monroe, & Co, E S	unissued	200	200 00
Monroe, E S	A 4	50	50 00
Oppenheimer, Ed L	unissued	70	70 00
Olcott, Horatio L	207	100	100 00
Patton, Wm L	unissued	67	67 00
Rathborne, R Wm	unissued	200	200 00
Rathborne, R Wm	139	100	100 00
Rathborne, R Wm	140	100	100 00
Rathborne, R Wm	161	100	100 00
Rathborne, R Wm	162	100	100 00
Rathborne, R Wm	103	100	100 00
Rathborne, R Wm	104	100	100 00
Rathborne, R Wm	105	100	100 00
Rathborne, R Wm	107	100	100 00
Randolph Bros	unissued	63	63 00
Rodwell, C M	1118	100	100 00
Scott, Wm B	1109	100	100 00
Scott, Wm B	1110	100	100 00
Scott, Wm B	1111	100	100 00
Scott, Wm B	1112	100	100 00
Scott, Wm B	1113	100	100 00
Scott, Wm B	1114	100	100 00
Scott, Wm B	1115	100	100 00
Scott, Wm B	1116	100	100 00
Scott, Wm B	1117	100	100 00
Scott & Co, Wm B	A 9	6	6 00
Scott & Co, Wm B	1102	100	100 00
Scott & Co, Wm B	1103	100	100 00
Scott & Co, Wm B	1104	100	100 00
Scott & Co, Wm B	1105	100	100 00
Scott & Co, Wm B	1106	100	100 00
Scott & Co, Wm B	1107	100	100 00
Scott & Co, Wm B	A 12	45	45 00
Underhill, Frad	unissued	100	100 00
Van Schaick & Co	unissued	47	47 00
Weed, Ed H	A 35	35	35 00
Weed, Ed H	1268	100	100 00
Weed, Ed H	1269	100	100 00
Weed, Ed H	1270	100	100 00
Weed, Ed H	1271	100	100 00
Weed, Ed H	1272	100	100 00
Wollberg & Co	unissued	130	130 00
Woodman, Cyrus	unissued	100	100 00
Weil, Henry	241	100	100 00
Weil, Henry	242	100	100 00
Weil, Henry	243	100	100 00
Weil, Henry	244	100	100 00
Weil, Henry	247	100	100 00
Weil, Henry	248	100	100 00
Weil, Henry	249	100	100 00
Weil, Henry	250	100	100 00
Weil, Henry	251	100	100 00
Weil, Henry	252	100	100 00
Weil, Henry	253	100	100 00
Weil, Henry	453	10	10 00
Weil, Henry	A 54	50	50 00

And in accordance with law, and an order of the Board of Directors made on the 7th day of September, 1876, so many shares of each parcel of said stock as may be necessary will be sold at public auction at the office of the company, Room 33, Nevada Block, No. 309 Montgomery street, San Francisco, California, on Monday, the 6th day of November, 1876, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

LEANDER LEAVITT, Secretary.

Office, Room 33, Nevada Block, 309 Montgomery street, San Francisco, Cal.

Sierra Iron Company—Location of prin-

cipal places of business, San Francisco, Cal. Location of works, Sierra and Plumas counties, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, levied on the 8th day of August, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Wm Reed	24	50	$ 50 00
Sophia Day	28	100	100 00
Wm S Day	38	50	50 00
P N Lilienthal	101	100	100 00
Chas D Haven, Trustee	54	500	500 00
Geo S Ladd, Trustee	55	500	500 00
G Hilton Scribner	58	50	50 00
L E Pratt	62	300	300 00
Wm Reed	63	50	50 00
Wm Reed	64	50	50 00
G Hilton Scribner	65	145	145 00
Wm Reed	67	100	100 00
Ben Hurxthal	81	50	50 00
Ben Hurxthal	82	50	50 00
G Hilton Scribner	85	55	55 00
P N Lilienthal	100	1800	1800 00
Ben Hurthal	86	50	50 00
H F Cutter, Trustee	91	100	100 00
H F Cutter, Trustee	103	50	50 00
H F Cutter, Trustee	104	50	50 00
P N Lilienthal	142	3713	3713 00
James D Hague	143	1	1 00
Edward Bosqui, Trustee	121	250	250 00
Edward Bosqui, Trustee	122	250	250 00
Edward Bosqui, Trustee	127	250	250 00
Edward Bosqui, Trustee	130	250	250 00
P N Lilienthal, Trustee	144	300	300 00
Hoffing & Straue	151	250	250 00
Chas Kobler	148	500	500 00
Jacob Benjamin	145	50	50 00
F S Spring, Trustee	154	300	300 00
P N Lilienthal, Trustee	140	50	50 00
F Weisenborn	153	700	700 00

And in accordance with law, and an order of the Board of Directors, made on the 18th day of August, 1876, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at room No. 9, Halleck Block, 318 Sansome street, San Francisco, Cal., on the 25th day of October, 1876, at the hour of 12 o'clock M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expensee of sale.

CALEB T. FAY, Secretary.

Office, Room No. 9, Halleck Block, San Francisco, Cal.

Amusements.

GRAND OPERA HOUSE, Mission Street, near Third. Open every evening with first-class Dramatic Company. Box Office open from 9 A. M. to 10 P. M. Doors open at half past seven. Commence at eight o'clock. THE WINNING HAND.

CALIFORNIA THEATER, Bush Street, above Kearny. Open every evening with the best Dramatic Company in the United States. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance. Doors open at half past seven. Monday, September 4th, EDWIN BOOTH.

Iron and Machine Works.

WM. HAWKINS. T. G. CANTRELL

HAWKINS & CANTRELL,

MACHINE WORKS,

210 & 212 Beale St.,

Near Howard, - - - SAN FRANCISCO.

MANUFACTURERS OF

Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horse Power.

N. B.—Jobbing and Repairing done with Dispatch.

FULTON

Foundry and Iron Works.

HINCKLEY & CO.,

MANUFACTURERS OF

STEAM ENGINES,

Quartz, Flour and Saw Mills,

Hayes' Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard, San Francisco.

THE RISDON

Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,

SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors:

Joseph Moore, Jesse Holladay, C. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary
24v17-qy

THOS. PENDERGAST. HENRY S. SMITH.

ÆTNA IRON WORKS.

MANUFACTURERS OF

IRON CASTINGS

and MACHINERY,

OF ALL KINDS.

Fremont Street, bet. Howard and Folsom,

SAN FRANCISCO.

SHEET IRON PIPE.

THE

Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,

Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

☞ All kinds of Machinery made and repaired.

24v22-3m JOSEPH MOORE, Superintendent.

THOMPSON BROTHERS,

EUREKA FOUNDRY,

Light and Heavy Castings of Every Description Manufactured.

Sole Proprietors and Manufacturers of

LYNCH'S

Ventilating and Illuminating Tile,

The Only Illuminating Tile Manufactured for Lighting Cellars, Basements and Dark Rooms which provides proper ventilation for such places.

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BET. MISSION & HOWARD, - - SAN FRANCISCO.

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Rolling Mill Company,

SAN FRANCISCO, CAL.

Established for the Manufacture of

RAILROAD AND OTHER IRON

—AND—

Every Variety of Shafting,

Embracing ALL SIZES of

Steamboat Shafts, Cranks, Piston and Connecting Rods Car and Locomotive Axles and Frames,

—ALSO—

HAMMERED IRON

Of avery description and size.

☞ Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2032, San Francisco, Cal., will receive prompt attention

☞ The highest price paid for Scrap Iron.

PHELPS

Manufacturing Company,

MANUFACTURERS OF ALL KINDS OF

Wharf and Bridge Bolts, Railroad Trestle Work, Car Frames and Bolts, Machine Bolts, Set Screws and Tap Bolts, Lag or Coach Screws.

ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGON AND SQUARE NUTS, WASHERS, BOLT ENDS, TURN-BUCKLES, ETC., ETC.

13, 15 & 17 Drumm St., near California,

SAN FRANCISCO, CAL.

OCCIDENTAL FOUNDRY,

137 and 139 First etrest, - San Francieco

STEIGER & KERR,

IRON FOUNDERS.

Quicksilver Condensers and Furnace Castings.

Sole manufacturers of the Hepburn Roller Pan and Callahan Grate Bars, suitable for Burning Screenings.

NOTICE.—Particnlar attention paid to making Superior Shoes and Dies.

UNION IRON WORKS,

Sacramento.

ROOT, NEILSON & CO.,

MANUFACTURERS OF

STEAM ENGINES, BOILERS,

CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston

PACKING, for naw and old Cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets.

SACRAMENTO CITY.

Brass Foundry & Pump Factory.

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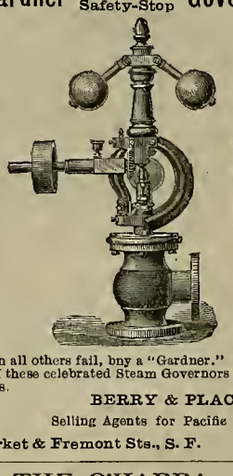

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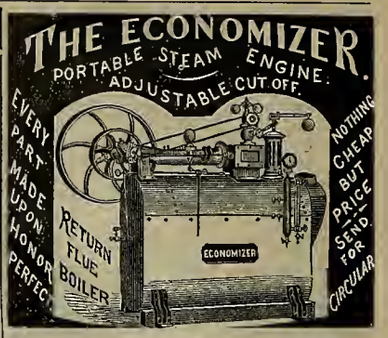

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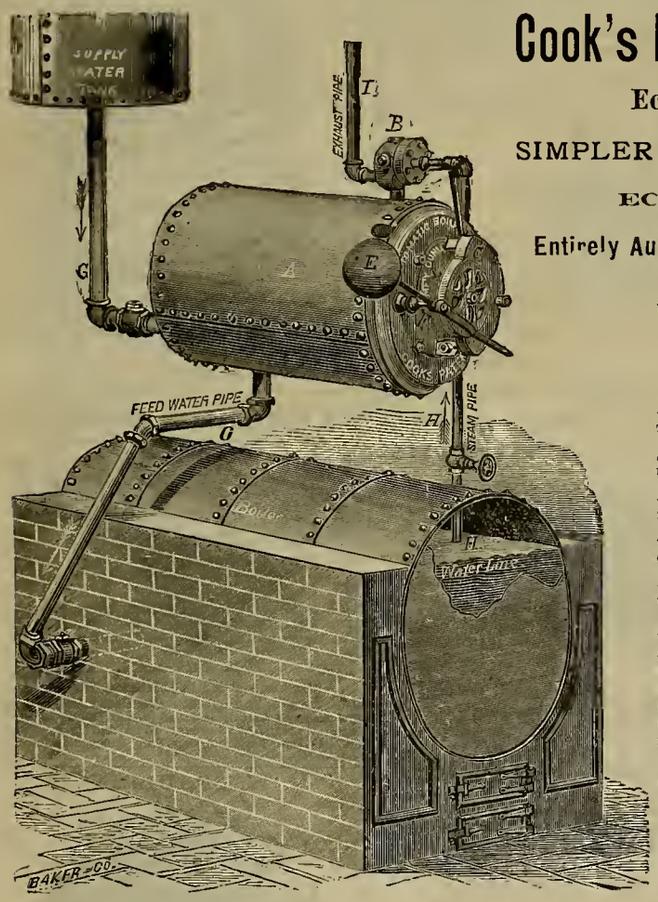

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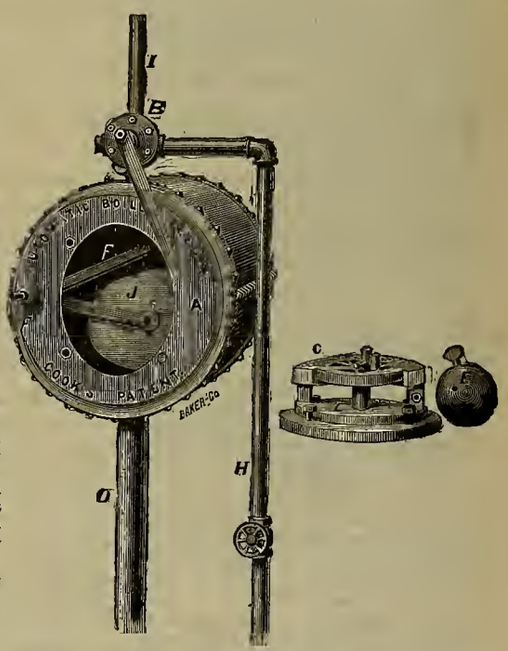

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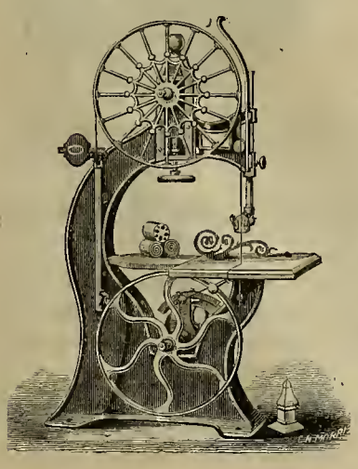

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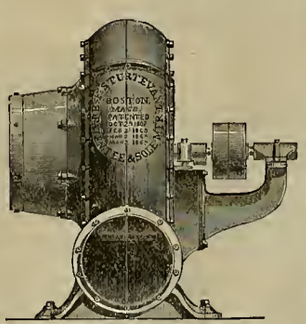

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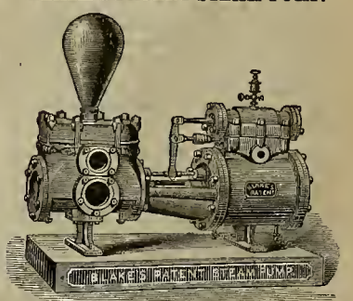

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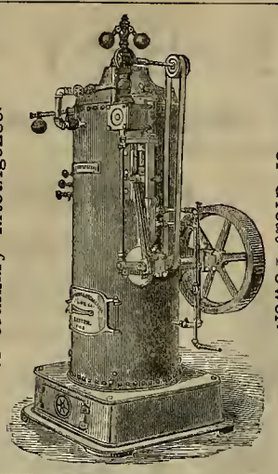

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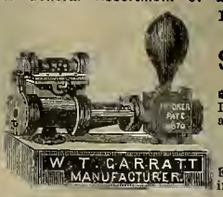

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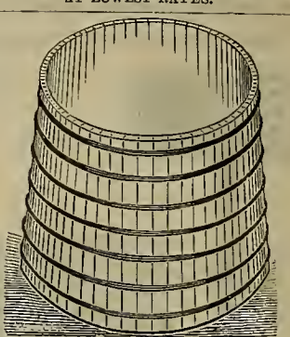

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, OCTOBER 28, 1876.

VOLUME XXXIII. Number 18.

Items of Interest from the Mines.

We give below items of interest from prominent mines, most of which are collated from letters of the respective superintendents on file at the offices in this city. Considerable of this news is later then that procured from the interior journals:

The stopes from the upraise in the Cosmopolitan are turning out finely. The mill is crushing about 20 tons per day.

At the Lady Washington they are overhauling the pumping machinery in anticipation of an increased flow of water.

The Wells-Fargo company expect by the 1st of November to heve their new works and machinery all ready.

In the Justice the 1000-foot level is freed of water, and work resumed in southeast drift, which will he pushed vigorously ahead on a direct course until msin vein is discovered. Northeast cross-cut, same level, operations will immediately he resumed until the msin ore producing vein is discovered, which from the action of the water, is close; the ore producing stopes throughout 400, 500, 600 and 700-foot levels are developing well and continue to furnish their regular uniform grade ore from 165 to 170 tons daily, constantly supplying the numerous mills engaged in milling company's ore.

The stopes in the Leopard are all yielding a full supply of ore.

The south level of the Mansfield continues to produce splendid ore.

A dividend of 20 cents per share has been declared by the Comanche mill and mining company. This is the fourth dividend of the corporation, each dividend aggregating $12,500.

The ventilation in the lower levels of the Alpha and Consolidated Imperial mines continues to improve.

The air in the 500-foot level of the Leopard is so bad that work had to he stopped to put in air pipes.

Operations at the Chollar for week ending October 21st were as follows: Nnmber tons of ore extracted, 610 tons 1,600 pounds; number tons forwarded to mills, 558½; average assay value of ore mined, $32.50 per ton. The main incline has been snnk 16 feet; pump has worked 19¼ hours. No change in ore producing portions of mine; ore shipped on 20th, 97½ tons.

A large body of ore has been struck in the Consolidated Poe mine, assaying $180 to the ton.

A new 13-inch pump has been put in below the 650-foot station of the Silver Hill mine.

A new shaft has heen started in the Steptoe Consolidsted mine, the old one being in the wrong place.

Another pump has been put in below the 1800-foot level of Hale & Norcross.

A letter of the 22d from the snperintendent of the Herald mine says: We struck very fine ore again in the face of the drift 40 feet north of the incline, having the appearance of being a good body of it. We are through the break; the ore is full of sulphurets and chlorides—very high grade.

Work will he resumed on the 1700-foot level of the Best & Belcher as soon as the incline of the Gould & Cnrry mine is repaired, which will give better ventilation.

The Consolidated Virginia is turning out about 400 tons of ore per day; the various ore breests improving, particularly those on the 1400 and 1500-foot levels. The superintendent says: On the 1700-foot level the heat greatly hinders and interferes with our progress. We are still working in the face of the drift and soon expect to be through this hard belt of rock. We are putting in additional blowers to aid ventilation, and Burleigh drills, with which we expect to meke good headwey in connection with some of the deep winzes to secure ventilation and proepect this level with vigor. At the C. & C. everything is progressing favorably. The drift on the 1650-foot level is being extended as fast ae possible. We are now 47 feet from the shaft, and with the assistance of drills and the help of enginee placed therein yesterday will make rapid headway. The Virginia & Truckee eide treck is fast approaching completion. The timbere for the new ore house are framed. We expect all of tbis work to he completed in about two weeks.

At the Belcher they are olearing ont the main incline in order to resume working.

At the California the work of repairs on the drifts upon the 1300 and 1400-foot levels is being continued. The ore hreasts are all looking well and yielding the desired quantity of good ore.

At the Jefferson connection has been made between the winze from the 400-foot level and the main south drift 600-foot level, giving good eir throughout the mine.

Work hes again been commenced on the 1700-foot level of the Gould & Curry.

The average of ores worked in the Msnhattan last week was $169.

The shaft of the Mint is now down 1274 feet.

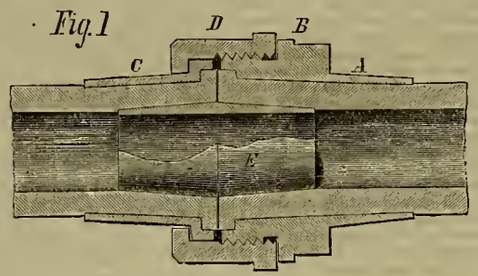
The ore body in the 400-foot level mein northeast sill floor of the Justice is fully 16 feet wide, aseeying $70 per ton. The superintendent says he has discovered and is developing the downward continuation of this same development on 600 foot level, where it is equally as rich and well-defined as on the former level; therefore the 400-foot level development overlape the west body of ore to the east. The mille are daily furnished with 190 tons of ore.

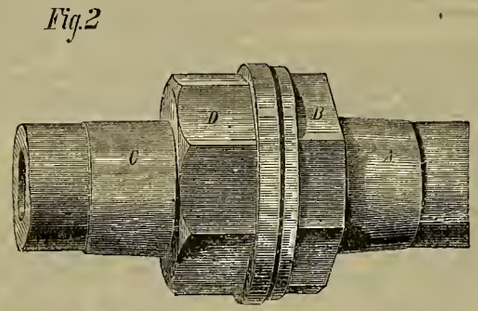
In the Baltimore Conolideted cross-cut No. 2, on the 1050 foot level, ore of a very promising character is being found.

The incline engine of the Consolideted Imperiel wes started up last Sunday.

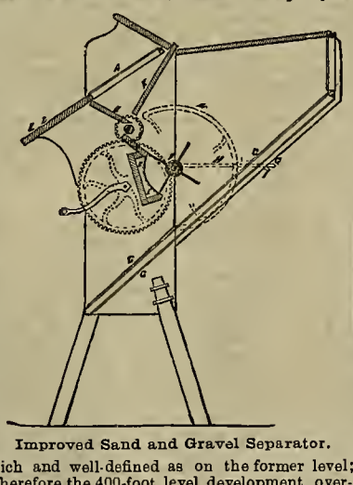
Sand and Gravel Separator.

We illustrate on this page a simple machine for screening sand and separating gravel, overcoming the slow and tedious process now in use. It will screen sand wet or dry when it can be screened in no other way. It separates the gravel entirely from the sand and deposits the roofing gravel and coarse gravel for walks, etc., in seperate places from the sand, thus saving the necessity of a second screening when roofing gravel is needed. It can be worked by one man to throw the sand and a boy to turn the crank.





THE LELAND PATENT COUPLING.



Improved Sand and Gravel Separator.

In the engraving, *A* is a coarse screen where the sand is thrown in, and which keeps large pieces from passing into the machine. The sand passes down to the feeder, *B*, which carries it down to the cylinder, *F*, which is made with four rows of pins, and which revolves with velocity, spreading and separating the sand and gravel and throwing it against the screens, *G*, *G*, which being two screens, one over the other, the roofing gravel and sand passes through the upper screen (which is made half inch mesh or any other size needed), to the lower, which is six meshes to the inch or any eize required. The roofing gravel passes down between the legs, which are enclosed, and the sand through the fine screen The coarse gravel passes down in front of the machine. *H* is a rapper or heater which strikes eight times with every revolution of the crank, against the under part of the screens, and loosens any sand that may stick to the screen. *K* is a feed board which can be raised or lowered to regulate the flow of sand to the machine. *L* is a shelf for carrying off coarse gravel. A single screen four meshes to the inch is made, or any other size required, to be used for screening sand when roofing gravel is not wanted, allowing all the gravel to pass down in front of the machine.

This machine is adapted to the use of plasterers, bricklayers and contractors who have to rescreen sand screened in the old way at the sand banks. A large sized machine is made to be run by horse or water power, with elevator to elevate the sand to the machine and elevator to carry the sand into hiue, core or other places of depoeit. Chambers & Quinlan, of Decatur, Illinois, are the manufacturers.

SILVER.— Silver bullion was quoted in London on Wednesday at 53¾ to 53¾ pence per ounce of the usual fineness. This is an advance of about fourteen cents per ounce from the lowest figures some months ago.

The Leland Coupler.

The Leland coupler is a simple and valuable invention designed to effect a perfect connection of lead pipes without the use of solder, thereby obviating the necessity of fire and dirt, and at the same time creating a more effective joint in half the time, and with much less labor and expense, and, by a series of patent combination faucets associated with the coupler, doing away with many conuections heretofore deemed essential. The coupling of lead to lead, lead to iron, copper to copper, and hose, comprises a most extensive field, so well known to the public that allusion to it at length would be superfluous, as scarcely a factory or building of public or private character but knows its necessity. The construction of this coupler or union will be understood from the sectional view, Fig. 1, its exterior appearance from Fig. 2. It is applied as follows; *A* is a ferrule of brass or other suitable metel, tapered within, and also heving an interior shoulder. There is also an exterior collar at *B*, and a threaded portion adjoining. The ferrule is slipped over the end of the pipe, into the mouth of which a steel or iron shouldered tamp pin is inserted. A few blows of a hammer on the latter distends the metal of the pipe to the taper of the ferrule, and the shoulder of the temp pin forms a facing of the pipe on the shoulder of the ferrule. On the other extremity of the pipe is applied, in precisely the same way, the ferrule, *C*, retained by a shoulder on which is the female union, *D*. A double thimble, *E*, of brass or iron, is then inserted in the month of one part of the pipe; the other end is brought over it, and the thread of the union engages with the threaded portion on the ferrule, *A*. By a few turns of the wrench the parts are drawn tightly together, the distended metal of the pipe itself meeting and forming the joint. The thimble simply fills up the enlargement of the bore produced by tapering the ends, and of course aids in strengthening the connection.

It is stated that the Leland coupler can be attached to a lead pipe and secured inside a minute and a helf, and we are assured that it may he applied with nearly equal facility to the connecting of lead to iron and copper to copper, and parts of hose. It is excellently suited for use on plumbing work in houses, especially at points where both strength and a neat appearance are required. It will he found valuable in proximity to ranges or furnaces, where the best frequently melts the solder, and will probably find an extended application on locomotives. It is also well suited to supersede the somewhat clumsy wire binding used in connecting Westinghouse brake tubes. It may be applied to attach pipes to corporation mains, without turning off the flow of water. It is extremely strong, and has been tested under the severest pressures. For fire and dwelling hose it specially commends itself, being cheap and efficient. The manufacturers state that no sewer gee or foul emanations can possibly escape through the Leland coupling. A great feature is that this coupler is capable of easy application by any one without the aid of a plumber, so that no fire, solder or skill is required to make it available. A company called the Leland coupler company (36 John street, New York,) has been formed to manufacture this convenient coupling.

THE following item will recall old times to California miners: "A letter from Deadwood City, in the Black hills, says that the main business street of that place is in a fair way of being worked out by miners, who had recently struck it big at two different points on the main thoroughfare. One man who had been running a cross-ditch came to the pay streak at the theater, which was evidently built on an old channel of the creek. Since then another party has tapped the channel a short distance below and near the center of the street. What led to the prospecting of the business portion of the town was the discovery of gold in paying quantities in a well that was dug not long ago. Next summer will see most of the business houses in Deadwood set up on stilts."

THE Columbia is at its lowest stage at the Dalles.

CORRESPONDENCE.

Lixiviation of Silver Ores.

EDITORS PRESS:—A short time ago an article on lixiviation of silver ores appeared in the San Francisco *Bulletin*, in which some erroneous statements are made in regard to the history of the introdnotion of this process in Sonora, Mexico. The writer, I think Mr. Smith, tries to demonstrate to the readers not only that he is the original introducer of the lixiviation in Sonora, but also that he is the original inventor of it, not considering that his second assertion lessens the credit of his first, as this process was invented a long time ago by Patera, and in its modification by Kiss.

Before relating the circumstances of the introduction of the leaching in Sonora, I will ask Mr. Smith why, prior to 1868, when he found it impossible to treat his ore with a profit by any of the then naed methods of reduction, viz: amalgamation and smelting, as he says in his communication, why, I ask, did he not in this dilemma by aid of his and his amateur chemist's metallurgical intelligence introduce Pateras or Kiss's process in his hacienda, without going to the expense of engaging me to go with him to Sonora?

In 1868 Mr. G. Kustel and I found that by a combination of Plattner's chlorination and Patera's leaching process, auriferous silver orea can be worked to great advantage, whereby both the silver and the gold is obtained separate, and also the copper if any in the ore. This combination never having been used before, was described and recommended in your paper under the name of "Kustel & Hofmann's process." A full description of it can be found in Mr. Kustel's little book on Roasting, but in order to facilitate the understanding of the following, I have to give a brief explanation of this process.

As mentioned before, the so-called Kustel & Hofmann process is nothing more than a mere combination of Plattner's chlorination and Patera's leaching process, and the operations are as follows: First, the ore is subjected to roasting, whereby towards the end a certain percentage of salt is added in order to chloridize the silver and all the base metals. The roasting must be perfect, and does not consist in a partial desulphurization, as Mr. Smith stated, as it would cause a very expensive chlorination or make it impossible. The roasted ore is moistened and conveyed to wooden tanks provided with filter-bottoms and tight closing wooden covers and impregnated with chlorine gas. The chlorination after roasting is intended to chloridize the gold, at the same time acting also on silver particles that escaped chlorination in roasting. The next operation is the extraction of the gold and all soluble base metals by leaching with water. The gold in the solution is precipitated with sulpbate of iron, the clear solution drawn off, and if containing copper conveyed to large tanks to precipitate the copper with old iron. After this the silver is extracted by a solution of hyposulphite of soda and precipitated with sulphide of sodium. In precipitating the silver with this chemical the solution turns into hyposulphite of soda again, and can be used over and over. The corresponding chemical combinations of calcium can be used to better advantage than those of sodium.

This is, in substance, the process with which we were treating auriferous silver ores in San Francisco, when Mr. Smith called on us and brought some of his ore to be worked. He was so much satisfied with the result that he engaged me at once and induced us to make an application for letters patent for this combined process, in the city of Mexico, in which he should have an interest. We told him that his ore, not containing any gold, did not require chlorination with cold chlorine gas, and a good chloridizing roasting would answer, but he insisted on having the complete process in operation in order to demonstrate it, for the sake of the to be-granted patent, to other mining companies whose ore contained gold.

So we started in September, 1868, for Mexico, provided with a wooden gas generator, three or four carboys of sulphuric acid, some manganese, about 100 pounds of hyposulphite of soda, one barrel of sulphide of sodium, a few thousand feet of lumber and some lead pipes and rubber tubes. When we arrived at La Dura we found that the flood of the Yaqui river had swept away the entire works, with the exception of the battery, which was still standing but half buried in sand and gravel. I mention this only to illustrate the difficulties under which the first introduction of lixiviation in Sonora was performed.

Having built a few cabins to give us and the workmen shelter, we commenced with the erection of the lixiviation works, which was done according to my direction. We built the first long reverberatory roasting furnace in Sonora, of which I drew the plan. Prior to that, Mr. Smith used Bruckner's mechanical furnace, and neither he nor his amateur chemist were familiar with the manipulation of roasting in a reverberatory furnace, but nevertheless Mr. Smith says: "We commenced at once to improve our mechanical appliances, altering our doors so as to effect great economy of fuel and a more thorough chlorinization of the ore." This great improvement, on which Mr. Smith lays so much weight, amounted to nothing more than common cast-iron frames for the working doors, which he ordered from San Francisco. It was of the greatest importance to have the works in running order as quick as possible, and I could, of course, not wait to build the furnace till the iron frames from San Francisco arrived, and consequently left it to Mr. Smith to make this "great improvement."

Having had the works as complete as the circumstances permitted, I commenced with the reduction of the ore, which was a very refractory one, consisting of fahl ore, galena, eight to nine per cent. of zincblende, four to five per cent. copper, some iron pyrites and quartz, and containing from $65 to $100 silver per ton. The ore I subjected to an oxidizing roasting till about one hour before discharging, when I added three to four per cent. of salt and finished with chloridizing roasting at a lower temperature, on account of the copper and zinc in the ore. The result which I obtained was very satisfactory, the tailings not containing more than four to five dollars per ton. As the La Dura ore did not contain any gold, I abandoned the use of the cold chlorine gas as soon as I had the whole works in running order, leaving them at the same time in such a condition as to enable a reduction of auriferous silver ore if such should be brought for treatment from other mines.

The gas generator, a very primitive one, constructed of two wooden tubs of about 30 inches in diameter, cost, including lead pipes, etc., about $50, and was put up and brought in connection with the leaching tanks on special request of Mr. S. for the above mentioned purpose, and not to be used for the La Dura ore. It was therefore a matter of course to abandon the chlorination as soon as the apparatus proved to be in good order and the workmen exercised enough to convince me of their ability to manage the same in my absence; and so I did, using only the second part of the process, which refers to the extraction of silver and copper, viz., chloridizing, roasting and extraction of the silver and copper by Patera's method. If, therefore, Mr. S. in his article says: "The gas generator gave out and in this dilemma, while considering what must to be done, against the earnest protest of Mr. Hofmann, I commenced experimenting on simply roasting the ore in a reverberatory furnace and leaching. I soon found that by careful roasting I obtained as good results as we had before obtained by the former process, and our success was assured," etc. he is simply misrepresenting the true facts for his own edification and benefit.

The dilemma in which we came was not caused by the giving out of the generator, but by the giving out of the chemicals. The barrel of sulphide of sodium was used up, and the ingredients for the manufacture of it, which Mr. S. pretended to have ordered from San Francisco, did not arrive. I had to look for a substitute, and tried to extract the potash from ashes, and to use this in place of soda, but decided finally in favor of lime, which is found in abundance and permits a quicker and easier manufacture of the chemical.

Mr. Smith claims that his amateur chemist suggested to him this idea, who found the formula for making this compound in some medical work. This statement is again incorrect. His amateur chemist, who was our bricklayer, did more harm than good. One night when the leaching vats were in his charge he let the whole solution of hyposulphite of soda with all the silver flow into the river, thinking he was leaching base metals with water. This was a still worse dilemma! We had no more hyposulphite of soda on hand, and consequently had to stop working. I tried to manufacture some hyposulphite of lime by generating sulphurous acid in a carboy and conveying the gas into sulphide of calcium, but the glass vessel burst and with it all our hopes. To order the chemical from San Francisco would have delayed us at least three months.

Finally, by reasoning, I found a way out of this calamity. Knowing that by precipitating with sulphide of calcium the chloride of silver, dissolved in hyposulphite of lime, the former transforms into a hyposulphite, I thought the same process might take place by precipitating chlorides dissolved in water. I leached some roasted ore, precipitated all the chlorides, and found to my great satisfaction the clear solution to dissolve chloride of silver very rapidly. From this moment we were out of trouble, and in a short time had the works in operation again.

I then left La Dura for Trinidad to obey a call of Mr. Alsua, who engaged me to introduce the lixiviation in his hacienda. The Trinidad ore contained so much clay that leaching was impossible, and I had to introduce wet crushing and to concentrate the ore in order to have success. Having found the ore to contain about twelve dollars per ton in gold, I constructed a wooden generator, similar to that one in La Dura, and treated the ore with cold chlorine gas, but finding great difficulty in obtaining the regular supply of sulphuric acid and manganese from San Francisco, as all the transportation had to be done on mule-back in a very mountainous country, I abandoned the chlorination and worked simply with the lixiviation, trying at the same time, by careful roasting, to extract as much of the gold as possible. The use of hyposulphite of lime extracts some gold with the silver, but not perfect, and very variable according to roasting.

"At Trinidad," writes Mr. Smith, "after expending several thousand dollars on Mr. Hofmann's mode of working, the process was abandoned and ours was adopted." This statement is evidently calculated to convey the idea that the several thousand dollars expended by me was loss, while nothing was changed except that a primitive gas generator was discarded and an old mule was killed by the breaking of one of the carboys of sulphuric acid in transporting.

The lixiviation process is so simple that any man can learn to treat it exact in less than a week. The roasting of ores is in no special connection with the lixiviation. A good chloridizing, roasting and oxidation of the base metals so far as practicable is all that is required for the lixiviation as well as for the amalgamation. OTTOKAR HOFMANN.

Chicago, Ill., Oct. 17th.

Peat.

The existence of extensive peat beds in this county, says the Stockton *Independent*, has long been known, and several companies have engaged in its manufacture to a considerable extent. This year, however, for some reason the works have remained idle, and the public are interested to know whether it is caused by a failure of the machinery to do its work, a failure of the crude peat in quality or quantity, a failure of the manufactured peat in the market, or only a temporary financial embarrassment. Specimens that we have seen from the works on Venice island would indicate that there is no fault in the quality of the peat, and we should be glad to hear of the resumption of work in its manufacture, as its production is an industry that will, if successful, be of great importance to our city in furnishing us cheaper and better fuel than is attainable elsewhere, even from the Ione coal mines. A test was made a year ago of the Venice island peat in its adaptability to railroad engines, the severest test to which fuel can be put. A train was run from Oakland wharf to San Jose with uncondensed and air-dried surface peat. The engine steamed easily, but it was pronounced impossible for one man to keep the furnace supplied. The run consumed 3,000 pounds of this peat, as against 1,600 pounds of Seattle coal commonly used. During the same month and with the same variety of peat, on shifting engine No. 116, 13,296 pounds of peat were used. Mileage, 336 miles; 39.57 pounds of peat used per mile. This same engine was accustomed to consume 26.51 pounds of Seattle coal per mile run. This shows that the peat was but two-thirds as valuable as the coal, although in cost the advantage was in favor of the peat. The objection in regard to keeping the furnace supplied would be done away with machinery for condensing the peat. It may be that the lack of this class of machinery at the works already established in this county accounts for their having suspended operations this season.

The Men in the Mines.

George Stokes, formerly connected with the Denver *Tribune*, writes from Deadwood of the men in the mines in the following humorous, yet truthful style:

"The smartest Alecks on all subjects here are men from Montana. The best miners in lean ground are men from California. The men who demand the highest wages and earn the smallest, are from Utah. The men who look you in the eye and ask the most unheard of prices for their claims, hail from Nevada. The most persistent prospectors, and—tell it not in Gath—the ones most given to the contemplation of the cocktail, come from Colorado. The weakest kneed, no-account growlers generally come from down East. One of these told me last week, in a burst of confidence, that he had actually been compelled to 'work for wages since he came here.' I stood appalled, but after considering that he received $24 per week for his services (more than he ever got for a month's elsewhere,) I withdrew my sympathy and went straightway and hunted up a job myself. All the nerveless men, I grieve to say, are not tender feet. Some men come here direct from other mining countries, and if they are not taken into partnership by the luckiest claim-holders on their arrival, they cry, go home; and as a rule we let 'em go."

DIAMOND TUNNEL.—We learn from J. A. Fish, Supt., that early Thursday morning a lode was cut in the heading at 1,136 feet, which shows a good body of ore, averaging six inches in width. A heavy stream of water was also struck, and at the same time the employees in the Dives shaft above noticed that the water fell immediately. A close examination shows that the vein cut in the tunnel crosses the Dives lode in a northeasterly course, thus furnishing drainage to the Dives workings, but the main Dives-Pelican lode is still 50 or 60 feet ahead of the tunnel. Arrangements have lately been made with the owners of the Baxter (called in the tunnel "Number Five") by which they will at once make connection from the tunnel with their surface workings, and have a right of way through the tunnel. By this method, development will be furthered, and both parties benefited.—*Colorado Miner.*

THE Treasury Department has issued a circular requiring sealed cars to be used in transporting across the continent unappraised merchandise subject to import duty.

Silver Queen Concentration Works.

After a considerable expenditure of money and time these works have been placed in complete running order, and are now busily engaged in treating ores. They are situated at the lower end of Georgetown, opposite and a little below Stewart's mill, and are built into the hillside on the terrace plan. The mill is 80 feet in length, the upper floor 25 feet wide, the second floor 25 feet, and the lower floor 80 feet wide. Ore is received on the upper floor, where a Blake crusher takes it in and delivers it to a pair of 20-inch rolls underneath. This crusher and rolls have crushed 4,200 pounds of ore in 30 minutes, and are fully equal to the task of grinding up all the ore the mill can require. From the rolls the ore is conducted to a five-mesh revolving screen, and what will not go through the screen is taken by an elevator back to the rolls again. That which has passed through is carried by another elevator into a pointed box, where water is added and the finest particles are washed off in slime, to be settled and treated on the lowest floor. Next the ore falls into revolving screens which make three sizes of it, and it is now ready for the jigging machines. Of these there are six; two each of the Kember, Morton, and Hartz patterns. Their operations are familiar to our readers; in all, the pressure of water from below is designed to force the lighter portions of the ore to the surface and give the heavy mineral the opportunity to sink first to the bed of machine. These jigs have a capacity of 50 tons daily. The slimes, after settling, are treated in a Cornish buddle, and their valuable components saved, while the tailings from all the operations are discharged into a waste pipe, and conducted to the creek below the mill. A boiler of 80 and an engine of 60-horse power, at the northern end of the building, are amply able to run double the machinery employed. Three men only will be needed in the mill, one at the crusher, one at the jigs, and an engineer. A large amount of ore has been successfully concentrated, and the manager, W. W. Rose, is now in the market to buy any and all grades suitable for concentration. When the wagon road on Democrat mountain is completed, the great reserves of low-grade galena ore now standing in the Rogers, Junction and other mines, will be brought here, and a trade is now being built up with mines near Alvarado and Mill City.—*Colorado Miner.*

Placer Mining on the Upper Boise and Smoky Creek.

Mr. John Pierce, says the *Idaho Statesman*, is down from Upper Boise, where his mining claims are located, 25 miles above the mouth of Feather river. He prospected this ground 14 years ago, and went there this summer and found the ground unoccupied, and after prospecting again, organized a company, composed of himself, Jo Jones, Lew Newton, John Hughs and Jo Baker. They went to work this summer, brought in water, whip-sawed lumber, set sluices, erected hydraulic works, and have their hose, pipes, etc., on the ground, and plenty of grub laid in so that they can commence mining operations early in the spring.

They have plenty of ground which prospects from the grass roots, 30 and 40 feet deep, with good dump; and they will go in some time in March and make a heavy summer's work.

The trouble with these diggings and the Smoky creek mines, some 30 miles farther east, is, they have to lay in their tools and supplies in the fall, for the high water sets them back until July before they can pack anything in. This was the trouble with Hardin & Co. on Smoky creek this season. They had no grub in and they have made only one short run. Hardin was about ready to clean up when Mr. Pierce came out. He will be down in a few days, and thinks they have done well, considering the short time they have run. Jo Pierce & Co.'s claims, on the south or main Boise, from Atlanta, where he will winter, is about 25 miles; and from there over to Smoky creek it is 30 miles. The miners that have been there this season have all laid in grub for next season, and they will go in on snow-shoes and make a good season next year. There is plenty of ground that will pay from $3 to $5 per day that is not taken. There is wood and water in abundance.

NEW SHAFT.—In the Yellow Jacket mine on the Comstock, arrangements have been completed for the starting of a large new working shaft at or near the site of the North Chipman shaft, situated about 2,600 feet to the eastward of the present working shaft. A road is being graded, blacksmith-shop erected, and other preparations completed for a vigorous prosecution of the work. It has not yet been decided as to whether the North Chipman shaft, which is down 100 feet, will be used as a starter or not. This shaft will be sunk to a depth of 800 feet with a small donkey hoisting engine, which will give ample time for the erection of the hoisting and pumping machinery, which in complete fitness, power and durability will have no superior on the line of the Comstock. This shaft will cut the ore vein of the Comstock at a depth of about 3,000 feet from the surface. The site selected for the shaft is close to the railroad, and in every way is one of the most convenient and eligible that it would have been possible to select.

MECHANICAL PROGRESS.

Speed of Pulleys and Cog-Wheels.

A writer for the *Northwestern Lumberman* says: Mr. Thomas Bell, of the Clay street planing-mill, Louisville, Ky., has been for the past 25 years using the following rule for computing the speed of pulleys or cog-gearing or both combined, which is, so far as we know, original with him:

The rule is based upon the proposition that the first motion or number of revolutions of the first shaft, multiplied by the continual product of all the driving pulleys or cogs in the wheels, is equal to the last motion or number of revolutions made by the last shaft, multiplied by the continual product of all the driven pulleys or cogs in wheels. Thus the unknown size of any intermediate pulley, or the number of teeth required in any intermediate cog-wheel, may be determined when the diameters of all the others are known as well as the speed of the first and last shaft. Or the number of revolutions of either first or last shaft may be found when the diameter of all the pulleys and either the speed of the first or the last shaft is known. In belt transmission take the diameter of the pulleys in feet or inches, and the result will be in feet or inches as either is used. In cog-gearing take the number of teeth or cogs in each wheel and they may be calculated indiscriminately with any other unit assumed. This gives a great advantage over the ordinary method.

In computing by this rule draw a perpendicular line and set the number of revolutions of the first shaft on the left of it, then set the diameter or number of cogs in each of the driving pulleys or wheels under it. On the right of the perpendicular line, opposite their respective drivers, set the diameter or number of cogs of each driven pulley or wheel. When this is done, do all the canceling you can, and multiply what is left on each side of the line continually together, including, of course, the number of revolutions of the first driver, whose place is always on the left side of the line, or of the last driven, whose place is on the right side of the line. Then divide the greater product by the lesser one, and the correct speed, or diameter, or number of teeth is obtained. When the speed increases from the first shaft to the last one, the products after multiplication will be greater on the left side, and vice versa.

Example: Suppose a shaft makes 100 revolutions per minute, carrying a driving pulley 60 inches diameter, which drives a pulley on a second shaft 30 inches diameter; on this second shaft there is a 40 inch pulley driving a 20 inch pulley on a third shaft. It is required the number of revolutions of the last pulley or shaft:

No. rev. 1st shaft....100
Diam. 1st driver...2÷4=0 | 30.....diam. 1st driven
Diam. 2d driver...2÷40 | 20.....diam. 2d driven

Then by canceling out 30 and 20 we have remaining on the left side 100×2×2=400, the speed of the third or last shaft.

Or if the revolutions of the first and last shaft are known, and it is desired to ascertain the diameter of any intermediate pulley to give the proper speed to last shaft, proceed as in first example, putting down the diameters of all the pulleys and the number of revolutions of first and last shafts in their proper places, leaving a cipher in the space for pulley the diameter of which is wanted:

No. rev. 1st shaft.....100
Diam. 1st driver....2÷60 | 30.....diam. 1st driven
Diam. 2d driver.(wanted) .0 | 0÷10.....diam. 2d driven
400÷4....No. rev. last shaft

Then by cancellation we have 4 and 10 remaining on the right side of the perpendicular line; 4×10=40 inches, the diameter of intermediate pulley wanted, which in this case is the second driver.

Another example showing cogs and belts mixed will suffice:

No. rev. 1st shaft.....100
Diam. 1st driver...3÷120 | 40.....diam. 1st driven
" 2d " ..4÷60 | 20..... " 2d driven
" 3d " ..2÷40 | 15..... " 3d driven
Teeth 4th " ..5÷100 | 20.....teeth 4th driven
" 5th " ..5÷50 | 10.....teeth 5th driven

Then we have on the left: 100×3×4×2×5×5=60,000—the number of revolutions of last shaft or pinion required.

Since becoming acquainted with Bell's rule (which I may perhaps safely term it), I have used it quite constantly with much convenience; it avoids complication and saves time.

THE CHAMPION BELT.—The *Manufacturer and Builder* had the pleasure of seeing in the warerooms of the New York belting and packing company, of 39 Park Row, the largest belt ever made, being 331 feet long, 4 feet wide and weighing 2 tons, made for Messrs. Gill & Mansfield, the contractors for the large grain elevator to be placed in the building at the foot of Sixtieth street, North river, New York, and which is to be completed on the 1st of November next, for the use of the New York Central & Hudson River railroad.

SWISS NARROW GAUGES.—Narrow gauges seem to meet with great favor in Switzerland, a great many having been lately completed. An exchange informs us of the completion of the road from Geneva to Lausanne, along the Jura mountains. The length of this road is 55 miles, the gauge being one meter. The line was constructed by a local board, who received a subvention of £70,000.

Shape and Strength.

How important it often is to the mechanic to give such shape to his material that it will possess the greatest possible strength. We find in the *Railroad Gazette* a record of some experiments which may be suggestive. The *Gazette* says: The results of the experiments are rather disturbing to some of the ideas which some of us have held, and will compel a general overhauling and correction of established theories. In the numerous discussions of the subject of the dead weight of cars, it has several times been proposed that the round rods used in the construction of cars should be thickened up on the ends on which the thread of the screw is cut, so that the effective diameter of the rod measured at the bottom of the thread would be the same as at the other parts of the rod. It was assumed that the rod, having less transverse section at the bottom of the thread, would be weakest at that point and would consequently break there. Nothing seems plainer, more obvious or more conclusive than this. The results of Mr. Garey's experiments, however, show how dangerous it is to draw such inferences, or rather to act on them without demonstrating them by experiment. He took three rods of seven-eighths, three-quarters and five-eighths inches diameter respectively, and three feet long, and then cut a thread in the ends without upsetting them. The threads were of the U. S. standard sizes. On subjecting them to strains, instead of breaking through the screw, as they seemed in duty bound to do, each one of them broke near the center. At the point of fracture, each of them was very much contracted in section, that is, was drawn down by the tension, as is always the case when soft iron is subjected to severe tensional strain.

The diameter of the rods was, as stated above, seven-eighths, three-fourths and five-eighths. The breaking strain for the first was 43,000 pounds, for the second, 33,000 pounds, while for the third 24,000 pounds sufficed. At the point of fracture the diameter was, respectively, nine-sixteenths, seven-sixteenths and three-eighths; while the stretch of the rods when broken was two and three-fourths, two and five-eighths and two and fifteen-sixteenth inches.

These experiments present an interesting problem, both theoretically and practically. It was stated by Mr. C. A. Smith, formerly master car-builder on the Erie railway, that in practice the rods on cars almost invariably break through the threads. Now, if this is so, the problem becomes still more intricate, and its theory more difficult to explain. If the experience of other car-builders confirms the observation of Mr. Smith, the question then presents itself, why do such rods break at one place while in use on cars and at another in a testing machine. If, as we suspect, this is due to the quality of the material of which they are made, then it indicates anew the importance of testing carefully all the iron which is used, so as to know its quality.

Testing Welded or Soldered Boiler-Plates.

The method recently introduced of manufacturing boiler-shells with welded seams, says the *Manufacturer and Builder*, has led to the construction of a machine for testing the soundness of such welds, their adaptation and value for the purpose in question being of course primarily dependent on this quality.

The contrivance consists of a fixed hydraulic cylinder, 12 inches in diameter, and of 12 inches stroke, connected to a traveling head by rectangular wrought iron bars 5 by 2½ inches, pierced with cotter holes of 11 inch pitch; the platen attached to the hydraulic ram slides along the bars.

When a boiler-shell is to be tested, the traveling head is run out of the way along the rails, and the shell is run in on a truck; the head is brought back to its place, and the cotters are inserted in the nearest cotter holes. Pressure is then applied to the cylinder by means of hydraulic pumps, the ram forces the platen against the end of the shell, and the joint is in this way made ready for the testing process. The shell is now filled with water from a tank by means of a flexible hose inserted into a passage in the platen, while the air escapes by means of a tube in the traveling head, this tube being made to slide diagonally, so as to suit any sized shell; the tube is then closed by means of a cock, and the test pressure is applied by the hydraulic pump.

IN the cloth manufactory of Renesson Fils, of Sedan, there is an electro-magnetic arrangement for stopping the steam engine. In the valve chest is a cock, on the axis of which is a little wheel, round which winds a weighted cord. The weight tends constantly to unroll the cord, and so close the cock, but is prevented doing so by means of a bar obstructing a tooth on the little wheel. This bar can be withdrawn by means of an electro-magnet, which can be worked at any distance from the machine with a constant, or, better, an interrupted current. In experiments made by a commission, the driving wheel did not make more than one and one-fourth to one and one-half revolutions after sending the current.

PULLEYS covered with leather, iron pulleys polished and mahogany pulleys polished, rank for working value as 36, 24 and 25 respectively, wood and iron uncovered being almost identical.

SCIENTIFIC PROGRESS.

The Planet Vulcan.

The observations made on Le Verrier's hypothetical planet Vulcan, on October 2d and October 9th, resulted in nothing. Whether there is an intra-Mercurial planet is consequently an open question with a strong negative. Prof. C. H. F. Peters, the well known director of the Litchfield observatory at Hamilton college, gives the Utica *Herald* the following reasons for his belief that Le Verrier is mistaken:

1. Le Verrier gives the earlier observers of the transit of Mercury the benefit of too much accuracy; had all observations been accurate, no material deviation in the course of Mercury would be observable. Le Verrier's claim that there is a deviation, due to an inter-Mercurial planet, is therefore but an assumption.

2. All the alleged observations of the planet are attended by too many suspicious circumstances to allow them to be accepted as facts. No famous astronomer has ever seen the planet.

3. The most unfavorable condition for the observation of such a planet would be when the plane of its orbit was at right angles with the ecliptic, the duration of a node being then the shortest possible. Under this condition there would be but three and one-half days at each node, or seven days in the year when the observation of a transit would be possible. But it is claimed that this planet is inclined only 13 degrees from the ecliptic. The length of time that it could be seen at each node, therefore, would be 14½ days, or 35 days during the year. It is further claimed that Vulcan revolves around the sun once in about 20 days. During the 35 days in the year it can be seen, it must make almost two revolutions. Hence two transits a year would not be improbable. Astronomers have almost hourly watched the sun for the last 15 or 20 years, but have seen nothing of an event that, if it occurs according to the prescribed conditions, should happen at least once, and often twice a year. Hence, the unauthenticated statements of one or two men that something has occurred which thousands, after years of searching, have not discovered, can not be taken as facts.

4. A planet so near the sun as Vulcan is declared to be, would be intensely illuminated, so that it could easily be seen when outside of the sun, if it really existed.

5. No such planet has ever been seen; no such planet can be seen; there is no such planet.

HORNED MEN IN AFRICA.—There was a paper read before the British Association, written by Capt. J. S. Hay, relating to a strange malformation in the males of a tribe of people he has visited in Akem, in West Africa. An extract is as follows: Two diagrams which are laid before you depict to the best of my ability, and will at least convey some idea of a malformation which is, I believe, peculiar to this tribe. I have at least noticed it in no other. The malformation in question is confined to the male sex, and consists of a protuberance or enlargement of the cheek bones under the eye, which take the form of horns on each side of the nose. The malformation begins in childhood, but is not, so far as I am aware, hereditary. It presents no appearance of being a diseased structure, nor is it a raised cicatrice, after the fashion adopted by many African tribes. On the contrary, I have seen children with this peculiarity of structure, whose parents were doing their utmost, though ineffectually, to stop it by medicines and applications. In the meantime, to set all speculation and conjectures at rest, and to corroborate a statement that doubtless may appear extraordinary, I have lost no time in writing to a missionary, a native of the country, to procure me, if possible, skulls in which the phenomenon appears; and as soon as these arrive it is my intention to exhibit them, in connection with a paper on the subject, which I propose to read at the Anthropological Institute in London.

A NEW PLAGUE IN EGYPT.—A letter from Alexandria, August 27th, says: A new calamity now engages the attention of all Egyptians even more than the financial decrees of the Khedive or the refusal of the government to accept the judgment of the new courts. It seems that many of the cavalry horses that have returned from Abyssinia in the last two months came with a most malignant disease upon them. The doctors pronounce it a kind of typhoid fever. It is most infectious and terribly rapid in its progress, death resulting in many cases in a few hours. It is stated, and on good authority, that the government, instead of isolating the infected animals, sold them all at a very low price to the *fellaheen*. Thus they have been distributed throughout the country, and in the neighborhood of Cairo alone several hundred horses are already reported dead.

AMONG recent communications to the French Academy on the subject of phylloxera was one by M. Theuerd, describing the good results obtained by stripping off the bark of phylloxerized vines. This is easily done by means of a steel glove; and it frees the vine from the insect during the aerial evolution of the latter. The method might prove more advantageous than that which attacks the phylloxera during its subterranean life.

Painless Killing.

Benjamin W. Richardson reports in *Nature* as follows: The latest experimental researches which I have conducted on lower living animals have had for their object the discovery of a ready, cheap and innocuous method for killing without pain those animals which are destined, as yet, for the food of man. If the labor of the physiologist be allowed to progress, the day will soon arrive when the slaughter of animals for food will become unnecessary, since he will be able to so transmute the vegetable world as to produce the most perfect and delicious foods for all purposes of life without calling upon the lower animal world to perform the intermediate chemical changes. But until this time arrives animals will have to be slaughtered, and my research has been directed to make a process, which at present is barbarous and painful, painless in the most perfect degree. For this purpose the various modes of rapid destruction of life—by powerful electrical discharges, by rapid division of the medulla oblongata, and by the inhalation of various narcotic vapors, have been carried out. The experiments, which have been exceeding numerous, have led me to the conclusion that the most perfect of the painless methods of killing is by the inhalation of carbonic oxide gas. So rapid and complete is the action of this gas, that I might say physiological science has done her part, as far as need be done, for making the painless killing of every animal a certain and ready accomplishment, an accomplishment also so simple that the animal going to its fate has merely to be passed through the lethal chamber in order to be brought in senseless sleep into the hands of the slaughterer. The application of teaching and the putting into practice this humane process lies now with the world outside science; but to insure its acceptance all the force of selfishness, of prejudice, and of practical apathy for the sufferings of the animal creation have to be overcome. There is a great deal of talk and a great deal of sentiment abroad on the question of the sufferings of the lower animal kingdom, but when an attempt is really made to relieve those sufferings by the invention of methods for the operating, surgically, without the infliction of pain, or for painless killing, the true vital sympathy which one would expect in support of such practical and humane efforts, until they are made universal, can scarcely be said to be found at all. With the exception of a few, not a dozen altogether, of really humane ladies and gentlemen, I have found no one, out of the ranks of science, in the least interested in the saving of sufferings to which I am now directing attention. The man of science stands and wonders at the strangeness of the psychological problem before him, and, in spite of himself, is forced to the conclusion that, practically, the noise that is made at him in the name of humanity is, after all, sounding brass and tinkling cymbal.

A PRIZE FOR A PROCESS.—An interesting competition is about to be opened by the German society, *Verein von Gas und Wasser Fachmaennern Deutschlands*, which offers a prize of $400 to the author of the process for the economical purification, from carbonic acid, of illuminating gas obtained from coal. The systems now commonly employed involve either hydrate of lime, certain salts, muriate of manganese for example, and iron oxides. Whether these methods leave more or less to be desired, according to the nature of the coal distilled, or whether the forms of the purifiers are imperfect, it is nevertheless certain that carbonic acid still remains present in illuminating gas, and its presence is decidedly unhealthy. Either a new system for its complete removal, or an effective improvement on the older process, is required. The invention must be economical, easy of manipulation and must not lower the illuminating power of the gas. The memoir describing it must be complete, and explain both the theory and the practice. Manuscripts must be signed with some distinctive device, which is to correspond with a similar mark on a sealed packet in which is written the name and address of the author. Communications are to be addressed to the president of the commission, Dr. Schilling, at Munich, prior to December 31st, 1876.—*Engineer.*

BALTIMORE'S GREAT UNIVERSITY.—The staff of Johns Hopkins university, consisting of the president and six professors, 12 associates and 20 fellows, are now assembled, and are engaged in the examination of students and the formation of classes. The number of candidates for admission was much larger than was anticipated. Most of them are from Baltimore and vicinity; but perhaps a fourth come from Virginia, North Carolina and other States. About 20 college graduates (in addition to the fellows) have applied for instruction, many of them in the laboratory of biology. The books and apparatus in physics, chemistry and biology (animal physiology) are arriving constantly. The afternoon lectures have already begun, with the first lecture of Prof. Gildersleeve on Greek lyric poetry. Prof. Rebillon's course on French literature has also begun. These afternoon lectures will be continued through the winter, with courses by Lowell, Child, Whitney, Walker, Hilgard, Newcome, Mallet and others, and are open to ladies as well as gentlemen, whether connected with the university or not.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to Oct. 5.		1 W'k to Oct. 12.		1 W'k to Oct. 19.		1 W'k to Sept. 26.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	25c	....
Advance	....	....	....	....	....	....	....	....
Alpha	47	44¾	46¾	41	45¾	42	45¾	43½
Alta	2⅜	....	2	....	2	1¾	3	2½
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	1	....	1	....	....	....	....	....
Andes	2½	2	2	1¾	2¼	1¾	2½	2
Alpa	75c	....	....	....	57c	....	....	....
Amazon	....	....	....	....	....	....	....	....
Balt'm'e Con	3½	2⅝	2¾	2¼	2½	2⅜	2½	2
Belcher	22¼	21½	21	16½	19¾	16½	19¾	18½
Belmont	2⅜	....	2	....	2	....	2	....
Best & Bel	45¾	46¾	46	43¾	45¾	42	49¾	44¼
Buckeye	....	....	....	....	....	....	....	....
Bullion	38	35	35½	33¾	37½	34	33½	35¾
Osleodonia	10¾	9⅞	9⅞	8⅞	11	9½	10¾	10
California	62½	61½	61	58	59½	57½	58¾	57
Challenge	....	....	3¾	3	3	....	....	....
Chollar-P'tsi	89	82½	79½	71	83	78½	81¾	76
Confidence	17	16¾	15	13¾	16½	15¼	16	15¾
Con Imperial	4.40	4.00	4¼	3½	4.05	3.90	4	3.80
Con Virginia	57	54¾	55½	45¾	51¾	45	55	51½
Crown Point	12	11¾	11½	10½	13	11½	13	11½
Ooso Con	60	20	....	....	....	....	25c	....
Dancy	....	....	....	....	....	....	....	....
Dayton	....	....	....	....	½	....	5	½
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka(G V)	....	....	....	....	....	....	....	....
Eureka Con	15¼	13½	17¾	12¾	14¾	13¾	14	13¼
Exchequer	15½	14¾	14¾	13¾	14½	14	15¾	14¾
Eureka	....	....	....	....	....	....	....	....
Gila	70c	....	75c	59c	50c	....	55c	65c
Globe Con	....	....	....	....	....	....	....	....
Golden Char	1¾	....	1¼	....	1½	....	....	....
Gould & Car	15	14¼	14¾	13	15	13¾	16	14¼
Hale & Nor	11¾	10¼	8¾	7¼	8¾	7¾	9	8¼
Ida Elmore	....	....	....	....	....	....	....	....
Jefferson	1	....	....	....	50c	....	25c	....
Julia	7¼	6¾	6¾	....	7¼	6¾	7c	....
Justice	19¾	18	18¾	16c	26¾	17½	25¾	24
Jackson	4	....	4	3¾	4¾	4	5	4¾
K K Con	2½	....	3	....	3	2½	2½	....
Kentuck	11¾	....	11¾	10½	11¾	11	13	12
Knickerb'k'r	....	....	50c	....	50c	....	....	....
Kossuth	2	1½	2	1¾	2½	....	2½	2¼
Lady Bryan	30c	25c	30c	25c	75c	2°c	85c	60c
Lady Wash	3	....	3	2	3	....	3	2¾
Leo	....	....	....	....	....	....	....	....
Leopard	10¾	8¾	8¾	8¼	8¾	8	8¾	7½
Leviathan	95c	80c	90c	80c	....	....	75c	....
Mahogany	....	....	....	....	....	....	....	....
Mansfield	....	....	....	....	20c	....	....	....
Meadow V'y	62½c	50c	25c	....	27½c	20c	25c	15c
Mexican	30¾	27½	26	23¾	28	23¾	29¾	25¾
Midas	....	....	....	....	....	....	....	....
Mint	....	....	20c	....	20c	....	25c	....
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	1¾	....	1½	....	1¼	1	1¼	90c
Niagara	....	....	....	....	15c	10c	19c	15c
Northn Belle	23	18¼	21	19	25	20¼	24	22
New Ooso	3¼	2⅞	....	....	2¾	2½	2¾	2½
Occidental	3	2¾	2¾	....	....	....	....	....
Ophir	56¾	51	47	40¾	55	43	51	47½
Or Gold Hill	....	....	....	....	....	....	....	....
Overman	81	77½	78¼	74	85	80	83	79
Pacific	....	....	....	....	....	....	37½c	....
Phil Sheridn	2⅝	1	2	....	3½	1¾	3	2¾
Plotsch	3c	2c	....	....	....	....	....	....
Poorman	2	75c	20c	....	27½c	25c	28c	20c
Prospect	....	....	1½	87½c	1	90c	90c	65c
Prussian	....	....	....	....	....	....	....	....
Ray & Ely	6	....	5¾	5¼	5½	....	6	5¾
Rock Island	1⅝	1⅜	....	....	....	....	1⅜	1¼
Rye Patch	....	....	....	....	....	....	....	....
Savage	18¼	17½	16	12	16	13	15	12½
Seg Belcher	....	....	....	....	15	70	....	....
Sierra Nev'da	14	11¾	13¾	12¼	13¾	12	13	11¾
Silver Hill	8⅞	8½	7¾	7½	9¾	7½	9½	9
Sth Chariot	....	....	....	....	....	....	....	....
Sncoor	20c	....	25c	10c	15c	....	25c	15c
Union Con	13½	12½	11¾	10¼	13¾	12¼	14	12¾
Utah	19	18	19	14	19½	16¾	18¾	16¾
Wells-Fargo	....	....	20c	15c	20c	15c	17c	15c
Woodville	1½	1	1⅜	1½	1½	1½	1⅜	1⅜
Yel'w Jacket	26¾	25	24½	21	25¼	23¾	25¾	23½

Sales at S. F. Stock Exchange.

FRIDAY, A. M., OCT. 20.

150 Alta.....2½@3
325 Andes.....2½
20 Alpha.....4¾
180 Bullion.....36
245 Best & Bel.....45½@46
270 Belcher.....19¾
100 Baltimore Con.....2¾
500 Caledonia.....10¾@10½
425 Crown Point.....12½@12¾
1200 Con Imperial.....3.95@4
545 California.....58@58¼
35 Chollar.....7
2850 Con Virginia.....52@51½
100 Cosmopolitan.....3½
10 Dayton.....¼
425 Exchequer.....14⅜@14¼
100 Florida.....1¼
400 Gould & Curry.....14¾@15
260 Hale & Nor.....9
430 Julia.....@7⅛
420 Justice.....2½
130 Kossuth.....2
60 Kentuck.....1
100 Lady Bryan.....60c
23 Lady Wash.....2½
1555 Mexican.....28½@29
50 New York.....1⅞
1850 Niagara.....@15c
400 North Con Vir.....17¾@17½
1130 Ophir.....52¾@52½
170 Overman.....82@83
50 Phil Sheridan.....3
2350 Con Virginia.....52@51½
100 Cosmopolitan.....3½
10 Dayton.....¼
425 Exchequer.....14⅜@14¼
100 Florida.....1¼
400 Gould & Curry.....14¾@15
260 Hale & Nor.....9
430 Julia.....@7⅛
420 Justice.....2½
130 Kossuth.....2
60 Kentuck.....1
100 Lady Bryan.....60c
23 Lady Wash.....2½
1555 Mexican.....28½@29
50 New York.....1⅞
1850 Niagara.....@15c
400 North Con Vir.....17¾@17½
1130 Ophir.....52¾@52½
170 Overman.....82@83
50 Phil Sheridan.....3
365 California.....58¾@58½
250 Prospect.....87½c
350 Rook Island.....1¾
385 Savage.....14¼@14⅜
260 Sierra Nevada.....12¾
80 Sil Hill.....9½
90 Uncle Sam.....3c
280 Sierra Nevada.....12¾
50 Sil Hill.....9½
90 Utah.....18¾@18¾
585 Uncle Sam.....14@13¾
2490 Yellow Jacket.....24¼@25¼

MONDAY, A. M., OCT. 23.

380 Alpha.....44¼@45¼
215 Andes.....2¾@2¾
260 Bullion.....38@38¾
1850 Belcher Con.....2¾@2¾
275 Belcher.....18¾
540 Best & Belcher.....47¾@48¾
365 California.....58¾@58½
253 C Point.....@1½
1295 Con Virginia.....53½@53¾
415 Con Imperial.....3.95@3.90
1160 Caledonia.....10¾
10 Confidence.....16
50 Cosmopolitan.....3½c
155 Exchequer.....14¼@14½
110 Florida.....1¼@1
300 Gould & Curry.....15¾
110 Hale & Nor.....8¾@8¾
120 Just ce.....24¾@24½
370 Julia.....7¼
300 Kossuth.....2¼@2½
60 Kentuck.....12
200 Lady Bryan.....60c
930 Mexican.....27½@28½
20 Mint.....25c
50 New York.....1
1365 North Con Vir.....15¾@15¾
2070 Niagara.....15@16c
1910 Ophir.....52@52¼
60 Overman.....80
370 Prospect.....@8c
130 Phil Sheridan.....2¾
480 Savage.....14¾@12¾
70 Silver Hill.....9¾
1100 Senator.....50c
680 Trojan.....20@65c
205 Union.....13¼@12½
50 Utah.....18
40 Virginia.....2¼
100 Woodville.....1½@1⅝
430 Yellow Jacket.....24½@24¾

AFTERNOON SESSION.

20 Alpha.....44¾
120 Best & Belcher.....48@48¾
75 Crown Point.....11½
145 California.....58
285 Con Virginia.....53@52½
70 Caledonia.....10¾
100 Ooso Con.....2½c
165 Con Imperial.....3.90
400 Eureka Con.....13¾@14
525 Gila.....70@75c
150 Gould & Curry.....15¾@15¾
110 Gennesee Valley.....2.10@2.20
280 Gen Thomas.....1¾@90c
16 G Char.....1
600 Geddes & Bert.....2
1985 Hussey.....40@45c
90 Hale & Nor.....8¾
500 Jackson.....4¾@5
125 Justice.....24¾
25 K K Con.....2½

910 Leopard.....8¾@8¼
280 Mexican.....27½@28
125 Manhattan.....16@15¾
745 Northern Belle.....22@23¾
75 New Ooso.....2½@2¾
20 Overman.....79
302 Ophir.....51¾@50
600 Panther.....30@40c
100 Poorman.....28c
25 Raymond & Ely.....6
165 Savage.....14½
280 Sierra Nevada.....12¾@12¾
310 Union Con.....12¾
50 Yellow Jacket.....24

TUESDAY, A. M., OCT. 24.

350 Alpha.....44½@44¾
4.0 Andes.....2¼@2½
50 Alta.....2½
305 Bullion.....37¾@37½
235 Belcher.....18½@18¾
160 Best & Belcher...4 @4 ¼
240 Baltimore Con...2½@2¾
360 Caledonia.....10@10¼
1440 Con Virginia.....52¾@53
610 Crown Point.....11½@11¾
800 California.....57½@57¾
787 Con Imperial...3.80@3.90
650 Cosmopohtan.....5¾c
25 Dayton.....¼
1025 Exchequer.....15@15¾
20 Gould & Curry.....14¾
540 Hale & Nor.....8¾@8¾
505 Justice.....24¾@24½
100 Julia.....7½@7¾
50 Kentuck.....12
650 Kossuth.....2¾
875 Lady Bryan.....80@35c
100 Leviathan.....5
50 Lady Wash.....3
805 Mexican.....27@27½
275 New York.....90c@1
635 Nth Con Va.....1½@1⅝
365 Overman.....79@78¾
935 Ophir.....50@50¾
125 Phil Sheridan.....2¾
725 Prospect.....90@65c
80 Rock Island.....1¾
120 Savage.....14¾
420 Sierra Nevada.....12½@12¾
50 Succor.....18c
20 Silver Hill.....9¾
50 Senator.....37½c
300 Tahoe.....35@37½c
1220 Union.....12¾@12½
10 Utah.....17½
50 Woodville.....1⅝
1 Wells-Belcher.....2½
560 Yellow Jacket.....24@23¾

AFTERNOON SESSION.

50 Alpha.....44¼
270 Best & Belcher.....44½
140 Belmont.....2
50 Crown Point.....11¾
235 California.....57
585 Con Virginia...51¾@ 1¾
500 Exchequer.....14¾@14½
170 Eureka Con.....13¾
100 Geneseé Valley.....2
10 Gila.....65c
530 Gen Thomas.....1¾@1¾
215 Hale & Norcross.8¾@8¾
250 Hussey.....40c
20 Jefferson.....25c
20 Justice.....24¼
400 Leopard.....8¾@8½
580 Mexican.....26¾@26¾
600 Manhattan.....15½@15¾
200 Meadow Valley.....15c

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., OCT. 19.

420 Alpha.....43¾@44
30 Andes.....2½
625 Baltimore Con.....2½
315 Best & Bel.....44@44½
225 Belcher.....19
180 Bullion.....37
995 California.....58¾@59
525 Crown Point.....12@12¾
855 Con Virginia.....51½@53
1 Chollar.....78½@80
995 California.....58¾@59
525 Crown Point.....12@12¾
855 Con Virginia.....51½@53
390 Gould & Curry.....15
640 Hale & Nor.....9@8¾
115 Julia.....7¼@7¾
710 Justice.....25¼@25½
325 Kentuck.....12¾@13
1390 Mexican.....29¾@28¾
70 Meadow Valley.....20@25c
170 Ophir.....52½@53¼
160 Overman.....82@82
570 Savage.....14¾@15
240 Sierra Nevada.....13@12½
50 Sil Hill.....9½
90 Utah.....18¾@18¾
585 Un Con.....14@13¾
2490 Yellow Jacket.....24¾@25¼

AFTERNOON SESSION.

200 Alpha.....43¾
100 Alpha.....50c
100 Advance.....6
220 Best & Belcher...45@45¼
40 Chollar.....7
940 Caledonia.....10½@10¾
330 California.....58¾@59
140 Con Virginia...50¾@50¾
280 Eureka Con.....13¾@13½
1175 Gila.....65@62½c
310 Golden Chariot.....95c
100 Gen Thomas.....95c@1
500 Geddes & Bertrand...1¾
180 Genessee Val...2.15@2.20
600 Hussey.....40c
10 Jackson.....4¾@5
255 Justice.....25¾
135 Kentuck.....12¾@11¾
754 Leopard.....8¾@8
30 Meadow Valley.....20c
80 Manhattan.....16
150 Modoc.....5¾@5½
885 Mexican.....27@27½
1795 Northern Belle.21¾@20¾
1000 New Ooso.....2¾@2¾
575 Ophir.....52¾@53
1590 Poorman.....25c
70 Raymond & Ely...5½@6
510 Sierra Nevada...12¾@13
10 Savage.....14¾
110 Yellow Jacket...24¼@24

THURSDAY A. M., OCT. 26.

265 Alpha.....45@45¾
285 Best & Belcher...48¼@48
210 Bullion.....36½
70 Belcher.....18¾@18¾
989 Crown Point...11¾@11¾
1125 Con Imperial.....3.90
2585 Con Virginia.....53½@54¼
1160 California.....58¾@59
135 Caledonia.....10
124 Exchequer.....15@15¾
1030 Gould & Curry.15¾@16¼
205 Hale & Nor.....8¾@8¾
1130 Justice.....24¼@24½
25 Julia.....7½
975 Kentuck.....12½@13¼
675 Lady B.....82½c
480 Mexican.....28½@28¾
480 Ophir.....50@50¾
230 Overman.....83@84
10 Savage.....14¾
415 Sierra Nevada.....11¾@12
750 Succor.....10@12½c
30 Utah.....17
640 Union.....13¼@13½
250 Yellow Jacket...23¾@24¼

AFTERNOON SESSION.

50 Alta.....2½
110 Andes.....2½
225 Baltimore.....2
75 Coso Con.....26c
875 Con Virginia.....53¾@53
775 California.....57¾@57
200 Cromer.....2½c
30 Chollar.....79
100 Eureka Con.....13¾
100 Gila.....70@65c
80 Genesee Valley.....2.15
250 Ge des & Bertrand...2
100 Jackson.....4¾
400 Kossuth.....2¼@2½
540 Knickerbocker...35@36c
1675 Leopard.....7¾@7½
75 Leviathan.....15c
75 Meadow Valley...4@10c
200 Manhattan.....15¾
380 Modoc.....5@5¼
995 Mansfield.....18@20c
915 Northern Belle.23½@24¼
50 New York.....1¾
1800 New Ooso.....2½@2¾
1000 Niagara.....15@16c
100 N Con Vir.....1¾
145 Overman.....84¼@84½
490 Ophir.....49½@49¾
200 Poorman.....26c
200 Panther.....20@25c
1235 Prospect.....80c
200 Pacific.....37½c
75 Raymond & Ely...6¼@6½
510 Rock Island.....1¾
105 Sierra Nevada...11¾@12
245 Silver Hill.....9½@9¾
50 Senator.....62½c
100 Tahoe.....60c
100 Wells-Fargo.....18c
175 Woodville.....2
35 Ward.....1¼
530 Yellow Jacket.23½@23⅞

AFTERNOON SESSION.

25 Alpha.....2½
10 Belmont.....2¾
30 Best & Bel.....47½@48
10 Belcher.....18¾
100 Con Virginia.....53¾
900 Ooso Con.....2½c
290 Crown Point...11½@11¾
220 Cosmopolitan.....4¾@5c
110 Con Imperial...3.90@3.85
150 Gennesee Valley.....2¼
680 Gt Eastern.....3@3¾
60 Gould & Curry.....15¾
450 Gila.....70@75c
30 Justice.....24¾@24¾
20 Julia.....7⅜
150 Jefferson.....22½c
475 Leopard.....7¾@7⅞

200 Northn Belle. .22¾@23½
1·75 Ophir.....47¾@48½
400 Poorman.....25c
25 Ray & Ely.....5¾
100 Tyho.....12
355 Union Con.....12¾@12⅝

WEDN'DAY, A. M., OCT. 25.

330 Alpha.....45@44¾
210 Andes.....2@2½
50 Alta.....2
120 Baltimore Con.....2@2½
220 Cosmopolitan.....55@50c
775 Exchequer.....15@15¼
640 G & Curry.....15¼@15¾
230 Hale & Nor.....8¾@8½
255 Julia.....7½@7¾
700 Justice.....24@23¾
100 Kossuth.....2¼
320 Kentuck.....13¾@13¼
1760 Mexican.....28¾@28¾
175 New York.....1¢@5c
215 North Con Vir.....1½
630 Niagara.....15@16c
140 Overman.....80@81
1·0 Phil Sheridan .....3@2¾
480 Prospect.....80@75c
100 Pacific.....3½
420 Savage.....14@14½
465 Sierra Nevada...12½@12¾
65 Silver Hill.....9
50 Senator.....25c
500 Hussey.....40c
320 California.....57¾@58
50 Coso Con.....25c
650 Eureka Con.....13¾
200 Geddes & Bert...2@1¾
80 Gould & Curry.....15½
200 Gila.....70c
20 Gold Chariot.....1
320 Hale & Nor.....8¾
500 Hussey.....40c
200 Justice.....24½@24¾
75 K K Con.....2¾
1080 Leopard.....7½@7¾
250 Meadow Valley.....20c
150 Mexican.....28½@28¾
160 Manhattan.....15¾@15½
250 Modoc.....5¾
200 Northern Belle...21¾@24
700 New Ooso.....2¾@2¾
575 Ophir.....50 7 8
70 Overman.....81¾@82
560 Poorman.....20c
500 Raymond.....5¾@6
365 Sierra Nevada.....12¾
80 Savage.....14@13¾
80 Union Con.....13¾

THURSDAY A. M., OCT. 26.

265 Alpha.....45@45¾
285 Best & Belcher...48¼@48
210 Bullion.....36½
70 Belcher.....18¾@18¾
989 Crown Point...11¾@11¾
1125 Con Imperial.....3.90
2585 Con Virginia.....53½@54¼
1160 California.....58¾@59
135 Caledonia.....10
124 Exchequer.....15@15¾
1030 Gould & Curry.15¾@16¼
205 Hale & Nor.....8¾@8¾
1130 Justice.....24¼@24½
25 Julia.....7½
975 Kentuck.....12½@13¼
675 Lady B.....82½c
480 Mexican.....28½@28¾
480 Ophir.....50@50¾
230 Overman.....83@84
10 Savage.....14¾
415 Sierra Nevada.....11¾@12
750 Succor.....10@12½c
30 Utah.....17
640 Union.....13¼@13½
250 Yellow Jacket...23¾@24¼

AFTERNOON SESSION.

50 Alta.....2½
110 Andes.....2½
225 Baltimore.....2
75 Coso Con.....26c
875 Con Virginia.....53¾@53
775 California.....57¾@57
200 Cromer.....2½c
30 Chollar.....79
100 Eureka Con.....13¾
100 Gila.....70@65c
80 Genesee Valley.....2.15
250 Ge des & Bertrand...2
100 Jackson.....4¾
400 Kossuth.....2¼@2½
540 Knickerbocker...35@36c
1675 Leopard.....7¾@7½
75 Leviathan.....15c
75 Meadow Valley...4@10c
200 Manhattan.....15¾
380 Modoc.....5@5¼
995 Mansfield.....18@20c
915 Northern Belle.23½@24¼
50 New York.....1¾
1800 New Ooso.....2½@2¾
1000 Niagara.....15@16c
100 N Con Vir.....1¾
145 Overman.....84¼@84½
490 Ophir.....49½@49¾
200 Poorman.....26c
200 Panther.....20@25c
1235 Prospect.....80c
200 Pacific.....37½c
75 Raymond & Ely...6¼@6½
510 Rock Island.....1¾
105 Sierra Nevada...11¾@12
245 Silver Hill.....9½@9¾
50 Senator.....62½c
100 Tahoe.....60c
100 Wells-Fargo.....18c
175 Woodville.....2
35 Ward.....1¼
530 Yellow Jacket.23½@23⅞

Pacific Board—Latest Sales.

WEDN'SDAY, A. M., OCT. 25.

55 Alpha.....44⅜
20 Atlantic.....2½
95 Best & Bel.....47¾@47⅞
10 Bodie.....11½
1500 City of Post.....1½
50 Cosmopolitan.....55c
345 Con Imperial...3.85@3.87½
100 Con Virginia.....53½
100 Crown Point.....11¾
210 California.....57⅜
200 Exchequer.....15@15½
100 Gould & Curry.15¾@15¾
115 Hale & Nor.....8¾@8¾
110 Julia.....7½@7¾
160 Justice.....24¼@24⅜
110 Kentuck.....11¾@12
100 Kossuth.....2¼
1020 Mexican.....28¾@28¾
200 New York.....1@1⅛
610 Ophir.....49½@50
500 Succor.....15c
385 Sierra Nevada.....12¼
1 0 Savage.....13¾@14⅛
330 Yellow Jacket.....23¾@24

AFTERNOON SESSION.

25 Alpha.....44¾
10 Belmont.....2¾
30 Best & Bel.....47½@48 ⅜
10 Con Virginia.....53¾
900 Ooso Con.....2½c
290 Crown Point...11½@11¾
220 Cosmopolitan.....4¾@5c
110 Con Imperial...3.90@3.85
150 Genesee Valley.....2¼
680 Gt Eastern.....3@3¾
60 Gould & Curry.....15¾
450 Gila.....70@75c
30 Justice.....24¾@24¾
20 Julia.....7⅜
150 Jefferson.....22½c
475 Leopard.....7¾@7⅞

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Deling'nt.	Sale.	Secretary.	Place of Business.
Andes S M Co	Washoe	7	25	Sep 15	Oct 21	Nov 8	M Landers	307 Montgomery st
Baltimore Con M Co	Washoe	12	1 00	Oct 6	Nov 8	Nov 27	O A Sankey	331 Montgomery st
Belmont M Co	Nev	9	50	Sep 18	Nov 4	Nov 21	W H McClintock	419 California st
Bullion M Co	Washoe	1	2 50	Sep 22	Oct 23	Nov 13	J S Kennedy	419 California st
Cherry Creek M Co	Nev	7	30	Oct 3	Nov 10	Dec 6	D F Verdenal	409 California st
Dayton G & S M Co	Nev	5	1 00	Sept 8	Oct 13	Nov 3	W E Oesn	419 California st
Equitable Tunnel & M Co	Utah	13	20	Sept 7	Oct 12	Nov 1	O S Healey	Merchants' Ex
Exchequer M Co	Washoe	11	*1 00	Sep 23	Oct 25	Nov 15	J S Kennedy	419 California st
Hale & Norcross S M Co	Washoe	52	1 00	Oct 10	Nov 14	Dec 5	J P Lightner	Nevada Block
Hussey Con M Co	Nev	2	20	Oct 21	Nov 22	Dec 11	R H Brown	426 California st
Jefferson S M Co	Nev	2	50	Oct 11	Nov 18	Dec 11	C A Sankey	331 Montgomery st
Julia Cons M Co	Washoe	1	1 00	Sept 11	Oct 16	Nov 6	A Noel	419 California st
Julia G & S M Co	Washoe	23	3 00	Sept 11	Oct 16	Nov 6	A Noel	419 California st
Justice M Co	Washoe	19	5 00	Sep 14	Oct 18	Nov 7	J S Kennedy	419 California st
Lady Bryan M Co	Nev	13	50	Sep 15	Oct 17	Nov 7	W H McClintock	419 California st
Mariposa Land & M Co	Cal	7	1 00	Sept 7	Oct 9	Oct 30	L Leavitt	309 Montgomery st
Mariposa M Co	Barcelona, Nev	1	10	Sept 7	Oct 11	Nov 1	J P Moore	426 California st
Meadow Valley M Co	Ely Dist	10	75	Sep 23	Nov 6	Dec 4	T W Colburn	418 California st
Mexican G & S M Co	Washoe	2	50	Sep 8	Oct 11	Oct 31	L McCoy	419 California st
Mint M Co	Washoe	15	15	Oct 12	Nov 15	Dec 7	D A Jennings	401 California st
Mitchell G & S M Co	Nev		10	Sept 7	Oct 28	Nov 18	A C Hammond	401 California st
Monitor Belmont M Co	Nev	—	25	Oct 17	Nov 20	Dec 19	B B Minor	309 Montgomery st
Niagara M Co	Washoe	3	25	Oct 3	Nov 4	Nov 24	W R Townsend	309 Montgomery st
North Carson M Co	Nev	5	10	Oct 3	Nov 6	Nov 27	W Van Bokkelen	320 Sansome st
North Con Virginia	Washoe	5	25	Sep 21	Oct 25	Nov 14	J Maguire	419 California st
Overman M Co	Washoe	36	3 0	Oct 21	Nov 25	Dec 15	Geo D Edwards	414 California st
Pacific M Co	Washoe	1	20	Sept 11	Oct 14	Nov 3	J W Clark	418 California st
Panther M Co	Nev	2	25	Oct 4	Nov 9	Dec 5	J Swift	419 California st
Pioche S M Co	Ely Dist	Nev	14	50	Oct 5	Nov 8	Dec 1	F V Smith	418 California st
Poorman G & S M Co	Idaho	7	25	Oct 23	Nov 27	Dec 16	W Willis	309 Montgomery st
Prospect M Co	Washoe	2	50	Sep 21	Oct 31	Nov 17	J P Moore	426 California st
Senator S M Co	Washoe	14	50	Sep 19	Oct 24	Nov 13	J H Sayre	330 Pine st
Sierra Nev'da M Co	Washoe	46	1 00	Oct 24	Nov 28	Dec 15	W W Stetson	309 Montgomery st
Silver Hill M Co	Washoe	9	1 00	Sep 18	Oct 24	Nov 14	W E Dean	416 California st
St Patrick M Co	Cal	12	50	Sep 18	Oct 23	Nov 15	D F Verdenal	409 California st
Succor M & M Co	Washoe	16	50	Sep 26	Oct 31	Nov 22	W H Watsen	302 Montgomery st
Trojan M Co	Washoe	3	10	Oct 20	Nov 21	Dec 11	D Wilder	328 Montgomery st

*$12.50 old stock; $1.00 new.

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Atlantic Con M Co	Nev	1	25	Oct 20	Nov 25	Dec 19	P Robineon	330 Pine st
Aurcola G & S M Co	Nev	2	10	Sep 23	Oct 30	Nov 21	T S Fitch	240 Montgomery st
Beach & Paxton G & S M Co	Nev	2	10	Sep 20	Oct 3	Oct 24	M Landers	309 Montgomery st
Cabinet M Co	Washoe	1	2	Sep 21	Oct 26	Nov 27	J F Sterling	320 Pine st
Cariboo Hydraulic M Co	Cal	3	15	Sep 29	Oct 30	Nov 20	Chas T Bridge	224 California st
Eagle Quicksilver M Co	Cal	9	250 00	Sep 30	Nov 29	Dec 4	Wm H Watson	302 Montgomery st
Esset Branch M Co	Plumas Co	Cal	5	10	Sep 26	Nov 6	Nov 25	E P Sanford	514 Washington st
Emigrant S M Co		Cal	1	10	Sep 22	Oct 23	Nov 15	W H Schlering	426 California st
Gold Canyon Con M Co		Nev		10	Sep 15	Nov 13	Dec 20	A A Pardow	636 Clay st
Golden Crown M Co		Cal	3	5	Sept 12	Oct 20	Nov 10	D Buck	309 Montgomery st
Honeton M Co		Nev	1	5	Oct 2	Nov 6	Nov 21	W Stairley	410½ California st
Low Range Ledge S M Co		Washoe	1	2	Sept 11	Oct 16	Nov 7	F E Luty	507 Montgomery st
Mineral Belle M Co	Inyo Co	Cal	1	25	Oct 4	Nov 8	Nov 27	J G Riley	209 Sansome st
Monumental M Co		Washoe	2		15	Sept 7	Oct 9	Nov 1	W B Townsend	Nevada Block
Morgan M Co		Cal	3	1 00	Sep 19	Oct 23	Nov 20	J H Wallace	108 California st
Moore's Flat Blue Gravel M Co		Cal		25	Sep 14	Oct 18	Nov 6	Wm Small	535 California st
National Prospecting & M Co		Cal		10	Sept 9	Oct 10	Nov 15	T T Wiswall	Merchants' Ex
Nonpareil G M Co		Cal	7	1 00	Oct 13	Nov 16	Dec 4	A DuPrat	508 Jackson st
Oceanic Quicksilver M Co		Cal	4	50	Aug 26	Oct 9	Oct 30	C G Funk	438 California st
Purdy S M Co		Colorado	1	2 00	Sep 23	Nov 14	Dec 5	A J Bell	331 Montgomery st
Renton Coal Co		Washington Ter	3	50	Sep 2	Oct 16	Nov 23	T H Henderson	24 Sacramento st
San Francisco Sulphur M Co		Nev	1	10	Sep 29	Oct 30	Nov 21	J Roberts Jr	328 Montgomery st
San Jose M Co		Nev	13	30	Sep 12	Oct 21	Nov 13	A Carrigan	108 Front st
South Ophir M Co		Washoe	1	10	Oct 9	Nov 23	Dec 12	A C Gilbert	224 Montgomery st
Valenciana M Co		Nev	1	10	Sept 11	Oct 13	Nov 11	J P Moore	426 California st
Volcano Gold Gravel M Co		Cal	1	10	Oct 20	Nov 21	Dec 11	E A Peck	330 Pine st
West Comstock G & S M Co		Nev	1	25	Sept 12	Oct 16	Nov 3	D D Thompson	401 California st
Young America M Co		Nev	5	24	Sep 29	Oct 31	Nov 18	R H Brown	426 California st
Yarborough S M Co		Cal	7	50	Oct 24	Nov 29	Dec 23	E Barry	415 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Cascade Bloe Gravel M Co		J M Buffington	311 California st	Special	Nov 20
Gen Thomae M & M Co	Nev	W Willis	309 Montgomery st	Annual	Nov 2
Nana Con M Co	Cal	W W Parrish	328 Montgomery st	Annual	Nov 8
St Patrick M Co	Cal	D F Verdenal	409 California st	Annual	Oct 30

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	O D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H G Kibbe	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	Oct 11
California M Co	Washoe	C P Gordon	Nevada Block	2 00	Oct 16
Consolidated Amador	Cal	F B Latham	426 California st	25	Oct 9
Con Gold Hill Quartz M Co	Washoe

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR.

VOLCANO GOLD GRAVEL COMPANY.—Amador *Ledger*, Oct. 21: The most extensive tunneling undertaking ever prosecuted in the county is now being carried on by the above mentioned company. It is known to all that Volcano flat, where gold-bearing gravel is met with in large quantities and of great richness, lies so low that it has been impossible to work it with hydraulics, because of there being insufficient fall to carry off the tailings. Much of the flat, however, has been worked by means of derricks to the depth of 40 or 50 feet. The auriferous gravel reaches down much deeper than this, the bedrock, we believe, never having been touched. Derrick mining is too expensive and inefficient to pay except in patches of unusual richness. The Volcano gold gravel company was organized in San Francisco for the purpose of tunneling through a hill so as to afford an outlet for the water, and enable the ground to be sluiced. The company started work some two months ago, and has kept working steadily ever since. During the past week we visited the tunnel, and were shown through the workings by the genial superintendent, Col. A. Heath. The tunnel has been opened about half a mile below town, at a point in Sutter creek where the width of the channel furnishes abundance of dumping ground. The total length of the tunnel and approaches, when completed, will be 2,240 feet. At present 1,150 is in a distance of 140 feet, with approaches finished 100 feet. The distance to be run in solid rock is about 1,800 feet. When completed it will drain the Volcano basin to a depth of 42 feet 8 inches below its present level. So far the workmanship is first-class, well timbered throughout, and the opening will be large enough to carry off all the water of Sutter creek in winter. The enterprise is estimated to cost at least $60,000, and, if prosecuted energetically without any stoppages, it is expected that the whole thing will be completed before September next. The enterprising promoters are entitled to much credit for inaugurating such a costly undertaking, and it is hoped they will be able to push it to a successful termination, and be amply rewarded for the investment of their labor and capital.

NEW MILL FOR THE GOVER.—The present milling capacity of the Gover has long been inadequate to dispose of all the rock that might be taken from the mine. Hence the company have determined to erect a new mill of 20 stamps—double the size of the present works. Knight & Co., of Sutter Creek, have secured the contract, and a large quantity of lumber is already on the ground. The new mill is being erected some 500 feet from the old one, on lower ground, so as to secure a greater fall for the water.

PHŒNIX MILL.—The additional 20 stamps to the Phœnix mill at Plymouth are now in and ready to be set to work. All the 80 stamps will be crushing rock in the course of a few days.

GRAVEL MINING AT DAYTOWN.—Not only is quartz mining being pushed ahead with unusual activity around Drytown, but gravel mining is also assuming a position of greater importance than it has done for many years. Indeed, it may be asserted that the gravel claims in this vicinity are yielding better than any other similar claims in the county. A number of Mexicans have been working the placers close to the property of the Loyal Lead mining company for years, with very favorable results. None of these claims were prospected to any depth; the deepest of them did not exceed 16 or 20 feet. It seems never to have entered the minds of the owners that the auriferous deposits reached further into the earth. Recently some Austrians purchased one of the claims, and sunk to a depth of 50 or 60 feet, and struck a peculiar kind of gold bearing quartz of great richness. This stroke of fortune has induced the other claims to sink, and we understand that about all of them are now in the same rich ground. A gentleman who visited these mines the other day tells us that 16 windlasses were at work on as many different claims, employing between 60 and 70 men. The pay dirt is washed in pans. Some of it is so full of gold as it can well be, running from $4 per pan to $10 and $15, while a few pans have been washed which yielded much higher even than the last named sum. As might be expected, there is a prospect of litigation to decide the rightful ownership of some of the ground.

CALAVERAS.

GWIN MINE.—Calaveras *Chronicle*, Oct. 24: An immense ledge of fair grade ore has been struck in the 1200-ft level of the Gwin mine, within a few feet of the shaft. In the upper levels it has been necessary to run a considerable distance before striking the pay chute, but at 1200 feet the shaft cuts through the ore. The prospects are flattering that the level now being run will uncover the finest body of ore yet discovered in the mine, placing the Gwin at the head of the producing mines of the Pacific coast. The mills are running on rock from the 1100-ft stopes, and great activity is being displayed in all branches of operations.

LAMPHEAR MINE.—Senator Nunan, Superintendent of the Lamphear mine, is pushing operations with great energy. He has just let a contract for finishing the sinking of the shaft an additional 100 feet, and the contracting parties have commenced work. They are from Sutter Creek, Amador county. Mr. Nunan is also running the 100-ft north and south levels and stoping from both. The hatteries are kept steadily at work and preparations are being vigorously pressed forward in every department. About 80 men are constantly employed about the mine.

BRADY MINE AND MILL.—Things are looking encouragingly at the Brady mine. A tunnel is to be run 200 feet into the hill following the ledge, work upon which has been commenced. The driving of the tunnel will prospect the mine and assist in keeping a supply of ore on hand for crushing. The mill is running steadily with satisfactory results.

EMERSON, the Happy Valley miner, is washing his ledge preparatory to cleaning up. The late rain caused an extensive slide in his ground since, but he had the debris pretty well disposed of when we were there Thursday afternoon. Emerson deserves a rousing "benefit" at his clean-up.

UPPER COUNTRY MINING JOTS.—Work is going on briskly at the Josephine mine, at West Point. Sinking the shaft is progressing, the ledge showing handsomely, and the battery is constantly employed crushing. The Champion is also sinking, the ore increasing in richness as a greater depth is reached. The lower levels are being run in the Mina Rica, and a high grade of ore extracted. Rock from the Deuteronomy mine is being crushed in Henry's mill. A tunnel is being run in the Glencoe Consolidated, at Mosquito, for the purpose of getting the exact bearing of the ledge prior to the erection of powerful machinery. The tunnel will approximate 100 feet in length, cutting the vein at the depth of about 60 feet.

EL DORADO.

THE BONANZA.—*Mountain Democrat*, Oct. 21: Superintendent Rosewarn, of the St. Lawrence mine, was in town the other day, at which time he was confident that the air shaft in the St. Lawrence would be through by the end of this week. Unless he is disappointed in this respect, and he seldom miscalculates mining probabilities, they will commence systematic operations next week, with a view to the thorough development, not only of the recently discovered bonanza, but also of deeper levels. Within a short time we expect to chronicle the fact that one mine in this county has been successfully prospected to a depth of 1,000 feet, and we confidently expect to hail the new year with the announcement that the St. Lawrence is on the list of permanent dividend paying mines.

INYO.

SANTA RITA.—Coso *Mining News*, Oct. 21: Learning that this property is about to be relieved from the lethargic state in which it has been for a long time, we made a visit to the mine a few days ago, and were exceedingly surprised to find a prospect of such fine promise. The mine is situated easterly from Darwin, toward the Lonkout country, about one and a half miles distant, and in a very accessible place for easy working. The owners have a fine spring of water of their own, distant from the mine six or seven miles, the waters of which will be probably utilized by them, instead of buying water. The location is one of the oldest in the district. We visited the mine in company with Mr. Arana, and on arriving there found about 600 tons of ore lying upon the dumps, which had been extracted from an incline shaft sunk upon the ledge to a depth of 100 feet. The croppings of the ledge are hardly observable, in fact it is what might be denominated a "blind ledge." A few feet of sinking, however, disclosed a vein of about three feet in width, which gradually widens out, with scarcely a break in it to the bottom, where it is about 12 feet in width. The ores are similar to those of the Defiance and other mines of this district, combining black sulphurets, gray carbonates and galena, interspersed with a sufficient amount of iron ores to insure its successful and easy running. This excellent property is now placed in the hands of the Hon. H. W. Fortune, of San Francisco, who is a member of the Mexican mining company. He has traveled extensively through Mexico and dealt much in the Comstock mines, and will undoubtedly secure capital to commence active work upon the mine in a short time.

MINIETTA BELLE.—Everything is exceedingly promising in and around the mines. Mountain View ore body is surprisingly rich and extensive. Have just received duplicate of assay No. 3,839 from Henry C. Hanks' laboratory—$1,182.70 per ton. This, I presume, was an unusually rich piece, but the whole vein is first-class ore, and receives the admiration of all who see it. Coburn-cut works are yielding $200 ore. The 45-ft cross-cut stopes in Minietta are yielding one ton per man per day of A No. 1 grade. Bottom south drift still looking well. Commenced to cross-cut west in search of hanging wall three days ago. Work in the north drift is being pushed with all dispatch. On boundary line of Mountain View and Keystone have two men taking out three tons daily of splendid ore. Have now about 2,000 tons on dumps awaiting arrival of the mill; site has been selected for same. Expect to have it up and running under full headway 60 days hence.

THE GELD DISTRICT.—Last week Messrs. J. S. Gorman and Henry Gashwiler made a visit to the gold mines belonging to Messrs. Snow & Grant, situated in Snow's canyon, and we are informed that they were well pleased with all they saw. There is no doubt but that these mines will soon receive the favorable notice of capitalists visiting this camp. It has been demonstrated by arastra process that the quartz is rich, and with a mill for its reduction will yield a handsome revenue. Snow & Grant are preparing to commence active work for the development of their claims.

MONROE.—Mr. Barber, superintendent, came in last Thursday and informs us that the Modoc company's mines never looked better. Connection has been made between Confidence Nos. 3 and 4 by a winze and raise, both being in splendid ore. Two men can now take out from these points a sufficient amount of ore to keep the furnace constantly running. In Confidence No. 4 they are taking out large quantities of ore of a high grade milling quality. The drift is being continued, and is in good ore the entire distance. On the Lookout the tramway is in successful operation and sending ore down to the furnace. A track is being laid in the tunnel for better working facilities. There is no diminution in the large body of ore in this mine, either in quantity or quality. The furnace is working charmingly, and has turned out, since it commenced, 960 bars of bullion, averaging 30 pounds to the bar. Some 500 bars have been shipped from the furnace, en route to San Francisco. The bullion now assays between $400 and $500.

LAKE.

SALD.—Lake *Democrat*, Oct. 21: The Oak Hills mine is now known as the Napa Consolidated quicksilver mining company. Messrs. Vivian, Waleh, Portor and Cook have sold out their interests therein. Consideration, $15,000. Mr. George Senn, the former superintendent, retains his interest.

THE result of the improvements made at the Mt. Jackson furnace, is increased shipments of mercury this week—22 flasks having been shipped below.

MONTEREY.

COAL IN SLACK'S CANYON.—San Benito *Advance*, Oct. 21: For some months past we have had samples of good coal in our office, and its appearance has frequently excited a wish to visit the mine from which it was taken. At the early part of the week we were conveyed to the Red Rock coal district of Slack's canyon, of Monterey county, the locality where the excavations have disclosed immense beds of good commercial coal of pure quality. Having frequently visited the coal districts of England, we know from observation the nature of what is known as the great coal formation. In the locality of the Red Rock coal mine its distinguishing signs are clearly apparent, and the prospect made opens to view the whole suits of strata common to the coal measures, viz: sandstone, bituminous shale, ironstone, pure clay and impure limestone. The hard and black and brilliant stratified beds of coal, varying in thickness, banishes the idea of the formation being recent. We entered one tunnel which penetrates the hillside about 30 feet, and found ourself in a stratum of unknown thickness. This tunnel is eight feet high and six feet wide, and nothing above or below or on the sides is visible but the veritable black diamond. We noticed other excavations at points widely apart and at various elevations on the surface of the hills, where beds thick and thin are visible. Even the little black monnds produced by the burrowing rodents give unmistakable signs of coal; and we are convinced of the existence of a coal field extensive and inexhaustible, sufficient to supply the wants of California for a century. The district is easy of access, and a road can be constructed at a trifling expense to connect with the railway depot at Los Gatos, the point to which the Southern Pacific railroad company is now extending the line from Goshen. The mine and depot are 12 miles apart. Several tons of coal have already been hauled from the mine to Tulare lake, where it has been used satisfactorily for steamboat purposes. At the expiration of a few months, when shipping facilities are perfected, the contents of this mine will supply the trade of the San Joaquin valley and the principal railroad cities of the State.

NEVADA.

NEW ENGLAND GOLD MINING COMPANY.—Nevada *Transcript*, Oct. 21: On the 30th day of August last, the New England gold mining company was incorporated to operate in Nevada county. Messrs. Lockhart & Co, are the owners. The ledge which the company are working is situated on the Grass Valley road, about a mile from town. It was worked as early as 1856, and the rock at that time paid all the way from $30 to $160 to the ton. An incline was run on it to the depth of 110 feet, and only a spur of the main ledge was worked, from which the rock was obtained. When water was reached the original owners had not the wherewith to obtain machinery, and they have consequently held on to the property for 20 years, waiting for some way to turn up whereby they could go to work again and develop the mine. As nothing favorable did turn up, Mr. Hobart, one of the old owners, this year sold out his claim to Lockhart & Co., who have, since the middle of last month, had an engine put in place, hoisting and pumping apparatus attached, a building erected over them, and have sunk a double perpendicular shaft a distance of about 65 feet. It is expected the shaft will tap the ledge at about 150 feet, and it will require about a month more to reach that point. The ledge is ten feet in width, and carries a large proportion of gold bearing sulphurets and galena. We have no doubt Mr. Lockhart will open out a first-class mine. All who are familiar with the rock of that district pronounce the New England to be of the most promising character. Our best wishes attend the enterprise.

NORTH BLOOMFIELD.—L. L. Robinson and Thomas Bell, large owners in the property known as the North Bloomfield gravel mining company, in Bloomfield and Eureka townships, have been up inspecting the property during the past week. They returned to this city on Thursday afternoon, delighted with the future prospects of the company. These gentlemen are original owners in the property, and strange to say, out of about a dozen of men who started into the enterprise, they are the only ones living to-day. From the commencement of the enterprise, about ten years ago, the company has expended over $1,700,000. During the next year they will take out an immense amount of money, as the gravel channel which has been developed is immensely rich.

SOUTH YUBA CANAL COMPANY.—A great many owners of hydraulic claims in this vicinity have been troubled about the sale of the South Yuba canal company to Alvinza Hayward, anticipating that in the future they could not get as much water from the company as they have in the past. We conversed with a gentleman yesterday who is well posted, having had a talk with Mr. Hayward's agent, who was in Grass Valley last week, and therefore the statement in regard to the matter may be relied upon. It is the intention of the company to supply water in this vicinity in a greater quantity than heretofore, if the demand requires it, and also to run the water to Blue Tent in quantities sufficient for their use. Mr. Hayward's water hills for his claims in Placer county have averaged in the neighborhood of $100,000 each season, and he has not been able to get all he required. The property was offered to him for $510,000 and knowing it was a matter of but a few years till he would pay out that much money for water, it was better for him to buy the whole property right out. Mr. Hayward also knew that the outlay of that amount of money would pay him better than any other investment on the coast. The property is worth a million or a million and a half of dollars, and is so estimated by those hereabouts who have a knowledge of the property. It is no wonder, then, that Hayward jumped at the proposition when it was made to him. The increased capacity of dame and reservoirs which will shortly be completed, will enable the miners to get all the water they want, and Hayward's profits will be immense. We also understand that Hayward contemplates acting with the greatest liberality, and intends to accommodate to his utmost ability all who have dealings with the company. The principal office will remain here for the present, but it is thought for the convenience of the company, it may be removed to Gold Run at some future time. In that case, a branch office will be established here.

THE Nevada mine makes out to pan out a very nice bar of bullion every five days. It has been a dividend payer for a long time, and the prospects continue to improve daily as developments go on.

PAY GRIT.—We understand the Red Diamond mine, located up at the Cascades, above Scott's Flat, has very flattering prospects now. An extensive cave some time ago stopped work, and necessitated the running of a bed rock tunnel about 120 feet. The work of running has been completed, and we learn that splendid gravel has been struck, and the miners feel jubilant over the prospect. Peter Hunofauth, A. Lademan, John Dickson and John Williams are the fortunate owners of the property.

BIG CLEAN-UPS.—*Foothill Tidings*, Oct. 21: Recently, the Centennial mine sent another crushing of 50 loads of ore to the Orleans mill, which turned out a gold bar of nearly $5,000 value. A new prospecting party down beyond New York hill, back of the Homeward Bound mine, took four loads to the Larrimer mill a few days ago, which, we understand, gave a return of $2,200 in gold. Such returns from labor bestowed in prospecting should induce more work in that direction on the thousand and one veins known to exist in this vicinity.

HOMEWARD BOUND.—We continue to hear good reports from this mine. A heavy flow of water was met early this week in the south drift, where the ledge is from 18 to 20 inches thick. The north part of the mine is also looking well.

THE Godfrey gravel mining company, out beyond Alta hill, have up their hoisting works, which loom up grandly from their elevated position. Those best posted on the underground workings of the old claims in the vicinity are confident that the Godfrey will get the deep channel.

PLACER.

MINING ITEMS.—Dutch Flat *Forum*, Oct. 19: The branch to connect the Baker shaft with the Yankee tunnel will be finished in a few days, when the work of constructing the sluices in this section of the tunnel below will be commenced. This work will take about three weeks to complete, by which time the Baker claim will be ready for washing. Our miners are sanguine with regard to the approaching season, and predict that at least twice the amount of gold will be taken out that has ever been in any one season heretofore. The claims in this section in which washing will be carried on are as follows: Baker, Yankee, Pacific, Central, Gold Run, Indiana Hill, Illinois, Maryland, Sachs, Gold Run hydraulic mining company, Cedar (limited), Hoskin, Lakamp, Summersett, Brston, Franklin, Elmore Hill, and perhaps the Polar Star and Southern Cross. These claims will give employment to about 300 men, and should they be washing at the same time would require about 14,000 inches of water.

SOUTH FORK OF THE NORTH FORK MINES.—The Luke & Collins company are busy cleaning up undercurrents and canyons and making preparations for the coming water season. The yield of the claim for this season has been good. At the Peelar & Gular claim, although they have worked steadily, the prospects have not been flattering until now. In about two weeks we expect to be able to report returns, which will place this claim among the first in this district. The Dover Bros. and Davis company have turned off the water and are now cleaning up. This claim never fails to pay even wages. The Martell claim is located above Humbug, on the same stream, and embraces a large bar. It has been worked during the summer with such encouraging results that Mr. Martell is now making arrangements to construct a ditch several miles in length, which will furnish water to work with in the future. There is considerable mining done here by Chinamen, but with what result is not known.

BEAR RIVER MINES.—The Richie company have replaced their broken rope with a new steel wire one, three-quarters of an inch thick, and the work is now progressing as usual. The Centennial company have been washing steadily since our last report, and as the drifts advance the prospects become brighter. Everything is favorable for good dividends. The Bartlett company are still pushing their main tunnel ahead, and have passed through considerable ground which they think will pay something over wages. They are busy washing. The Whipple claim has improved considerably lately. They are now working in ground that will pay wages, and it is improving. The Dom Pedro is a new company, located about three-quarters of a mile below the Richie claim, and they have commenced work this week. They are running a tunnel into the hill, with expectations of striking the same channel that passes through the claims above mentioned.

LIWELL HILL MINES.—SWAMP ANGEL.—This company have just completed four prospect drifts on the north side of their main tunnel, which runs due east. Each of these drifts is 75 feet in length, and are being run parallel with each other; they will open up a breast from the back part which will connect the four together at a width of 200 feet. This ground paid something over wages while running the drifts, and will average $10 per day to the man while breasting out. They also have a large force of men at work laying in a supply of timber and wood for the winter, as they use a great deal of these articles for their mining operations.

RISING SUN.—San Juan *Times*, Oct. 21: Our friend Mr. Neff is the superintendent of the Rising Sun mine, situated about one mile from Cofflax, the only paying quartz mine in that section of Placer county. We visited the mine with Mr. Neff on Monday afternoon and found it in full operation. The mill is a ten-stamp one and is run by steam power. The buildings and works are in magnificent order and the mine is paying handsomely. There are three steam engines, all under the same roof, one of which runs the machinery, one operates the pump and the other the hoisting works. The shaft is down about 700 feet and the vein is about 8 inches in width. We saw several specimens of rich quartz which was taken from the 600-ft level. Judging from appearances we should say this quartz mine is a profitable institution.

Nevada.

WASHOE DISTRICT.

AMAZEN & GLASGOW.—Gold Hill *News*, Oct. 19: The new pumping machinery was started into full operation yesterday morning, everything working with the utmost perfection. It is believed that the addition of this pumping machinery will be sufficient to keep the water drained without any further expense at the present. The east clay wall of the ledge has been cut by the shaft at the bottom, and as the ledge is pitching across the line of the shaft and must be penetrated by it while sinking, it has been decided to sink the shaft a depth of 100 feet more before opening a station. It is now down 400 feet.

HALE & NORCROSS.—The pumps are kept busy, but are steadily gaining on the water, and are lowering it at the rate of about 20 feet per day. The new pump both at the 400-ft station has been completed. The lower pump at the 1850-ft level, which was covered by the flood of water a short time since, has been reached and connected with the main pump column above, saving a lift of 180 feet by the air pumps.

COSMOPOLITAN.—Since last report the Hops mill has been running steadily on ore from this mine. There is plenty of ore opened out in the mine to keep the mill running for some time to come. The drifts both north and south from the winze below the main adit level are running in excellent ore, and the stopes and breaste in the upraise above that level continue their good ore yield.

FLORIDA.—No sign of west wall is yet met with in the face of the northwest drift, cross-cutting the ledge at the 400-ft level. The face is in very favorable vein matter, with occasional streaks of good ore.

BALTIC CON.—The main west drift having passed completely through the ore vein into what is thought to be the west country rock, a drift is now being run northward, following the fine ore streak found lying next to the west wall. It is all in quartz and low grade ore of unpromising character.

MEXICAN.—The east cross-cut on the 1300-ft level, started recently to cut the ledge at that point, is making good headway. The upraise on the 1455-ft level is making steady progress, the face still in good ore.

PROSPECT.—The main drift west from the 400-ft station is being steadily advanced toward the ledge. The water is kept reduced below the station without difficulty.

WELLS-FARGO.—The old hoisting works have been torn down to make room for the new building and machinery.

YELLOW JACKET.—The east and west cross-cuts, 100 feet south of the east winze on the 2040-ft level, have jointly been extended a distance of 406 feet east and west, passing nearly the entire distance through lively ledge matter, some of which gave excellent ore assays. Another cross-cut will be started in a day or two more at a point 100 feet south of cross-cut No. 1 on the same level.

CALIFORNIA.—Daily yield, 450 tons of ore. This is being extracted and sent to the mills daily. The ore stopes on both the 1500 and 1600-ft levels are yielding rich ores and are looking as promising for the future as ever. The yield for October thus far is sufficient to insure the payment of the usual monthly dividend of $2 per share. Everything is in the best possible working condition, and with the present facilities for working can be kept up to the 700-ft level and improving as the work progresses both north and south. It is the intention to soon start another mill with a capacity of about 55 tons per day. East cross-cute Nos. 1 and 2, on the 800-ft level, are steadily advancing, the face of each being in soft ledge matter, with heavy stringers and hunchee of rich ore. It is apparent that the east ore body on this level will be reached in a very few days more. A heavier flow of water has been encountered for some daye past in cross-cut No. 3, on the 800-ft level, which has impeded its progress somewhat. The water has been lowered in the main shaft sufficiently to admit of the resumption of work in the main northeast drift on that level.

CON. VIRGINIA.—The daily yield of the mine is 450 tons of ore, which is all that the mills can crush at present. The quality of the ore continues of the same uniform richness as in the past, and the ore breasts show well at every point where the ore is being extracted. On the 1400 ft level the ore breasts going north show a steady improvement. The new Consolidated mill has settled down to regular work, everything working with the utmost perfection. Yield of the mine for October will be amply sufficient to insure the payment of the regular dividend of $2 per share. The west drift from the C. & C. shaft on the 1650-ft level is advancing at the rate of nine feet per day. The north drift on the 1700 ft level is being advanced as rapidly as the great heat and the difficulties under which the work is prosecuted will admit of. A large supply of winter necessaries is being laid in, and every preparation made indicates that the mine will now have a long, uninterrupted and prosperous run. The mine certainly has not been in a better condition or shown a more favorable aspect for the past year than at this time.

IMPERIAL CON.—The south drift from the bottom of the south winze on the 2135-ft level is steadily advancing to connect with the north drift from the Yellow Jacket. The north drift from the bottom of the same winze is also making good progress, the face in soft ledge matter, carrying streaks of fine quartz. The south drift from the bottom of the north winze on the same level is being advanced to meet the north drift from the south winze. The air in all portions of the mine is being wonderfully improved by the new No. 7 Baker's rotary pressure blower, recently erected. The pipe from this blower leading into the mine is 22 inches in diameter, and the benefit already derived from it is very great. On the very lowest levels the thermometer now shows only 92 degrees, where it before stood at 120 and 130 degrees.

TROJAN.—Owing to the unfortunate accident of day

before yesterday work has been suspended until damages could be repaired. All is about in readiness for resumption of work again. Superintendent Westfall has done some very good work since having charge. He sank the main shaft to the 300-ft level, passing through a fine vein of ore which dipped away to the southeast. He then opened a station and drifted for this ore body. The drift is now in 66 feet and has cut into the ore body.

NORTH CARSON.—The whole bottom of the shaft is now in the vein, showing splendid seams of black sulphuret ore. The vein is considerably wider than is shown by the levels above, and of a better character.

OVERMAN.—The north and south drifts on the 1200-ft level are each making good progress, both being in quartz of a fine character. Sinking the main shaft is making the usual fair rate of progress, the rock in the bottom blasting out well. The erection of the new pumping engine is being pressed toward completion. This engine will be equal if not superior to any now in operation or in course of construction on the Comstock. It will be about 700-horse power and be fitted with all the latest improvements.

ALPHA.—The north drift on the 2000-ft level is being pushed vigorously forward, the face of the drift showing some quartz of a good character. The air in the face is much improved.

JULIA.—The new machinery is all in readiness to resume sinking the main shaft, which will be done in a day or two more. The east drift on the 1800-ft level during the week tapped a flow of water so strong that it has been deemed best to suspend work at that point until the heavy head of water is somewhat exhausted.

CHOLLAR-POTOSI.—Daily yield, 100 tons of ore, the assay value of which is $30 per ton. This ore is being taken from the old upper workings and is crushed at mills as fast as it is extracted. Sinking the main incline is progressing at the rate of two and a half feet per day. It is now down 24 feet below the 1600-ft level. Sinking the combination shaft is going steadily forward.

BALTIMORE AND AMERICAN FLAT.—The south drift on the 1050-ft level is being driven ahead, the face still in favorable looking ledge matter. In the east cross-cut from the north drift on the same level some excellent ore has been found. The extent of this ore has not yet been determined.

OPHIR.—Daily yield, 300 tons of ore. The ore stopes are looking well and continue to yield a good supply of high grade ore. The south drift from the bottom of the winze, 60 feet below the 1600-ft level, is showing some fine ore.

LADY WASHINGTON.—The drift east from the 850-ft station, cross-cutting the ledge at that point, is now in 40 feet. Considerable seepage of hot water is met with in the face of the drift, so that it is deemed advisable to stop work there for a short time in order to overhaul the pump and place everything in perfect order, ready for any sudden influx of water which may be encountered.

NEW YORK.—The raising of the pump compartment of the shaft is progressing at the rate of seven feet per day. There is about 300 feet more to raise. Meanwhile the excavations for the pump tanks are completed, and the tanks will be put in forthwith.

SUTRO TUNNEL.—Face of header in somewhat difficult working ground, being porphyry and clay, requiring considerable care and substantial timbering. Total length of tunnel this morning, 14,711 feet. Occasional small seams of quartz and clay have been met with during the last two or three days, which gave low assays.

DAYTON.—The main shaft is being sunk below the 900-ft station deep enough to secure a good sump in which to receive the water, should much be encountered. The north and south lateral drifts on the 700-ft level are both being rapidly advanced.

BEST & BELCHER.—The repairing and retimbering of the double winze that connects the 1500 with the 1700-ft level is completed, and as soon as a little better ventilation of that portion of the mine is obtained, it is the intention to commence cross-cutting and prospecting the ledge on that level.

BULLION.—The north drift on the 1700-ft level is steadily advancing, the face still in very favorable ground. The east drift on the 1600-ft level is showing an improvement. The east cross-cut from the north drift on the 1400-ft level is also looking favorable for a near approach to the ore vein.

CALEDONIA.—The north drift on the 1150 ft level is making good headway, the face in ledge material of a very favorable description.

GLOBE CONSOLIDATED.—The main drift north at the 300-ft level is being pushed ahead in very promising vein matter, giving good assays. The main incline is cleaned out, also the ore shutes, and everything is in readiness to resume the extraction of ore from the old stopes.

UTAH.—The pump tank and hoist at the 900-ft level is completed, and sinking the main shaft has been resumed in good earnest.

TAHOE.—The joint shaft of the Tahoe and Lady Bryan is being sunk at the rate of two and one-half feet per day, the bottom being in soft ledge matter of a very favorable character, carrying spots of lively looking quartz.

LEVIATHAN.—Fine streaks and bunches of ore, giving splendid assays, continue to be cut through by the north drift at the 600-ft level. Every indication goes to show that a good paying ore vein will be opened when cross-cutting shall be deemed advisable.

MELBOURNE.—Sinking the main shaft goes steadily along, with the bottom in quartz of a very promising character, some of which gives low assays.

NIAGARA.—The machinery is again in the best possible working order. Work was resumed in the main incline last Monday morning.

WEST BELCHER.—Work in all the drifts and cross-cuts going ahead as usual, with plenty of good milling ore in sight in the west drift as well as in the upraise above it, which will be utilized whenever milling facilities are secured.

SOUTH OPHIR.—A contract is let for sinking a first-class three-compartment working shaft, and the work will be pushed forward with energy.

SIERRA NEVADA.—The flow of water at the bottom of the shaft is still strong. The prospecting drifts at the 1700-ft station are looking more favorable. The north drifts on both the 1250 and 1500-ft levels are showing an improvement.

GOULD & CURRY.—There is but little doing in the mine at present, except the repairing of the main incline, which is making good progress.

SAVAGE.—The pumps are steadily gaining on the flow of water, which is being lowered in the shaft at the rate of 20 to 25 feet per day.

BUCKEYE.—The main south drift on the 550-ft level running to connect with the south winze is making good progress. The face of the north drift on the same level is still in a fine character of quartz.

ROCK ISLAND.—The flow of water is still too strong to permit of a resumption of the work on the 800-ft level.

ALTA.—Sinking the shaft is being forwarded at a very rapid rate. Everything in and about the mine is working in the best manner possible.

LADY BRYAN.—The erection of the heavy stone masonry for the foundation of the new and powerful pumping machinery is going rapidly forward.

KOSSUTH.—The west drift at the 600-ft station is steadily advancing toward the ore vein, the face in very favorable ledge matter.

HERALD.—Some fine ores has been found in the north cross-cut on the 160-ft level during the week, which is looking fair to form a good sized body.

SUPERIOR.—Running the drift from the ravine to drain the vein to a lower level and connect with the main shaft at the same time, progresses at a very satisfactory rate.

BELCHER.—Daily yield, 300 tons of ore. New pumping machinery is working finely.

Continued on Page 292.

Heavy Mining Machinery.

The New Pumping Machinery of the Belcher and Crown Point Companies.

The Gold Hill *News* thus describes the recent starting up of the new pumping machinery at the Belcher and Crown Point air and drainage shafts, in the presence of a large number of mining men, engineers, mechanics and citizens generally. Mr. Joseph Moore, superintendent of the Risdon iron works, San Francisco, where the new engine was constructed, was present, having come over the mountains for this special purpose. J. P. Rugg, chief engineer of the Belcher works, was on duty. Sam Jones, superintendent of the Crown Point mining company, lent the moral assistance of his presence to the occasion, and W. H. Patton, the constructing engineer, placed his hand on the lever and started the concern in motion. Slowly, gently, quietly did the huge engine obey the touch of the master hand, and in a few minutes the water was flowing upward through the heavy pump column to the surface from the depths of the mine 1,600 feet below. Huge piatons, beams and rods worked slowly but with immense force, and everything worked as successfully as could be expected. It will be three or four days before things generally will be worn smooth, and the entire machinery brought into regular and effective working operation. Technically speaking,

The New Engine

Is a vertical compound, condensing engine, direct acting, with inverted beam, and Cornish double beat valves, controlled by Davy's differential valve gear. The initial cylinder is 30 inches in diameter, with 10 feet 6 inches stroke, and the expansion cylinder is 62 inches in diameter, with 8 feet stroke. The engine, however, can be controlled to any lesser length of stroke, and run to a speed of 10 strokes a minute if required. Its regular working capacity is rated at 500 horse power, yet it can be run up to 600-horse power if desired. It is a ponderous and most powerful affair, compact, very finely finished in all its parts, well made and proportioned in every respect, and, as we before stated, was constructed at the Risdon iron works, San Francisco, from plans and specifications furnished by Mr. Patton himself. Mr. Patton, as is well known, has planned and put up all the heavy engines and machinery of the principal mining works along the Comstock during the last two or three years, therefore is experienced in the matter. This is the first engine of its style yet erected on the Comstock, and is the most powerful now in operation on the Pacific coast. One still more powerful, however, will be started up in about a month, at the Chollar-Norcross-Savage combination shaft, and in two months from now still another at the Overman shaft.

The Steam Supply

Is furnished by boilers of the largest size and most approved pattern. There are three pairs or sets of these in the boiler room, only one or two sets being required at a time, so that one set can be held in reserve in case of accident or repairs. After supplying the big engine the steam passes through a huge exhaust pipe into a compressor of peculiar and very effective style, which operates also in creating the requisite vacuum for the piston of the engine.

The Pump

Is of the usual lift style, and the vertical column is 900 feet in length, the depth of the perpendicular shaft, to which is added the incline portion extending to the 1600-foot level. The column is 14 inches in diameter, and is in sections of 200 feet each, with a tank to each section, thus draining the mine at stations or intervals of 200 feet from top to bottom. From the 1700-foot level the water is raised at present to the lower tank of the main pump by a donkey pump driven by a compressed air engine. The main pump rods are of solid square timber, 14 inches square, which, extending in connected sections from top to bottom of the shaft, forms a tremendous weight of itself, to say nothing of the raising of such a huge column of water from such a great depth. This gives some idea of the tremendous power of the engine.

The Foundations

For all this ponderous machinery are of solid granite masonry 36 feet in depth, and the balance-bob or walking-beam of the pump, working in its deep pit beneath the floor of the works, is massively constructed of iron, 33 feet in length and weighing 50 tons. The center bearing or pivot it works upon is 18 inches in diameter at each end, and 20 inches in the middle between the bearings.

The Hoisting Engine

Used for lowering the workmen and handling machinery, timbers, etc., in the shaft, is of the double cylinder, horizontal pattern and 250-horse power.

The Shaft

Consists of two compartments, each 6x6 feet in the clear, one for the pump and the other for hoisting and lowering workmen, etc., as just described. The perpendicular portion extends to the 900-foot level, and the balance, which continues of the same size, extends to the 1700-foot level, or present bottom of the mine, following the dip of the vein at about an angle of 45 degrees.

The Buildings

Over the shaft and machinery are substantially built of wood, the frame work and everything being of the best and most workmanlike description, the whole being done under the efficient direction of Mr. B. F. Hazeltine, the head carpenter of the Belcher company. The shear or gallows frame over the shaft is a conspicuous novelty, rising to the hight of 85 feet above the foundations of the works. It is 30 feet square at the base and 12 square at the top, splendidly framed of 14-inch timbers, and was erected for handling timbers, machinery, etc. One of the pump rods lowered down the shaft by means of it was 82 feet long. The main building is 50 by 58 feet wide, and the boiler room at the south side, 61 feet long by 46 feet wide. For

Protection Against Fire

Two water tanks are erected on the steep hillside back of the works, each 30 feet long, 20 feet wide and 9 feet deep, furnishing a perpendicular pressure of 180 feet, sufficient to throw water over any portion of the buildings. Hydrants are stationed at convenient points, connected with the tanks aforesaid, and supplied with plenty of hose. The northermost hydrant might be made to throw a splendid stream of water down upon the new public school-house near by, in case of fire, by the addition of two or three lengths more hose. A tank or reservoir is also constructed on a slight elevation just north of the works, for the pump to discharge into. It is 250 feet long by 60 feet wide and 2½ feet deep. Here the water is settled and cooled for use in the works.

Measuring the Continent.

Mr. George A. Fairchild, of the United States coast survey, who is engaged in the transcontinental triangulation, has his headquarters at the Lindell. The object of this geodetic survey is to determine the length of the 39th parallel from the Atlantic to the Pacific coast, and which will connect the surveys of the two coast lines. It will also furnish additional data for determining the shape of the earth's surface, and then all these triangulation points will give accurate data for the surveys of the different States. This will be the longest triangulation ever made in any country, the distance being some 3,000 miles. Eleven measurements of degrees, for determination of the curvature of the earth's surface, have been made by other countries, of which nine only belong to the present century. One was made in Peru, two in the East Indies, and the rest in Europe, all of which have made us acquainted with the size of the globe, and which, together with the "pendulum experiments," have shown that the polar radius is 11½ miles shorter than the equinoctial radius of our terrestrial sphere. In the United States some two or three triangulations have been made; one from Ocracoke to the head of Chesapeake bay—in the arc of the meridian 300 and odd miles long, and which will probably be extended across the States of Pennsylvania and New York. A line of triangulation is also being made from the Atlantic along the Blue Ridge obliquely to the Gulf of Mexico.

The present triangulation across the continent was commenced several years ago. On the Atlantic coast the starting point was on the Chesapeake, and the triangulation is completed to Harper's Ferry, and from the latter point a special reconnoissance has been made to the Ohio river, striking it on the 39th parallel. Coming east from the Pacific coast, Prof. Davidson, of the coast survey, is in charge of the triangulation from a point above San Francisco to the Sierra Nevada. Some three or four years ago the survey was started at St. Louis, working both ways to join the work from the east and west. The starting point was the Second Presbyterian church, of which the exact latitude and longitude were established astronomically, in which the telegraph wires and clock work, both in St. Louis and Washington, were brought into requisition. The work was accomplished after midnight, when the telegraph wires were relieved from business. The observations were repeated night after night when a certain star passed the meridian, in order to secure perfect accuracy. As then determined, the latitude of St. Louis is 38 degs. 38 mins. 0.99-100th sec., and the longitude 90 degs. 12 mins. 13 82-100th secs. Three years ago Major Boyd completed the work of triangulation from St. Louis to the bluffs, establishing a station near French Village and one near Collinsville, and a base line was measured. Mr. Fairfield is now working the other side the bluff, selecting stations with a view of making a reconnoissance to the Ohio river to join the line coming from the East. The country is hilly and wooded, and he finds some difficulty in selecting points so as to see from station to station. Most of the States through which the survey has progressed have, by acts of their Legislatures, made the necessary provision—such as allowing those connected with the survey to go into any man's land, cut down trees, excepting valuable trees and fruit trees—for which damages are to be agreed upon and paid In most cases, if objections are made, the surveyors tender a sum to compensate for damage. People generally cannot understand the purpose of the survey, and are disposed to regard it as a trespass. In one case, a man over on the bluff demanded $2,000 for a slight damage of not over $20.

From St. Louis, where stations were established at the stand-pipe of the insane asylum and Missouri station, the triangulation westward has been completed to the Gasconade river, a length of about 72 miles. Assistant J. A. Sullivan, of the coast survey, is now making a reconnoissance from the Gasconade to the summit of the Rocky mountains, striking a little below Denver. For this purpose he first rides over the three lines of railroad, to get an idea of the topography of the country, and select his station. He returns over the same lines in order to have the day time to inspect that portion passed over in the night on the outgoing trip. The next operation is to go over the route and make a permanent reconnoissance, erect stations, etc., for the work of triangulation. A flat prairie country like the great plains is much more slowly triangulated than a mountainous country. Stations have to be erected every 10 or 15 miles, whereas on the survey of the Blue ridge, for instance, peaks were selected 90 miles distant from each other. In flat countries it is generally necessary to measure a new base line in every 300 miles to serve as a check-line. The triangulation now in progress will take several years yet to complete, and the line runs through the States of Delaware, Maryland, Virginia, West Virginia, Ohio, western part of Kentucky, Indiana, Illinois, Missouri, Kansas, Colorado, Utah, Nevada and California.—*St. Louis Republican.*

Report of the Commissioner of the General Land Office.

Hon. J. Williamson, Commissioner of the General Land office, has furnished the Secretary of the Interior a synopsis of his forthcoming annual report, of which following are the main points of interest: The cash receipts of the office during the fiscal year ended June 30th, aggregate $1,547,215. Total number of acres of public lands disposed of during the year was 5,524,326, of which 2,875,910 acres were absorbed by homestead entries, 507,985 acres were obtained by entries under the timber culture law, 1,008,000 acres were approved to various States as swamp lands, 1,100,078 acres were certified to railroads under land grants of Congress, and 642,692 acres were disposed of by ordinary cash sales. The total disposals were 545,945 acres less than those of the preceding year; 21,806,517 acres were surveyed during the fiscal year, and 68,025,309 acres had been previously surveyed; leaving yet to be surveyed of public lands in the States and Territories of the United States 1,132,665,244 acres. The Commissioner concurs in the opinion of his predecessor that the public domain west of the one hundredth meridian and east of the Sierra Nevada mountains should not be surveyed in minute subdivisions according to the present system, except those small portions which are susceptible of cultivation without artificial irrigation. He furthermore recommends in regard to this portion of the country, that barren lands should be thrown open to purchasers in tracts of unlimited size, as they are worthless without irrigation, which cannot profitably be undertaken for small areas of 160 acres each. He likewise renews the recommendation of Commissioner Burdett, as the only practicable means of preserving the forests of the country from waste and destruction, that Government timber lands should be transferred to private ownership by immediately surveying and offering them for sale in unlimited quantities, at not less than the appraised valuation. Commissioner Williamson also recommends the consolidation of the pre-emption and homestead system, and urges the correction of certain errors in the compilation of the Revised Statutes, and suggests legislation authorizing the bureau to dispose of its publications, such as the "Centennial Map" and the "Centennial Atlas," at prices which will cover their cost and meet the continuous heavy demands for them which have now to be almost invariably refused.

RUSHES.—In an interesting article on rushes, a contributor to the *Gardeners' Chronicle* points out that the plant has really rendered considerable service to commerce. The canals or water-ways constructed by the Duke of Bridgewater owed much of their stability to the rushes that were planted all along their banks, and particularly on the towing-path side, where the fringe of rushes saved the rope from fretting; in short, the plant seemed essential to the canal, for its toughly matted roots bound the banks firmly, and formed the crowning sod, making an elegant fringe, as useful as if it were made of hewn stone. Unlike the working of any shrub or tree that would outgrow its place in a year or two, the rush retains its evergreen wisps to all appearance forever; and hence we see Brindley's rushes little more than a foot high after a generation of boatmen have brushed their tops ten times a day.

RUNNING.—The San Francisco sulphur company, whose mines are situated near Rabbit Hole, have commenced refining sulphur, and are now turning out from four to four and a half tons of pure brimstone daily. They are now shipping to Dayton to fill a contract of several car loads, and have made arrangements with a powder manufacturing company in California to supply them. The attention of the Secretary of the Treasury has been directed by members of the company to the fact that imported brimstone has been admitted free, although the revenue laws require that a duty of ten dollars per ton shall be imposed on all refined sulphur imported into the United States. The enforcement of this act will enable the owners of the extensive sulphur deposits in this county to compete successfully in the home market with the imported article.—*Silver State.*

Hoodlumism and Drink.

It is a well known rule among ths Chinese that there ehell be hut one wash-honse in a block. If the eame rnla could ba established among tha Christians with regard to the disposition of drinking houses, or rum holes, ae they are expressly termed among their patrons, a very direct hlow at hoodlumism would be struck. If idleness be the root of hoodlumism, as peopls are generally willing to believe, it is anstained and nonrished by tha sale of cheap liqnors. The nnmbers, given by the statisticians, of the places devoted to liquor traffic, ara perfectly appalling; but a walk through the onter edges of tbe city will oonvince the skeptical of their truth. Thera is no more familiar sign decking onr streets tben the foaming glass of beer, with the allnring words underneath, "five cents a glass." These cheap cellare and sbops, where alcohollo liquors are sold at correspondingly low rates, are the favorite lonnging places of idlers and the scenes of innnmerabla brawls. It is impossible for the law to get at the root of the matter by breaking up the patrouege. It is not easy to restrain any person or class of persone from visitiug thes. places. In any casa snch a law would be a dead letter, with a body of police who are afraid to interfere with hoodlnms in the opeu street, to say nothing of atemming the lawlessuess of a crowd of striplings inflamed with liquor. It is with tbe dispensers of liquor that the law will be obliged to deel. It will be easy enough to limit the number of places within a certain area at wbich liqnor may be sold, since its sale is one nf tha uecessary evils, and, if the law be rigidly adhered to, even so simple a movement will have its weight in decreasing hoodlumism. In additioa to this, the conseut of a mejority of tha neighborhood shonld be obtaiued for the establishment of a saloon, eiuce it is a nuisance, in that it not only dieturbs the people, but deteriorates the valne of property. Also, the keeper of a saloon shonld be a man of attested good cheracter. Such a one wonld have some care about tha class of habitues whom he permitted to trade at his counter. It wonld be a still greater improvemeut if a brawl, or a specified unmber of brawls, would insure tbe immediate closing up of the saloon where they occurred. If the hoodlum were met at the threshold with a warning, if he had uo comfortable place in which to lonnga, to brew miechief and to etnpefy himself with cheap drame, he would be driven to work deepite himself and his idle habits for sheer necessity of paseing the time. Another evil resultiug from the eame cause is the eese with which yonng chiidren learn to drink. Mora than once the police have come npon a den of youug hoodlums, either under some accommodating house, or in a vacant lot, where the entire gang were stupefied with beer procured for a trifle at eome adjoiuing groggery. The oldest of the crowd in such caees is rarely more than 14 or 15 yeare old. The man who will eell liquor to euch children sadly needs the pressure of the law. It will certainly be necessary to put it in effect somewhere in the liquor bnsinees, or hoodlnmism will shortly be beyoud control.—*San Francisco Alta.*

Sunday on the Comstock.

Any oitizen of Virginia City, with a seuse of humor in hie composition, would aek no better fun, we should think, than to act as guide to eome Massachusetts stranger on a Sunday evening promeuade through the oity of the Comstock. The 130 seloons of C street, with glaring lighte and widely-opened doors; the sound of "No. 46 for a starter," and the réaounding yell of "keno;" the brass band invitation to the melodeon; the cigar-smoking, lonuging, laughing and ewearing orowds npon the etreet ooraers—to say nothing of the sights upon the street a little down the hill from C etreet. What a chill of horror wonld they eend through the veine of the staid New Englauder. Would not his eetabliehed ideae that the earth wes made for the ohildren of the Lord, and that the people of New England are his children, be eomewhat confused? "Are we in America?" he wonld exolaim, and if hie companiou had hie wite about him he would anewer, "No, we are on the Cometock." Sunday on the Comstock ie indeed somewhat unique —work going on in all the minee, horse raoing and dog fighting at the race-track, gambling in the ealoone, lonnging on the streets—all forming a picture *sui generis*. Whether we ought to be proud of it or regretful is a question which need not be discussed, since we cauuot alter the existing condition of thinge if we would. But certainly we oau eend any New Englander back to the blue lawe and bitter Sebbath, with the valuable knowledge that although Bostou may be the hub of the univeree, it hae one very lively epoke.—*Virginia Chronicle.*

Singular Specimen.—Recently, while preparing the fonndatione for the new pumping machinery at the Gould & Carry, the workmen had oocasiou to break a large piece of volcanic tufa, of which the fonndations are being laid, aud there found a geode coataining some beautiful stellated bunchee of fibroue gypsum. The cryetale are from oue-helf to an inch in length and as olear as water. The singularity is that these cryetale ehould be found in the heart of a great rock quarry of leelite or rhyolite, for such is the tufa formatiou from which the geode wae taken. It is to be presented by Superintendeut Osbistou, throngh Professor Stewart, to the Society of Pacific Coast Pioneers.—*Virginia Enterprise.*

Useful Information.

How Pebble Jewelry is Made.

Tho following interesting facts concerning the manufactnre of "pebble jewelry," are taken from the *British Trade Journal*: The gold used by jewelers is always alloyed with certain proportions of puro silver and the finest copper, according to the quality desired. Tbe joweler melts his metals in a crncible and oasts them into ingots about two inches broad, three inches long, and one-eigbth of an inch thiok. The ingots are reduced to any degree of tbinness by being passed between steel rollere. The sheets or plates of metal thns produced are intrusted to a workman, who, guided hy drawings or models, clipe out the pieces required for the various articles to be made. The pieces are giveu, along with the designs, to other workmeu, who pnt them together. These meu are seated at large tables, ronnd the sides of which are a series of semiciroular recesses, each recess being occnpied by a workman. After the pieces are brought to the exaot size reqnired, they are soldered together by means of a blowpipe. Articles of an ornate character, such as broooches and bracelets covered with designs in filigree work or inleid with pebblee, require great nicety of manipulation, and the number of parte which go to compose eome of them ie immense. Pebble bracelets of a finely worked geometrical patteru are made in wuich there are no fewer thau 160 pieces of stone. Ia making an article whioh is to be inlaid with pebbles, the jeweler forms a back or foundatiou, to which a plate p'erced with apertures for the pebbles ie fixed, a convenient space being left between the two plates. At thie stage the work is passed to the lapidary, who cute and fixes the pebblee. The etones are first cut with a revolving disc of iron charged with diamond dust and oil, and roughly ehaped witb a pair of pincere. Each piece is theu taken in succession and attached to a "cement etick"—a small piece of wood with a quentity of etrong cemeut on one end. Held in that way the stone ie grouud to the required shepe on a revolving disc of leed charged with emery and water. Wheu all the pieces are brought to the shepe of the apertures designed for them they are set iu ehellec. The outer surface has up to this time been left rough, but after the cement hes hardened tbe lepidary tekes the brooch in his hand and manipuletes it on the grinding diso until the etone is reduced to the level of the metal whioh surrounds it. The surface is next polished on a disc of tin charged with rotteu stone and water, and the brooch is returned to the jeweler. Usually pebble brooches have in the centre a "oeirngorm," or what ie euppoeed to be one. The cairngorms are not "set" until the work on the other parts of the broooh is all but completed. The exposed surface of the metal on the face of the brooch is uenally relieved by engraved scroll-work. Eaemeled jewelry has recently oome into fashiou to eome extent, and fine specimene have been produced, the Ruuic petterns especially being very pretty.

Adulteration of Sugar.

The *Manufacturer and Builder* says thet all this talk about adulterated suger is exaggerated. We have tried to find adulterated sugar, and cannot succeed. What, indeed, would the menufacturere adulterate it with? People talk of merble-dust; this would at once be detected by its grittiness. Adulteration with starch, as some etorekeepere have told ue ie practiced by eome refiners, would at once be discovered when diesolving the sugar in pure water, wheu the etarch would cauee the water to become milky, and finally settle at the bottom. It doee not require a pure eugar at all to meke ceudiee; nothing is adulterated more then these. They put staroh, flour, chalk, or other thinge in them, if nothing woree. Iu order to chenge the crystallizeble sagar into the nou-crystallizable, which is the best for oendies, all that is necessary ie to boil it long enough; this will at the same time remove the most common adulteration—water or moisture. In answer to the queetion what they have that they call eugar, we can eay they have nothiug elee, ae engar is so cheap and plentiful now-a-deys that it is not worth while adulteratiug it. They nee oane eugar, however, to adulterate other thinge, euch as maple sugar; most that ie sold in the market ie 75 per ceut. or more oommou hrown eugar, flavored witn maple sugar. The eame may be eaid of houey, the kind eold iu bottles being eugar syrup, flavored with some real honey. Glycerine has been adultered with sugar syrup. Then many wines and cordials are eweeteued with sugar, if deficient naturally; jelliee and other like articles coneist largely of engar. There ie ecarcely an end to the substancee in which eugar enters, either as an adulterant or ae a regular constituent, eo eettle your mind in regard to bad eugar; there is perheps no article generally more pure and reliable in the market, and in order to satisfy your mind on thie point, try to adulterate it yourself, and you will soon eee the fallacy of all the talk about it.

Polishing Wood Carving.—Take a piece of wadding, soft and pliable, and drop a few drope of white or traneparent polieh, according to tbe color of the wood. Wrap the wetted wadding up in a piece of old linen, forming it into a pad; hold the pad by the enrplue liuen; touch the pad with oue or two drope of liuseed oil. Pass the pad gently over the parts to be polished, working it round in emall circles, occasionally re-wetting the wadding in polieh, and the pad with a drop or eo of oil. Tbe object of the oil is merely to cause the pad to rnn over the wood easily without sticking, therefore as little as possible ehould be used, as it tends to deaden the polish to a certain extent. Where a oarving is to be polished after having been varnished, the same process is neceesary, hnt it cau only be applied to the plainer portione of the work. Plain surfaces mnst be made perfectly smooth with sand paper before polishing, as every scratch or mark will show twice as badly after the operation. When the polisb is first rubbed on the wood, it is called the *bodying in*; it will sink into the wood and not give much glaze. It must, when dry, have another body rubbed on, and a third generally finishes it; bnt if not, the operation must be repeeted. Just before the task is completed, greasy smears will show themselves; these will disappear by continning the gentle rubbiug without oiling the pad.

Uses for Infusorial Earth.

We have made meutiou from time to time of the depoeits of infusorial earth in this Stete, and of the error which has been made in supposing them porcelain clay. There are uses for infusorial earth. Tbe *Scientific American* names some of them ae followe:

Infusorial earth, or tripoli, is best kuown as a polishing powder for gold, silver, etc., for which purpose it has uo rival. Mention has already been made of its use in the manufactnre of blasting powdere, in which it serves the useful purpoee of holding the explosive nitroglycerine. Bnt these will ultimetely be counted among the least of its uses. Already it playe an importent part in the manufacture of cements and artificial stones, especially iu Ransome's process. Combiued with carbouate of magnesia it forms the excellent cement known in Germany as albolite. With borate of lime it forme a valuable glazing for furneces, pottery, etc., and is found very useful as an enemel for irou and slate. Fnsed with borate of magnesia it forms a beeutiful and durable porcelain, which can be cast and even blown like glass. A multitude of minor uses have been suggested, aud meny more will no doubt follow as our artisans become acquainted with ite properties. Its lightness, indestructibility by fire, and slowuess of heat conductiou ere qualities of very great value. Bricks of it, with a little cley, are neerly as strong as common bricks, yet eo light as to float on water. At the eame time they are infueible, end such poor conductors of heat that they may be held at one eud while the other is heated to reduess. As an experimeut, au Italian engineer conetructed the powder magazine of a wooden vessel with such hricks, aud when eet on fire the vessel bnraed till ehe sank without exploding the powder. The lightness of such fireproof bricke makas them epecially valueble for such uees. They heve also been used to advantage in the construction of reverberetory furnaces, pyrometers, etc. The heat-reeisting quality of infueorial earth makes it not less useful as a protection to ice bine, ale oellere, etc, and as a lining for fireproof safes and the like, for which purposee it ie rivaled only by aebestos.

How to Dry Flowers with Sand.—The *Floral Cabinet* eaye: There are meny of our brilliant flowers—euch ae deh ies, pansiee, pinke, gereniums, sweet williams, carnations, gladiolue, which may be preeerved so es to retain their oolor for yeara. Wbite flowers will uot answer for thie purpose; nor any succulent plant, as hyacinthe or cactus. Take deep dishee, or those of sufficient depth to ellow the flowers to be covered an inch deep with eend. Get the oommon white eand, euch as is used for ecouring purposes, cover the bottom of the dieh with e layer half an inch deep, and then lay in the flowere, with their etems downwerd, holding them firmly in place while you sprinkle more eaud over them, nntil all placee between the petele are filled and tbe flowers buried out of eight. A broad dish will accommodate quite a large number. Allow efficient sand between. Set the dieh in a dry, warm place, where they will dry gradually, and at the end of a week pour off the sand and examine them. If there ie any moisture in the eand it must be dried out before using again, or fresh eand may be poured over them the same ae before.

Good Health.

Drainage and Disease.

The bearing of geology upon health is not very evident at first eight, but the New York *Tribune* eays it was fully exponnded by Mr. Jamee T. Gardner at the meeting in Boetou last week of the American health aseociation. Many dieeaeee arise from defective drainage, and thie in turn ie frequently a reenlt of the etructure of the rocke below. A thorough survey of the State will furnieh the facte in regard to the natural drainage of each portiou of it, and it will then be in order to diecnes the claime of different localitiee in regard to superior saluhrity. Meanwhile it ie well to remember that the whole teudenoy of recent inveetigations proves that the controlling cauee of our moet fatal diseasee is to be found in local conditions. Powerfnl as are climatic influences in modifyiug forms of life, scienoe teaches that death dwells uot so often in the "viewless winds," whioh man can neither direct or restrain, as in the earth beneath hie feet. Fourteen years ago Dr. Henry I. Bowditch demonstrated before the State medical society that certain conditions of the soil slew annually, in Massechusetts, a thousand of her citizens hy consnmption alone. No plan for artificial drainege can be completely succeesful unless besed on a thorough comprehension of the natnral drainage system of the area nnder treatment. The region above the Palisades on the Hudson fnrnishes excellent illustration of these statements. The platean fronte the river eastward with a bluff 300 feet high, end westward slopes gently to the Hackenseck valley, its altitude and proximity to the sea both tending to temper the snmmer olimate. All topographical conditions of nnnsual health seem here present, and yet malarial diseasee abonud. The reason for this will probably be found in the confignration of the rock. The dense basalt underlying the thin soil of the plateau absorbs almost no water. If the rock were either fissured or porous, the hight of the plateau would ineure perfect underdreining; but as it is, we heve probably on the Palisedes topographical conditione favoriug health, while the underlying structnre is the governing canee of prevailing diseases. In coutrast, consider the formation of the Helderberg platean, lying also near the Hndson river. An escarpment 1,000 feet high bonnds, on the eastern side, the table-land, composed of horizoutal limestone resting on shales. Mr. Gardner recently examined the natural drainage system of thie elevated region. From the more level parts water does not pese off by eurface streame. Low undulatious divide these areas into many separate basins, eech dreining toward its owu center, where a funnel-ehaped opening in limestone receives the disappearing flow, whose fnture course is subterrenean. The plateau's elevation insures that theee waters sink at once many hnudred feet, or escape in epringe along the cliffs. Bnt this seme Helderberg limestone, nuder different topographical conditions, has proved one of the most powerful producere of diseese. When oholera prevailed in this country the mortelity at Sandusky was excessive, and some observers hastened to the conclusion that limestone regione were especially lieble to the terrible scourge. The truth, as expleined by the State geologist of New York, Prof. Jamee Hall, appears to have been this: Sandusky is indeed underlaid hy Helderberg limestone, through whoee many open fissures much foul surface weter of the city easily aud certeinly found ite way downward, but as the streets have an elevation of only 30 or 40 feet above the leke, the drainage sank this small distance and there remeined, while its poisonous gases rose continually through the same open fissures by which the water descended, proving that the very geological conditioue which, in combination with other topographical features, appear most favorable to health, here spread beneath Sandusky a deadly uetwork of opeu drains with uo outfall.

Beware of Dust.

The injuries done by duet are among the moet eerioue to which mechanics end operatives are subjected. Wherever filings and fine particlee of any kind are produced, it is very important to prevent their introduction into the lungs; even an occasionel exposure mey do herm, and one continued for mouthe aud years will certainly produce fatnl reeults.

Dr. B. W. Richardson, of Loudon, after several experimente with inhaling air throngh cotton, layers of orepe, eto., iuforme ue thet he finds the best arrangement to be a number of feathers erranged around the outeide of a perforeted breathing tube of convenient size, so ae to closely cover all the perforatione; by breathing through the tube the feathers are drawn down to the perforations by iuepiratioa, and hy expiration they ere lifted from the openings, and all the intercepted duet is blown off. The latter makes the arrangemeute with cottou or crape objectioneble, as their pores are soon filled with the duet as well as the moisture exhaled by the breath. The tnbe is attached to an arrangement which allows it to he put on and taken off as easily as a pair of spectaclee.

A natural protectiou against breathing dust ie aleo afforded to most males of the Caucasian race in the beard and hairs around the mouth. Theee should not be removed by any persons exposed to a dusty atmosphere, who, therefore, do a very unwiee thing if they indulge in the vice of shaving, which is nothing less than an attempt to improve upon nature'e protective provicione. Three evils result from thie practice: 1st. Stimulating the continual growth of the hair, which will become slow, and finally ccase if not interfered with, while thie etimulated growth is a eteady nnuecessary drain on the powere of the vital eyetem. 2d. The removal of a natnral protection againet cold from a place where this protection is more needed than is generally supposed. 3d. The removal of a duet-protector, above referred to. Men inclined to pulmonary consumptiou should especially guard against shaviug, and let their heards grow ae nature intended, only curtailing a little when it becomes inconveuieatly long.

Another natnral protectiou againet dust may be eecured by accuetoming oneself to breathing exclueively through the nose, and only through the month when epeaking.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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A. T. DEWEY, GEO. H. STRONG
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Our latest forms go to press on Thursday evening.

San Francisco:

Saturday Morning, Oct 28, 1876.

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ABOUT the Black hills a correspondent says: In the first place, everything is taken up; and in the next place, there are not a dozen claims paying. The gold is very much spotted. There have been but two claims that paid big here. One was a big one. There were $3,000,000 taken out of it this summer, and the parties that owned it left with about 1,600 pounds of dust two weeks ago. Jack McAlear has the other good one. It has been paying him about $150 to $200 to the man per day, but it is not doing him any good. He has some other claims that he is prospecting. There are other claims that are paying him $4 to $20, but not many. Everything seems to be in Deadwood gulch; outside gulches not paying, with the exception of a few claims. Times are very dull here and money scarce.

THE late rain affected the American river greatly, and it rose several feet, its water rushing into the Sacramento with a roaring noise. Cox & Clark's bridge at the mouth of the American was carried away, and a portion of it floated down the Sacramento, and brought up in a pile of drift at the hows of the steamer *Empire City*, and the barge alongside of her, lying just below the bridge. The Sacramento rose about two feet eight inches.

THE gold yield in Montana this year is estimated at 35 per cent. in excess of any season since 1871, and the silver product is nearly double. That is doing pretty well.

IT is said that the Mexican government has leased the silver mines at San Luis Potosi, Guanaxuato and Zacatecas to an English company for $500,000 per annum.

Gold in the Sacramento River.

There are not a few Californians who believe that the time will come when it will pay to work portions of the bed of the Sacramento river for the gold which has been washed into it by hydraulic mining for so many years. The capital required for such an undertaking would be large, and to some the idea seems Utopian. Others, however, are firmly convinced that it will some day be done. Probably the choicest diggings in the State are in those river beds, the only question being how to get at them. Several plans have been devised, but none carried into practice; nor is it likely they will be until the present gravel deposits are worked out, which will not be for many a year.

There can, of course, be no question but that a large quantity of gold is constantly coming down the river with the debris of the stream to points even far below Sacramento. To any one who has carefully considered the nature of gold and gold mining, and the rough manner in which it has been conducted, there is nothing strange or improbable in the supposition that the gold has been constantly accumulating there for many years. Even before mining was carried on in California it must have collected in the bed of this river as well as in the gulches and mountain streams.

The gold found in such abundance in the beds of smaller rivers in early days was but the result of the forces of nature, carrying off debris, washing down hills, and leaving the heavier particles concentrated at low points. What nature did before, man is now doing by artificial means, and doing it much more quickly. Of course, previous to the commencement of work by miners, all the gold was deposited, while now the bulk of it is caught and saved; but still a large quantity goes to waste. Experiments made long since proved without doubt that the sands in the bed of the river, at various places, was worth from $2 to $10 per ton in gold, and the relative value is materially increased by lapse of time. Few have any idea of the amount of debris from hydraulic washings flowing into the river continually night and day; but so great has the quantity become that it has shoaled the river nearly its whole length, made islands, and given the agriculturists so much trouble that it will soon be the subject of congressional investigation in search of a remedy. Of course, the lighter particles float off, but the fine gold gradually sinks and concentrates in the bed of the river, where it will always remain unless means are devised to collect it.

The beds of the rivers of past geological ages are worked in California with great success, and it is from these "dead rivers" that the bulk of our gold product is gathered. In the course of ages the water has cut away hills, reduced the rocks, and carried the debris away, leaving the virgin gold in the bed of the ancient river for man to collect. Mayhap the miner of to-day is but assisting nature in performing a like duty for the benefit of future generations. If this be so, then the miners of the future who may find the bed of the Sacramento when it shall become a "dead river" will strike a veritable bonanza, and will reap a rich reward from the carelessness of the miners of to-day.

The large volume of water now employed cannot but be attended with large loss of gold; but whether it is practicable ever to try to recover that which is lost remains a question. As hydraulic mining ceases gradually the lighter portion of the river bed will naturally be carried off, when, with no large quantity of debris flowing in, the deposit on the bottom will be slowly concentrated and more easily available for working. If, then, it is found that when our present mines are nearly exhausted that gold is in the river bed in sufficient quantities to pay for the outlay even of immense sums, the money and means will, no doubt, be found to get at it.

The old method of wingdams and flume would scarcely do, and some other would have to be devised. It is probable that if anything is ever done in this direction it will be carried out on the plan tried on the Trinity river, and now being done on the Feather river by the Main Feather River company, of which we spoke a short time since. In this instance, where there are known to be rich deposits, the plan adopted is to commence a shaft on the bank of the river at a point opposite the last and richest workings of the former claims and above high water mark, and sink the same below the bedrock underlying the original gravel bed of the river; to run an upward incline drift from the bottom of the shaft through the bedrock into the gravel bed, and then along on the surface of the bedrock, where the most valuable deposits are always found. To prevent the complete success of this plan there is but one contingency, viz: Such an influx of water, seeping through the gravel, as cannot be controlled by a pump, filling the drift and shaft. But it is the belief of the company, which is fortified by the opinion of engineers and miners, that the pipe-clay debris which for many years has been flowing into the river bed from the various hydraulic mines, and which is of a depth varying from 15 to 24 feet, has so puddled the underlying gravel that the percolation of water will not be greater than can be kept down by a powerful pump. We believe that the shaft on the bank of the river has already been started, so that it will not be long before the success or failure of this new principle of mining be demonstrated.

Why Fine Gold Floats.

Although most miners recognize the fact that gold in fine particles will float or remain for some time suspended in water, few know why this is so, as it seems contrary to the principles of gravitation. A series of experiments made a long time since by one competent to judge, proved, first, that fine particles of gold would remain afloat in water of common temperature for over 24 hours; and, second, that when the temperature of the water was raised to, or near to, the boiling point, the suspended particles of gold would subside. Reflecting on these points, the experimenter was reminded of the well-known property possessed by platinum of condensing gases upon its surface, and it seemed no far fetched hypothesis to assume that gold and, probably, most other metals, possessed the same property, though in a less degree. Upon this supposition, the fact that particles of gold did not sink in water in accordance with their specific gravity was readily explained, because the buoyancy of the film of air or other gas adhering to them would more or less counteract their weight, and as the surface of bodies relatively increases as their bulk decreases, it was plain that the smaller the particle of gold the more apt it must be to be kept afloat by a film of gas upon the surface. It also becomes obvious that when the water is heated to a certain degree, the particles of gold suspended therein must subside, because the film of gas sustaining them would be expanded and removed.

On this peculiar characteristic of metals to condense gases, Overman may be cited as an authority (Metallurgy, p. 282), "As not only the specific gravity, but the size of grain and its affinity for water and other minerals, has a decided influence on its tendency to subside, it is evident that the operation of separating minerals is truly one which requires more than common intelligence to perform it well. Iron is by far specifically heavier than quartz, still fine iron filings will float in water, while fine sand sinks directly. Carbon has not the weight of clay, yet carbon sinks sooner in water than clay, but not so in air. Gold is by far heavier than silex, but we may observe, by means of a microscope, a multitude of fine particles of gold suspended in water, while we cannot detect the slightest particle of silicious matter, however fine it may be. The latter will subside more quickly than visible particles of heavy gold. All the metals appear to have a tendency to float on water when in fine particles, some more than others. This is caused by a particle of gas, either air or water gas, adhering to the particle of metal, which causes it to be light and float or become suspended. Precious metals appear to possess more of this quality than others. Sulphurets of metals, oxides, salts and, in fact, all compound matter, do not manifest it. The size of a particle and its form have also some influence in causing heavy matter to subside in water; a large grain will, in all instances, sink faster than a small one."

Unless we accept the explanation that a great deal of gold escapes with the water, despite its high specific gravity, it will be difficult to account for the loss in working with a continuous current from the stamps. We ourselves had some extremely fine gold in a bottle of water, not long since, and, as a matter of curiosity, shook it up and set it on the desk to see how long it would take before settling. On the second morning minute particles could still be seen suspended in the water, although the water had been perfectly quiet in the meantime.

Mining Companies' Troubles.

The Loyal Lead gold mining company brings suit against John Maximillian et al., for an injunction restraining defendants from working or injuring said claim or ground; that said injunction be made perpetual; that plaintiff recover said ground and $10,000 damages for the detention and injury of said property.

Judge Daingerfield of the Twelfth District Court has rendered a decision in favor of David Calderwood, in the case of Calderwood vs. the Rock Island gold and silver mining company for the sum of $15,660. The Court find as a conclusion of law, that Calderwood is entitled to the highest market value of certain shares of mining stock since the suit was commenced, viz. $11.75, amounting in all to the sum of $15,660.

M. J. Fitzgerald and W. H. Simser have brought suit in the Twelfth District Court, against the East Modoc Consolidated mining company and S. E. Holcomb. Plaintiffs allege that in June, 1875, they sold the Topeka, Pittsburg, West Side and East Side mines, in Inyo county, to Holcomb on certain conditions. Holcomb transferred them to the other defendant without any consideration; that Holcomb has failed to perform his part of the contract, and that it is therefore null and void. Judgment is asked to remove any cloud on the title of plaintiffs.

The Coso Consolidated troubles have been settled by the retiring of the old board and the selection of D. L. McDonald, president, and E. H. Gadsby, S. Kahn, J. H. Conway and A. H. Yeazell as the new directors. W. F. Bogart was chosen secretary.

UP to the 1st inst. $3,831,600 has been paid in assessments on the mines of Ely district, Nevada, and $4,432,500 paid in dividends.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

BOTTLE AND CUP STOPPER.—Carlton Newman, S. F. The first part of the invention relates to an improved method of applying a cup stopper to the mouths and necks of bottles or flasks, and the second part relates to an improvement in the bottles or flasks themselves, by which the inventor increases their capacity and at the same time adapts them to the shape of the cup. In constructing the bottle or flask it is provided with a bulging neck which will fit the bell-shaped mouth of the cup, and above this enlarged neck is made a short neck which is provided with external screw threads. The cup is made to conform to the shape of the short neck and enlarged neck of the bottle; that is, the mouth of the cup is flared or bell-shaped so as to fit the swell of the enlarged neck, while the base of the cup is made to fit the short neck of the bottle, and is supplied with female screws so that when the cup is turned upside down over the neck of the bottle the short neck can be screwed into the base of the cup. In the bottom of the base of the cup is placed a cork, against which the mouth of the bottle will press and make a tight joint when the cup is firmly screwed down; or an india rubber ring may be drawn over the short neck so as to fit upon the shoulder formed by the swell of the enlarged neck. By making the bottle with an enlarged neck, so that it will fill the mouth of the cup, the capacity of the bottle will not only be increased, but the shape of that part of the bottle will conform to the shape of the cup and thus avoid the recesses and projecting edges which would otherwise be formed on each side of the bottle and which are common on other bottles and flasks having cup stoppers. In this way the inventor completely protects the mouth of the cup from dust and dirt, and at the same time the bottle is not so liable to be broken as when the cup projects on each side.

COMBINATION EXCAVATOR AND DUMP CART.—Joseph Price, San Leandro, Alameda county. This invention relates to certain improvements in that class of excavating machines in which a number of buckets are formed on the periphery of one of the bearing wheels of a cart, so that the earth which is turned and deposited in the buckets by a plow attached below the cart body will be lifted by the motion of the wheel and deposited in the box or body of the cart until it is filled, when it can be transported to any desired place and dumped. The arrangement permits the buckets to dump their loads directly into the box without the necessity of using chutes or carriers. The plow will retain its plowing position at any elevation, as both ends of the beam will be raised and lowered simultaneously. By the use of a "spreading" wheel (placed horizontally) the box is filled a level full, and an objection heretofore made to these machines is obviated on account of the piling up of the dirt upon the side of the box next to the elevating wheel. The improvements referred to make this class of excavating, transporting and dumping machines convenient, effective and easy to operate.

MINING ACCIDENTS.—One day this week the catch was pulled from under the cage of the North Consolidated Virginia mine, and it began to descend. After it got started it was found impossible to stop it, and down it went the whole depth of the shaft, the fire rolling from the brake. When it reached the bottom—nearly 1,000 feet—the cable was snapped like a thread and followed the cage to the depths below. There were four men at the time working in the bottom of the shaft but fortunately not one of them was in the compartment when the cage struck. A miner named Frederick Brown was killed last week in the Trojan mine by jumping on a loose cage which dropped down the shaft with him. A man named Lawrence Healy was killed in the Prospect mine by an explosion of giant powder. A blast failed to go off and the unfortunate man returned to the drift, struck a blow with a pick at the opening of the hole, when the blast went off and blew him almost to atoms.

THE *Black Hills Pioneer* says: Deadwood contains 173 business houses of various kinds and degrees. The first house was built on the 28th day of last April. We now have a population of nearly 3,000 people. Can any city on the continent make as good a showing this Centennial year?

OWING to the rain in the mountains in the neighborhood of Hope Valley, the Carson river has grown from a brook to a stream of considerable dimensions. The river is higher now than for several years in October, and all the mills are at work.—*Carson Tribune.*

THE Eberhardt & Aurora company's tunnel, at White Pine, is now completed a distance of 240 feet. The formation they are working in is very hard, but, notwithstanding this, they are making very expeditious headway.

THERE are 5,000 men in and around Deadwood City, Black hills, yet all the prospecting is limited to about 30 miles.

Remarks on Quicksilver.

[Written for the PRESS by SAMUEL PURNELL.—No. 3.]

A favorite form of working small quantities of very rich ores is that of the retort or muffle. The retorta are of iron, heated to a red heat. The powdered ore is mixed with some 15 per cent. of hydrate of lime (varying according to amount of cinnabar present); the mercury distills off and is easily condensed. However, on account of its slowness and great cost, this excellent method can only be used with profit on very rich ores, with which it can be made to work up to 85 or 90 per cent. The advantages of the retort process are greater yield of metal, greater purity of product, prevention of soot and greater healthfulness to the workmen. The retort furnaces are arranged similar to the style familiar in gas works.

The author deems it somewhat singular that managers of quicksilver smelting works have not yet tried the

Revolving Cylindrical Furnace

For roasting their ores, especially the fine ones. There can be little or no question that this style of furnace would most thoroughly roast cinnabar, be healthful for attendants, work very rapidly and with a small expense for fuel and attendance, work fine ores and turn out a very large daily product, and altogether be superior to any of the ordinary forms in cost of construction and cost of reduction. They are no longer an experiment on gold and silver ores, and certainly should not be left untried with cinnabar. All ores to be reduced should be in the form of coarse sand or gravel, and can then be quickly reduced as they pass through the cylinder from end to end, and can be continuously and automatically fed and discharged. The time of reduction need not exceed from three to five hours.

The Fumes

Would be in as good a condition for condensation as though they had come from a shaft furnace; and better, as the heat can be better regulated. The only disadvantage seems to be that machinery to run the cylinder and break all the ore in small pieces would be necessary, which would be but a small drawback in view of the cost and time of reduction being greatly lessened in other respects.

Therefore, again referring to the object of this communication, the author would affirm that in his opinion a partial means of aiding in the development of our low grade mines and preventing a serious state of affairs which seems imminent, consists in the adoption of some form of continuous revolving furnace for smelting cinnabar.

Condensation of Fumes.

The condensation of the fumes from the roasting of poor quicksilver ores is very difficult, and is still essentially the weakest point in the metallurgy of quicksilver. Said Prof. Becker (SCIENTIFIC PRESS, vol. 30, p. 98): "Condensers are an exceedingly important portion of the structure, and no absolutely satisfactory construction has thus far been hit upon." Even a good material for a condenser is difficult to find. Brick is porous, and cast and wrought iron are destroyed by the sulphurous fumes.

The iron condensers attached to the Janin and the Knox & Osborne furnaces had little durability, and the condensers as a whole have not been satisfactory. Wood and glass are the most enduring. The sublimations from rich ores are easily condensed to a high percentage in a condenser of simple form; but when mercurial fumes from poor ores are sent into a condenser a difficulty of great magnitude arises. The small particles of metallic quicksilver are borne along in a relatively very large amount of air and gases, which separate one particle from another; they float in the current. The globules are slightly oxidized and repellant. The particles are in various ways prevented from uniting into a globule of sufficient size to fall through the current by its own weight. Thus these small and dusty globules, consisting of from 50 to 75 per cent. of the fumes from poor ores, are carried along by the gaseous current, and in spite of all mere refrigeration and time and distance traveled, are borne to the external air and are forever lost.

The Redington company have for some years past experimented upon a large scale with several of the most approved forms of modern condensers. The result has been unsatisfactory, and we are informed that the company will hereafter build substantially the old form of the large cooled chamber, as they deem the latter style, with all its objections, more economical and efficient than any of the former ones. From this it will be seen how little real progress has been attained in the complete condensation of fumes from poor ores during this century.

To quote again from Prof. Becker: "The losses in smelting are various and very important, and are not at all very well understood. The whole bulk of gas passing out of the last condenser is saturated with mercury vapor." "Its aggregate per day is considerable." "Another source of loss is the fine dust of mercury suspended in the gas; minute globules so small they fall very slowly through the air, and are, therefore, carried away in the current of gas. The rate at which a spherical body falls through the air depends upon its specific gravity and its size." Therefore, if a metallic particle is small enough it may have so little specific gravity that it will float a long while in the air before it falls, and from this and other conditions surrounding it, the particle may be prevented from cohering and aggregating to another. This difficulty has been understood for some time, and many devices have been employed to arrest these small floating atoms of metal, but their success thus far has not been noticeable.

A Remarkable Timepiece.

Among the exhibits of various timepieces at the Centennial—which may be numbered by thousands, and from all parts of the world—there is none of more interest than the time globe, invented by L. P. Juvet, of Glen Falls, New York, and shown on this page. This

JUVET'S TIME GLOBE.

marvel of mechanical skill shows the time on all quarters of the globe.

The invention has been patented and is thus described by the *Jeweler*: It consists of a globe properly sustained, as shown by the engraving herewith. On this globe, which can be made of any proportionate size desired, is a complete map of the world. A large dial encircles the globe at its equator, at which the time of the various meridians is indicated. At the north pole is a smaller dial which shows the mean time at the place where the globe is located. The remarkable feature of this invention is the fact that by the mechanism inside of it this miniature globe actually revolves, as does the earth, once in every 24 hours. The actual time at any part of the world can be easily and quickly ascertained by reference to the large dial encircling the globe at the equator. It has a sliding Vernier, divided into 360 degrees, by means of which the latitude of localities can be ascertained, or the proper degree of inclination of our own or any other heavenly body illustrated. By setting the globe at the proper angle of inclination, giving the poles the proper direction north and south, and letting light, properly applied, fall upon it, it will give not only the amount of light or darkness each country has, but the very time at which it has it. The clock therefore gives the time, longitude, and latitude of any place in the world, as well as the difference of the same between two or more places.

The time globe is attractive in appearance and would adorn any place in which a timepiece is desirable. It stands in any position, and is a stem winder. Other instruments for noting the changes of the weather, etc., can be added to the case which sustains the globe.

Crater Forms.

In his investigations in the Fire-hole basin, Professor Hayden found a great variety of forms of craters, springs, etc., many of them being similar in shape or appearance to familiar objects. He named many of them in accordance with their peculiarities, such as the "bath-tub," the "punch-bowl," the "dental cup," etc., the latter of which is represented on this page. There are great numbers of these craters or chimneys well worthy of close attention in this remarkable region. Some of them have margins on which there is the most delicate and intricate embroidering, surpassing the most elaborate lace-work. In the bottoms of the reservoirs is the variegated sediment, which aids in giving such a wonderfully gay appearance to the springs. Some are beautifully scolloped around the inner margins with the spongiform or cauliflower masses of silica inside, and the outer surface adorned with the greatest profusion of the pearly beads.

DENTAL CUP, FIRE-HOLE BASIN.

BULLION SHIPMENTS.—The shipments of bullion from prominent mines since our last report have been as follows: California, October 18th, $72,541; Ophir, 18th, $10,931; Chollar, 18th, $14,105; Northern Belle, 17th, $12,143; Comanche, 19th, $8 467; Leopard, 17th, $12,382; Ontario, 20th, $5 981; Northern Belle, 19th, $12,034.82; California, 21st, $124 206.99; Con. Virginia, 21st, $156,017.88; Tyho Con., 16th, $13,221.36; Leopard, 19th, $6,327.56; Manhattan's total shipment to the 20th is $81,530; Ophir, 23d, $10,465.21, total to date, $107,768.19; Tyho Con., 19th, $4,380.14, total to date, $31,303.50; Leopard, 22d, $8,680; Modoc, 21st, 200 bars of bullion; Manhattan, 24th, $13,137; Justice, 24th, $34,000; Northern Belle, 22d, $16,016.19; Arizona, 22d, $3,570.18; Con. Virginia, 24th, $68,515.03; California, 25th, $95,000; Ophir, 24th, $48,205.08, total to date, $155,973 27.

JUDGE SAWYER, of the United States Court, has directed that hereafter declarations of intention to become a citizen shall be made in open court. Judge Dwinelle, of the Fifteenth District Court, has made a similar order.

THE Health Officer is still at work fumigating Chinatown.

Great Whaling Disaster.

Tidings come of a dire disaster to life and property among the intrepid men who hunt the leviathan in our frozen northern waters. The history of whaling is dotted with hardships and disasters, but still the hardy whalers pursue their hazardous occupation. In 1871 there was a catastrophe similar to the one which we are pained to chronicle this week. The story is old and yet ever new. The theme is of painful interest.

The survivors of this latest disaster reached this city on Saturday last on the bark *Florence*. This ship had on board 190 men, being part of the crews of 12 whaling vessels which were abandoned in the Arctic ocean on the 5th of September. The remainder of the crews of these ill fated vessels have gone to Honolulu in the bark *Three Brothers*. For three days after the abandonment of the fleet, the *Florence* had 360 men on board, more than could possibly get below decks at one time.

The following are the names of the abandoned ships: Bark *Onward*, of San Francisco, 303 tons; bark *Cornelius Howland*, of New Bedford, 333 tons; bark *Clara Bell*, of San Francisco, 197 tons; barkentine *Josephine*, of Boston, 598 tons; ship *St. George*, of New Bedford, 393 tons; ship *Camilla*, of Boston, 854 tons; ship *Marengo*, of New Bedford, 478 tons; bark *James Allen*, of New Bedford, 350 tons; bark *Java*, of New Bedford, 309 tons; bark *Acors Barns*, of New London, 297 tons; Hawaiian barks *Desmond* and *Arctic*.

The story of the disaster is like that of numbers which have preceded it. The ships were having a prosperous season, the catch of whales was large, and the sailors plied the harpoon in the face of impending dangers until the threatening ice closed in upon them and they were fast beyond escape in the "ice pack." The masters of the lost ships have prepared a statement of the hardships they suffered, and from this we take several paragraphs.

Two ships were first enchained in the ice, and soon afterward escape was cut off from the remaining ten. At times they could see the open water, but could not move an inch toward it, being held by the ice as by a vice, and drifting into different positions. The icebergs were immense, some of them being fully three miles in length. When I speak of an ice pack, I do not mean a smooth, uniform surface, like the face of the ocean in a calm; but a broken, heaped up, irregular jam of ice-blocks drifted ashore by the sea and the wind from the north and east, and hemming us in beyond all possible chance of extrication.

It was finally decided that, to save our lives, we should be compelled to abandon our ships and face unknown hardships and danger in a struggle for life. September 8th was the day chosen for the final start, if nothing turned out in our favor. The ships at this time were moving slowly, frozen hard and fast, in the pack. During the night it came on a thick northeast snow storm, and at daybreak all hands were started, a hasty meal taken, and in the face of a heavy snow storm we commenced our dreary and uncertain march. Thus we marched day after day for a week, undergoing the severest privations. At length we deserted the bark *Florence* and some days afterward the bark *Three Brothers*, and our delivery was accomplished.

After meeting the *Three Brothers*, a part of the wrecked crews from the *Florence* was put on board the *Three Brothers*, and on the 24th got under way and set sail, the *Florence* for San Francisco, and the *Three Brothers* for Honolulu.

The fate of some men who went back to the ships cannot be positively told, but if they do not reach the land and live among the natives, a lingering death is certain, however distant it may be, as not a vestige of any of the ships that were abandoned in 1871, which were carried away by the ice, was ever seen afterwards, and judging by that, as these ships are in a much worse situation, having no defence against the ice, the probabilities are that they will be crushed by the ice, rudders torn off and they rendered totally unmanageable. If by any possibility they should drift out, they will go ashore, but it is our firm opinion they will never come out of the immense pack where they were left, as the whole pack moves together and they are frozen in solid, nothing but some extraordinary commotion among the ice with a good crew on board and ships free to work, could have brought them out before the abandonment; how much less chance, then, with none to manage them, we leave others to judge.

N. GARDNER, of Deadwood, reports that the Black Hills mining company's quartz mill commenced operation on the 16th inst. On the following day they ran through seven tons of ore from the Hidden Treasure lode, which cleaned up $5,000. Gulch mining is still in operation, and the quartz mines are showing better results every day.

THE sales of stocks in the San Francisco Board during the first nine months of the present year show an aggregate value of $174,872,575, or over $11,000,000 more than for the like period in 1875; $20,000,000 more than for the same time in 1374, and $80,000,000 more than in 1873.

MR. E. G. GAERTNER has filed his bond and taken oath of office as U. S. Mineral Surveyor for Arizona.

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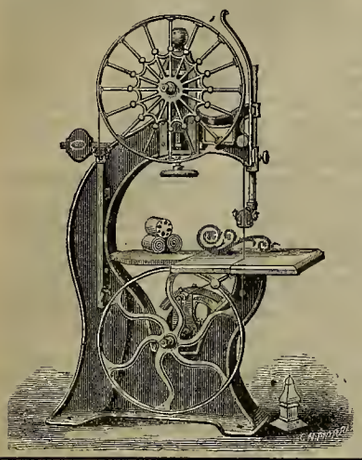

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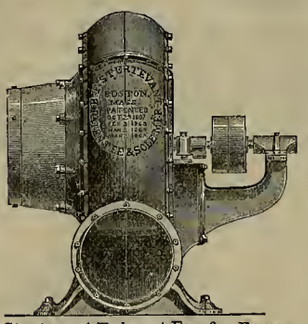

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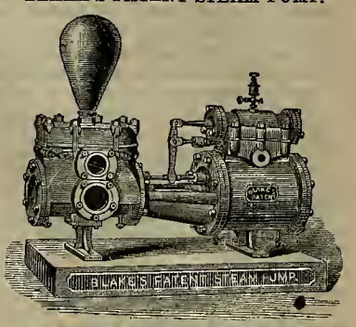

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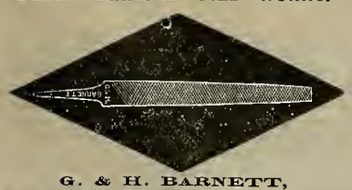

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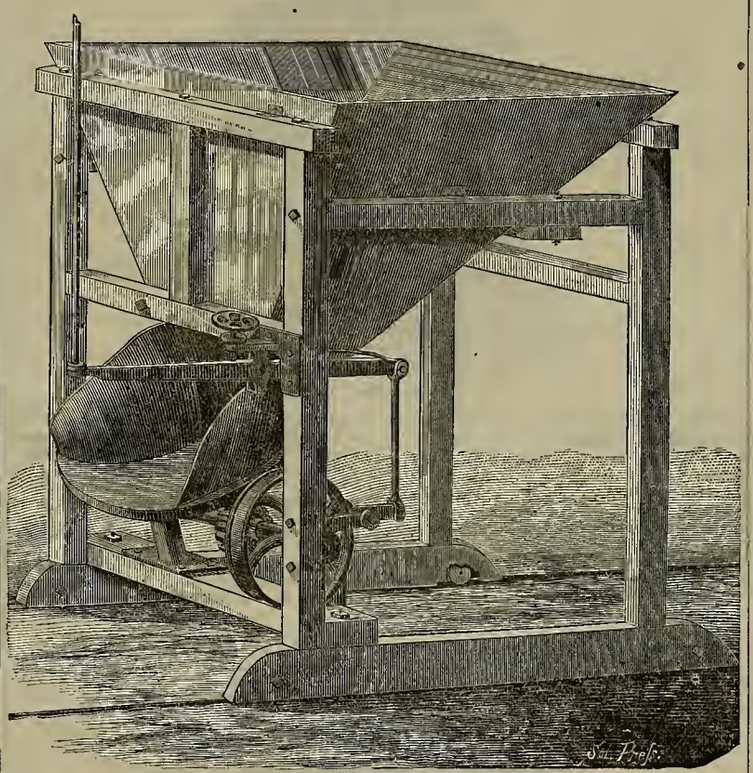

It may be considered as now fully demonetrated, by careful snd long-continued experimentation, that tbe plan upon whicb a perfect ore feeder must be constructed is that of tbe *carrier*, and not tbat of the shaking table. Uniform snd accurate feeding is not possible upon the latter plan. The ore must be evenly carried, upon a steadily advancing plane, or table, to tbe line of discbsrge, and tbere simply *dropped* Spasmodic or jerky contrivances will not answer tbe pnrpoee.

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A letter received from tbe Julian Mill, Newcastle, says, of tbe Table Feeder: "It is tbe most perfect Feeder we have ever seen; don't see how any mill can do without them."——A letter from Mr. C. C. Belding, of Amador County, speaks in the highest terms of tbem.——Two of tbe macbines were shipped to tbe Bunker Hill Mill, Amador County.—— Mr. Stevenson, of Boston Mill, Gold Hill, Nevada, saye tbey are tbe best Feeder he bss ever seen.——Mr. Lacbman, of the Soulsby Mill, Tuolumne County, says they work splendid; could not do better.——Two of tbe macbines were shipped to tbe California Company, Nevada City.——O. J. Garland, of Mosquito Gulch, Calaveras County, says: "I find them an excellent macbine."——S. D. B. Stewart, Supt. Lincoln Gold Mining Compsny, says they are a perfect success.——O. C. Hewitt, Supt. Keystone Mining Compsny, saye: "I csn safely recommend tbem to all millmen."

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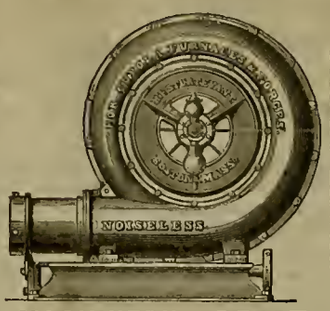

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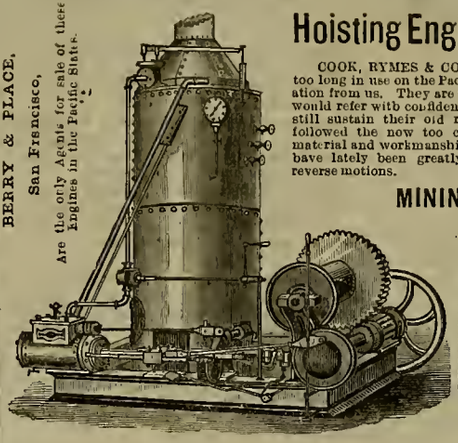

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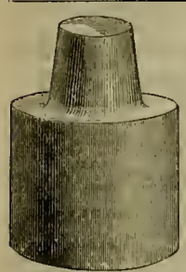

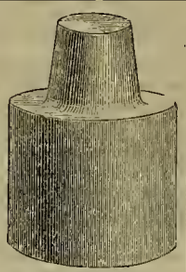

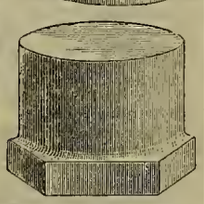

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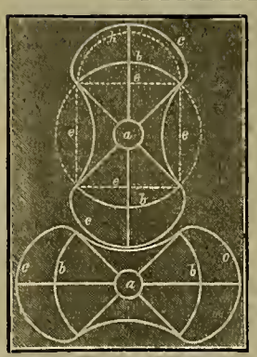

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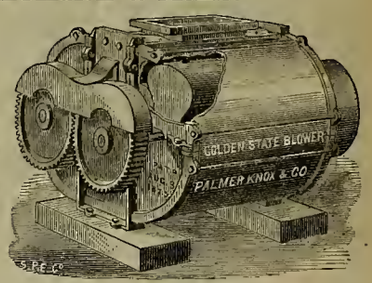

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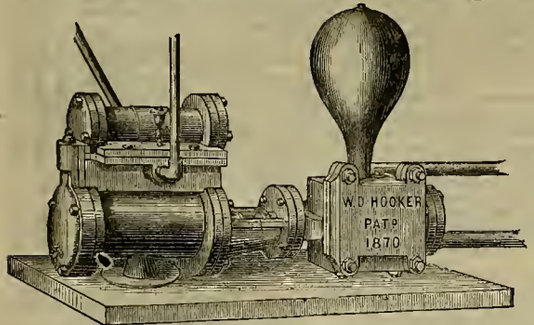

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(Continued from Page 286.)

EUREKA DISTRICT.

EUREKA CON.—Eureka *Sentinel*, Oct. 22: About 65 men are now employed at this mine. Work is being prosecuted mostly in the eighth and ninth levels, which, although not yielding at present sufficient ore to keep the furnaces running, present indications which justify the expectation, amounting almost to a certainty, that a large body of ore is near at hand.

THE FIRST DIVIDEND.—Capt. Taylor informs us that the proprietors of the Matamoras netted $14,000 in cold cash from the late short run of the new Matamoras furnace. This, he believes, is the finest dividend ever taken to Chicago from a mining venture, and it will doubtless have a tendency to place our camp in a favorable light before the speculative people of the Lake city. Messrs. Steele & Co. departed for Chicago much pleased with the prospects of the Matamoras.

JERSEY DISTRICT.

LOOKING WELL.—*Silver State*, Oct. 21: S. J. Chambers, who arrived yesterday with mail and express matter from Jersey, informs us that the mine is looking well and the new whim works like a charm. The shaft will now be sunk deeper and the mine developed to a greater extent. The prospects are bright and everybody is hopeful.

Arizona.

BULLION.—Arizona *Miner*, Oct. 13: On Saturday last, Mr. Pletz sent in his weekly shipment of Peck bullion, viz: 3 bars, aggregate value, $5,645.62. And on Wednesday, from Swilling's mine at Black canyon, one bar, weighing 1,479.15 ounces, 959 fine, worth $1,833.99. Making the aggregate shipment of silver during the week $7,479.61. This latter bar is the product of five and a half tons of ore sent from Black canyon as an experiment. This mine only runs five stamps on silver ore, and for want of pan capacity they are only run in the day time, while it takes the whole 24 hours for the two pans to work up what the five stamps crush in 12 hours. The other five stamps are at work on gold-bearing rock from various localities.

GLOBE DISTRICT.—Los Angeles *Herald*, Oct. 21: From Col. T. Burgess, who has just returned from a four months' stay in Arizona, we yesterday gathered some interesting information concerning the reported fabulous wealth of the Globe district. Although no shafts have thus far been sunk deeper than ten feet, much of the rock taken out assays away up in the thousands. The valley, which is some ten miles long by two or three in width, is dotted over with monuments of claims set up by silver hunters. Col. Burgess stated that full preparations for developing the ore were in progress when he left, on the 13th of September. A stamp mill had just been brought in by Morell & Ketchum, of Silver City, which is probably in operation, and another was to be erected by Magruder & Fresh, of Georgetown. Reducing works will also be erected by Messrs. Kennedy & Beebe. Our informant confirmed the story reported some time since, of a young man who came into the district and made some remarkable finds by means of a crooked stick or wand, in a manner similar to the old method of finding places to dig for water.

Colorado.

BULLION.—Colorado *Miner*, Oct. 14: The Judd & Crosby works shipped, since last report, $13,375.

QUEEN OF THE WEST.—The Silver Fountain tunnel has just cut the vein at a depth of 600 feet. No stoping has been done, and the tunnel will be pushed ahead rapidly.

SILVER CLANGE.—The lessees, Morseman & Co., have in their lower level, adjoining Gen. Gilbert's workings, six to eight feet in width of scattered ore, rich streaks permeating crevice material, all of which pays to save. Little sorting is required, and the boys can break down large amounts of ore at a small expense.

CENTENNIAL AWARDS.—Clear Creek county's exhibit has received much favorable mention from Centennial visitors, and thus far has obtained the following medals and awards: For silver and lead ores, Dives mine, Baxter mine, Pelican mine, Coldstream mine and Hercules and Roe mine. At the head of the list of machinery for treating ores, we notice the award to Stephen R. Krom, New York, dry ore concentrators in two models, and one in full size and jaw breaker.

Idaho.

THE EMPIRE.—Owyhee *Avalanche*, Oct. 21: Work is progressing very favorably in this mine, and in the vicinity of the main ledge where operations have been recently carried on the developments are of the most satisfactory character. A prosperous business for the Empire for the coming winter months may be set down as a fixed fact.

Oregon.

QUICKSILVER. — Jacksonville *Times*, Oct. 17: The Emeline quicksilver mining company have selected and packed out one and a half tons of 60 per cent. ore, which they propose shipping to Oakland, Douglas county, Oregon. This is probably the richest lot of quicksilver ore ever taken out of the mine. The company has no concentrating apparatus and this ore has been picked out by hand. They have about 60 tons of ore on their dump, which will yield at least 15 per cent. The company contemplate taking in retorts in the spring by the way of Klamath river, Siskiyou county, California.

Utah.

TINTIC NOTES.—Salt Lake *Tribune*, Oct. 21: Mr. Richard Gough, of Tintic, favored us with a pleasant call last evening. He brings favorable reports from his district of the mining interests there. Some 12 or 15 mines are taking out ore enough to pay expenses, and others are coining money. There are no idle men in the district, the weather is yet pleasant and business is generally good.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

COVE M. CO.—October 23d. Location: California. Capital stock, $10,000,000. Directors—A. Blatchley, C. Hawley, T. Prince, F. McCann and John O'Drane.

LOMA LARGA M. CO.—October 22d. Location: California and Republic of Salvador, Central America. Capital stock, $12,000,000. Trustees—Edward L. G. Steele, Jose Maria Monteliegre, George A. Moore, Adolfo Urtosk and John Hewston.

PHŒNIX PETROLEUM CO.—October 25th. Object: To bore for petroleum oil in Los Angeles, Ventura and other counties of California. Capital stock, $5,000,000. Trustees—Dorville Libby, Z. E. Britton, Henry Kimball, T. F. Palmer, E. P. Gray, George S. Thurston and Joseph Pentecost.

Meetings and Elections.

LORD & ROBINSON M. CO.—Oct. 20th. Trustees: S. Heydenfeldt (President), Jas. Phelan (Vice President), J. G. Riley, D. B. Francis and W. B. Murdoch. H. S. Healy, Secretary.

COOK & GRAY M. CO.—Oct. 20th. Trustees: S. Heydenfeldt (President), Jas. Phelan (Vice President), J. G. Riley, D. B. Francis and W. B. Murdoch. H. S. Healy, Secretary.

PLUTUS G. & S. M. CO.—Oct. 20th. Wm. Jay Smith, President; Jno. Brunner, Vice President; H. A. M. Thee, Treasurer, and E. A. Peck, Secretary.

WASHOE WATER AND GRAVEL M. CO.—C. W. Carter, President; O. H. Nelson, Vice President; W. L. Ustick, Secretary, and Merchants' Exchange Bank, Treasurer.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING OCTOBER 17TH, 1876.

SEWER TRAPS.—Thomas Gnerin, S. F.

BOTTLE AND CUP STOPPERS.—Carlton Newman, S. F.

EXCAVATOR AND DUMPING CARTS.—Jacob Price, San Leandro, Cal.

PLASTER CEILINGS, CORNICES, ETC.—Thomas P. Cleary, S. F.

PROCESS OF REFRIGERATION.—Robert H. Lucas, S. F.

WATER METERS.—Sebastian Plymale, Portland, Ogn.

——"The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Hendy's Ore Feeder.

The Hendy ore feeder, which we described in detail not long since, is being extensively introduced among the mills on this coast, and wherever used gives good satisfaction. The feeder is constructed in such a manner as to cause a perfect and uniform feeding of ore to the stamps. It is constructed on the plan of a carrier, and not that of a shaking table. The latter, it is claimed by some, does not feed regularly wet or dry, fine or coarse ores, and Mr. Hendy claims that the carrier table overcomes these objections.

Mr. Hendy's confidence in the superiority of his machine is expressed in the name he has given it. By the "$1,000 Challenge ore feeder" is meant that Mr. Hendy challenges all owners of ore feeders of any description whatever to a test trial for that or any other sum. The only conditions exacted are that the machines shall be subjected to every kind of rock, or whatever may come in contact in the general use of ore feeders, and that the decision shall be left to the judgment of disinterested mill owners; moreover, that the test shall be carried out at a quartz mill, and continued for a period of days or weeks. Concerning the controversy with Stanford—inventor of a feeder of that name—Mr. Hendy makes a statement to us substantially as follows: When Mr. Hendy invented his machine he used the adjustable lever invented by Stanford, thinking the latter's patent covered only a combination. On consultation, however, he found Stanford's claim to the adjustable lever to be valid. He accordingly purchased Stanford's patent outright for $3,000, giving him $2,950—$50 being discounted for cash. Then, owning the Stanford patent on the adjustable lever, he proceeded to manufacture the improved feeder. Not long after, however, he found that Stanford had another feeder, and was practically using the device the patent for which he had sold to Hendy, thereby being in the position of an infringer on his own patent. This is in substance the cause of the controversy which has been carried on in the newspapers. We should judge, however, that the proper place to settle any such dispute would be in the courts. Mr. Stanford, for reasons best known to himself, has, as will be seen by the advertisement of Mr. Hendy in another column, thus far declined to accept the challenge offered to him, and so the matter stands.

COST OF WORK IN MINES.—The following extract from the official letter of the superintendent of the Manhattan mine will give those not familiar with the subject an idea of the cost of running underground work: The following is a summary of the workings for the last week: Bowman incline—570 square feet were breasted on the Panamint, at a cost of 95 cents per square foot; 90 square feet on the S. Panamint, at a cost of $1 33 per foot; 250 square feet on the 500-foot level, at a cost of 30 cents per square foot. The cross-cut at the head of the double chute was run 10 feet, on day pay, at a cost of $4 per foot. West drift in incline No. 2, N. Panamint, was extended 11 feet, at a cost of $4.36 per foot; chute No. 2, N. Panamint, was raised 10 feet, at a cost of $4 80 per foot. The Paxton east drift was extended 14 feet, at a cost of $3 42 per foot. Parrish east drift was extended 4 feet, at a cost of $4 per foot—the above are all on day pay. The N. Panamint drift was carried forward on contract 14 feet since the 4th inst., at $5.90 per foot, netting contractors $2.95 per day. Frost shaft, 615 square feet were breasted on the Independence ledge, above the 370-foot level, at a cost of 80 cents per square foot. At the 500-foot level 620 feet were breasted, at a cost of 74 cents per foot. On 260-foot level, North Star ledge, 120 square feet were breasted, at a cost of $1.50 per foot. The 260 east drift was extended 6 feet, at a cost of $8 per foot; 375-foot east drift 12 feet, at $3.33 per foot; the 500-foot east drift 11 feet, at $8.72 per foot, all on day pay. The 300-foot cross cut was run 13 feet on contract at $7 per foot, netting contractors $9.10 per day. During the past week the 570-foot cross-cut was run 8 feet, on contract at $9 50 per foot, netting contractors $3.30 per day. The 517-foot cross-cut of the Curtis shaft was run 19 feet on day pay at a cost of $7.57 per foot.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

General News Items.

A THREE days' battle last week resulted in a victory for the Turks.

GOVERNOR IRWIN has decided that an extra session of the legislature is not necessary.

THE fire in the Wellington mine, British Columbia, is reported extinguished. The damage is great.

THE French senate have voted 6,000,000 francs toward the construction of a building for a world's fair, to be held in Paris in 1878.

H. C. BENNETT, the defaulting pension agent, arrived here from Colorado on Saturday in charge of a deputy United States marshal.

WM. T. COLEMAN has been elected President of the Society of California Pioneers, vice James Lick, deceased.

A DISPATCH from Rome says all the cardinals residing abroad are expected there to discuss the important propositions offered by the congregations.

IT is announced that the British government intend to present St. George's house, at the Centennial grounds, to the city of Philadelphia at the close of the exhibition.

THE operative cotton spinners of Blackburn have decided to withdraw their notices, and practically the dispute in north and northwestern Lancashire, England, is at an end.

THE taxes of 1876–77 in this county are now payable. The rate is $2.12½, which is unusually high. After the first Monday in January 5 per cent. will be added on all taxes then unpaid.

THE engineers and firemen on the New Jersey Central railroad struck work at 12 o'clock Monday night. Wherever the trains happened to be the engineers dumped their fires, and the men left the engines.

REVENUE agent, Alvin B. Clark, on his arrival in Washington, and reporting to the department was discharged from the service by order of the President. The grounds for the dismissal are not made public.

A CHANGE is to be made in the office of Chief of the Detective Corps of the Treasury, the resignation of Elmer C. Washburne, the present head of that organization, having been requested.

DR. WILLIAM T. LUCKY, who died in this city on Saturday, was well known in educational circles in California, having been for a number of years principal of the State normal school, and latterly principal of the Los Angeles high school. His age was 55 years.

A DISPATCH received at the Merchants' Exchange yesterday morning reports that the steamer *Fidelitier* went ashore at Cuffey Cove on Tuesday. Her propeller shaft and foremast have been broken. The steamer *San Vicente* has sailed hence to render assistance.

THE residence of the late W. C. Ralston, at the corner of Pine and Leavenworth streets, it is said, has been leased to a New York firm for a term of years, and that it is the intention of the new lessees to refit it with furniture similar to that of the Palace hotel, and utilize it as a large boarding house.

THE sub-treasury in this city on Tuesday disbursed $45,000 in silver coin. The silver was not paid out in the redemption of greenbacks or fractional currency, but paid in part liquidation of checks against the Government. The amount of silver paid was 25 per cent. on each check.

A CALCUTTA dispatch to the *Times* states that the prospect for crops in Bombay becomes daily more gloomy. Seven districts, containing a population of nearly 6,000,000, are threatened with severe distress. The local government estimates that over 200,000 persons must be relieved in these districts alone. It is stated that the Monsoon crops have entirely failed, and the absence of rain prevents the collection of the rabbar and winter crops. The collector of Poonah reports that not a single blade of grass is visible for miles. Tanks and rivers are drying up and cattle dying from starvation. The collector at Singapore gives a still worse report. The government has opened relief works, and is employing people in excavating tanks and making roads.

THE Mackey & Fair tailings flume, to carry the slums from the Consolidated Virginia and California mills to the Ophir mill on the Carson river, will be eight miles long.

LEATHER.

[WHOLESALE.]

WEDNESDAY M., Oct. 25, 1876.

Sole Leather, heavy ₰ lb	25@ —
do light ₰ lb	25@ —
Jodot, 8 Kil., per doz	48 00@ 50 00
Jodot, 11 to 13 Kil., per doz	68 00@ 70 00
Jodot 14 to 19 Kil., per doz	82 00@ 84 00
Jodot, second choice, 11 to 16 Kil. ₰ doz	57 00@ 74 00
Cornellian, 12 to 16 Ko	57 00@ 67 00
Cornellian Femalee, 12 to 13 Kil	63 00@ 67 00
Cornellian Femalee, 14 to 16 Kil	71 00@ 76 50
Simon Ullmo Females, 12 to 13, Kil	58 00@ 62 00
Simon Ullmo Females, 14 to 15, Kil	66 00@ 70 00
Simon Ullmo Females, 16 to 17, Kil	72 00@ 74 00
Simon, 18 Kil., ₰ doz	61 00@ 63 00
Simon, 20 Kil. ₰ doz	65 00@ 67 00
Simon, 24 Kil. ₰ doz	72 00@ 74 00
Robert Calf, 7 and 9 Kil	35 00@ 40 00
French Kips, ₰ lb	1 00@ 1 35
California Kip, ₰ doz	40 00@ 48 00
French Sheep, all colors, ₰ doz	8 00@ 15 00
Eastern Calf for Backs, ₰ lb	1 00@ 1 25
Sheep Roans for Topping, all colors, ₰ doz	9 00@ 13 00
Sheep Roans for Linings, ₰ doz	5 50@ 10 50
California Russett Sheep Linings	1 75@ 4 50
Best Jodot Calf Boot Legs, ₰ pair	5 00@ 8 25
Good French Calf Boot Legs, ₰ pair	4 00@ 4 75
French Calf Boot Legs, ₰ pair	4 00@ —
Harness Leather, ₰ lb	24@ 32½
Fair Bridle Leather, ₰ doz	48 00@ 72 —
Skirting Leather, ₰ lb	33@ 37½
Welt Leather, ₰ doz	30 00@ 50 00
Buff Leather, ₰ foot	17@ ¼
Wax Side Leather, ₰ foot	17@ —

METALS.

[WHOLESALE.

THURSDAY, M., Oct. 26, 1876.

American Pig Iron, ₰ ton	32 00 @ — —
Scotch Pig Iron, ₰ ton	31 50 @ 32 00
White Pig, ₰ ton	40 00 @ 50 00
Oregon Pig, ₰ ton	31 50 @ 32 50
Refined Bar	— — @ — 4¼
Boiler, No. 1 to 6	— — @ — 5
Plate, No. 5 to 9	— — @ — 5½
Sheet, No. 10 to 14	— — @ — 5¾
Sheet, No. 16 to 20	— 5¾ @ — —
Sheet, No. 22 to 24	— 6 @ — —
Sheet, No. 26 to 28	— 6¾ @ — —
Horse Shoes, per keg	7 00 @ 8 50
Nail Rod	— 10 @ — —
Norway Iron	— 8½ @ — 9½
Rolled Iron	— 6 @ — 8
Other Irons for Blacksmiths, Miners, etc.	— — @ — 4¼
COPPER.—	
Copper Tin'd	— 37 @ — 40
Sheathing, ₰ lb	— 24 @ — 40
Sheathing, Yellow	— 21 @ — 22½
Sheathing, Old Yellow	— 10 @ — 11
Composition Nails	— 21 @ — —
Composition Bolts	— 24 @ — —
STEEL.—English Cast, ₰ lb	— 20 @ — 25
Anderson & Woods' ordinary sizes	— — @ — 15
Drill	— — @ — 16½
Flat Bar	— 16 @ — 20
Plow Steel	— 8½ @ — 9
TIN PLATES.—	
10x14 I C Charcoal	11 00 @ — —
10x14 I X Charcoal	13 00 @ — —
Roofing Plate I C Charcoal	10 00 @ 10 50
Banca Tin	— 24 @ — —
Australian	— 25 @ — —
ZINC.—By the Cask	— — @ — 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₰ lb	— — @ — 11
do do 7x3 ft, No 11 to 14	— — @ — 11½
do do 8x4 ft, No 8 to 10	— — @ — 12½
do do 8x4 ft, No 11 to 16	— — @ — 12
NAILS Assorted sizes	3 60 @ 3 75
QUICKSILVER, per ₰	— 40 @ 45 —

GENERAL MERCHANDISE.

WHOLESALE.]

WEDNESDAY M., Oct. 25, 1876.

BAGS.

Eng. Stand Wht.. 10 @11	
Neville & Co's...	— @ —
Hand Sewed.... 10 @11	
24x36..... — @—	
24x40..... — @—	
Machine do 22x40. — @15½	
" " 22x40. 14½@—	
" " 22x40. 13 @—	
" " 22x36. 9½@10½	
Flour Sacks ¼e... 9 @11	
" " ⅛e..... 8 @ 7	
" " ¼s..... 4½@ 5	
Hessian 60-in.... 12¾@14½	
do 45-in..... 10 @—	
do 40-in..... 8½@—	
Wool Sacks, 3½ lbs. 45 @50	
do 4 " 50 @52½	
Stand. Gunnies... 11½@12	
single seam do.. — @—	
Bean Bags..... 7 @ 8	

CANNED GOODS.

Assd'd Pie Fruits	
in 2¼ ₰ cans. 2 75 @ 3 60	
do Table do...3 75 @ 4 25	
Jams & Jellies 4 25 @ —	
Pickles ¼ gl... — @ 3 50	
Sardines, qr box 1 65 @ 1 50	
do hf boxes 3 00 @— —	

COAL—Jobbing.

Australian, ₰ ton 8 75 @ 9 00	
Coos Bay..... — @ 9 00	
Bellingham Bay.— @ 9 00	
Seattle..... — @ 9 00	
Cumberl'd.....14 00 @16 00	
Mt. Diablo..... 5 75 @7 75	
Lehigh..... — @22 00	
Liverpool..... 8 50 @10 00	
West Hartley.... — @14 00	
Scotch..... 9 00 @10 00	
Scranton..... 13 00 @16 00	
Vancouver's Isl. 10 50 @12 00	
Charcoal, ₰ bbl.... 75 @—	
Coke, ₰ bbl..... — @ 60	

COFFEE.

Sandwich Island — @ 21½	
Costa Rica per ₰ 21½@—	
Guatemala..... 20½@ 21	
Java..... — @ 24	
Manilla..... — @ 19	
Ground in cs.... 25 @—	
Chicory..... 27 @—	

FISH.

Sac. Dry Cod, new 5½@ 6½	
cases.... 6 @ 7½	
do bonelees.... 8½@ 10	
Eastern Cod.... 8 @ 9½	
Salmon in bbls.. 6 50 @7 25	
do ½ bbls 3 75 @4 00	
do 2 ₰ cans.. 2 40 @—	
do 1 ₰ cans.. 1 20 @—	
do Cod. R. ½ s. 4 25 @4 50	
Pick. Cod, bbls. 22 00 @—	
do ½ bbls 11 00 @—	
Mack'l, No. 1, ½ bbls 11 00 @—	
" Extra.... — @12 00	
" in kits.... 1 90 @2 25	
" Ex mess.. 3 50 @4 00	
" Ex mess, ½ bs — @12 00	
Pio'd Herr'g, hx.. 3 00 @ 3 50	
Boe. Sm'k'd Hsr'g 40 @ 50	

LIME, ETC.

Lime, S'ta Cruz, ₰ bbl..... 2 00@ 2 25	
Cement, Rosendale, do..... 2 75@ 3 50	
do Portland do 4 75@ 5 50	
Plaster, Golden Gate Mills.... 3 00@ 3 25	
Land Plaster, ₰ ton..... 10 00@12 50	

MISCELLANEOUS.

Pulu..... @ 7½	

NAILS.

Assorted size, keg 3 25 @4 00	

OILS.

Pacific Cline Co	
Neat F't No. 1.1 00 @ 90	
Pure..... @ —	
Crescent Oil, No. 1 05 @1 10	
Baker's A A..... @1 10	
Cocoanut..... — @ 60	
Olive Plagniol..4 85 @5 00	
do Possel..... 4 45 @4 50	
Palm ₰..... 9 @ —	
Linseed, raw.... — @ 65	
do boiled.... — @ 70	
Ohina nut in oc.. 65 @ 70	
Sperm..... 2 00@—	
Coast Whalee.. 60 @ 65	
Polar, refined.. — @ 60	
Lard..... 1 15@1 17½	
Oleophine..... — @ 37	
Devoe's Bril't... 38 @ 39	
Eureka..... 32½@ 38	
Barrel kerosene 32½@ —	
Downer Kerose'e 45 @ —	
Elaine..... — @ 42	

PAINTS.

Pure White Lead 9¾ @10¼	
Mixing..... — @ 7¾	
Putty..... 4 @ 5	
Chalk..... — @ 1½	
Paris Whites.... — @ 2½	
Ochre..... — @ 3½	
Venetian Red.... — @ 3½	
Averill Chemical Paint, per gal. White & tinte. 2 00 @2 40	
Green, Bins & Ch Yellow.. 3 00 @3 50	
Light Red.....3 00 @3 50	
Metallic Roof.1 30 @1 60	

RICE.

China No. 1..... 5¾@ 8	
Hawaiian, ₰ lb... 7 @ —	
Carolina, ₰ lb.... 10 @ —	

SALT.

Cal. Bay, per ton 10 00@14 00	
do Ocmon.... 9 00@10 00	
Carmen Island..12 00@15 00	
Liverpool fine..13 50@16 59	

SOAP.

Castile ₰ lb.... 10 @ 10½	
Common brands.. 4½@ 6	
Fancy do 7 @ 8	

CANDLES.

Grant's..... 16 @ 16½	
Mitchell's..... 18 @ 20	

SPICES.

Cloves ₰ lb..... 45 @ 47½	
Cassia..... 23½@ 26¾	
Citron..... 28 @ 30	
Nutmeg..... 95 @ 97½	
Whole Pepper... 14¾@ 17½	
Pimento..... 18 @ 17½	
Gr'nd Allspice.. — @1 12	
do Cassia do .. — @1 50	
do Cloves do.. — @1 50	
do Mustard do — @1 20	
do Ginger do.. — @1 00	
do Pepper do.. — @1 00	
do Mace do.... — @2 00	
Bowen's Pure Ground ₰ lb — @ 50	

SUGAR, ETC.

Cal. Cube per lb.. — @ 12¼	
Circle A crushed — @ 12	
Powdered..... — @ 12¼	
Fine crushed.... — @ 12¾	
Granulated..... — @ 11¾	
Golden C..... — @ 10¾	
Hawaiian Plantation 10 @ 11	
Cal. Syrup in kgs — @ 67½	
Hawaiian Molasses..... 25 @ 27½	

TEA.

Oolong, Canton, ₰ lb 19 @ 25	
do Amoy.. 28 @ 50	
do Formosa 40 @ 80	
Imperial, Canton 25 @ 40	
do Pingsuey 45 @ 80	
do Moyune.. 80 @ 1 00	
Cmnpo'der, Cant. 75 @1 00	
do Pingsuey 50 @ 90	
do Moyune. 65 @1 25	
Ying Hy, Canton 25 @ 40	
do Pingsuey 50 @ 70	
do Moyuns.. 65 @ 87	
Japan, ½ chests, bulk..... 30 @ 75	
Japan, lacquered kegs, 4½ and 5 lbs 45 @ 67	
Japan do, 3 lb hxe 45 @ 60	
do pl'n bx, 4½ lb 35 @ 65	
do ½ & 1 lb paper 30 @ 55	

TURPENTINE.

Eastern..... 60 @ 65	

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, Oct. 25, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 91¼ to 91¾. Silver 5⅞@6¾.

GOLD in N. Y., 109¾.

GOLD BARS, 880 to 890. SILVER BARS, 12@20 per cent. discount.

EXCHANGE on N.Y., 50@55–100 per cent. premium for gold; on London bankers, 49¼; commercial, 49¼; Paris, five francs per dollar; Mexican dollars, 7 per cent. discount.

LONDON — Consols, 96⅛; Bonds, 102⅜

QUICKSILVER in S. F., by the flask, per ₰, 45.

Proof Positive of Paul's Process.

I hereby certify that I worked 228 tons of heavy sulphureted gold ore by Paul's dry process, which gave a yield of $15,373.71 ($67.42 per ton), and as high as 85 per cent. of assays. I do not hesitate to say that the process will produce, taking the average of California ores, from 80 to 90 per cent. by practical working.

CORTLAND WOON.

Thanks for Prompt Attention.

STOCKTON, June 26, 1875.

Messrs. Dewey & Co., S. F.:

I have received the patent for my invention in wagon brakes, which you prosecuted for me; patented May 11, 1875—No. 163,046. Thanks to you for your prompt attention to the case; you will hereafter be my attorneys in such cases. I recommend all inventors on the Pacific coast to give you a call, which I think they will never have any cause to regret. Very truly yours,

GEO. G. BUCKLAND,
Stockton, Cal.

DEWEY & CO.

U. S. and Foreign

Patent Agents,

No. 224 Sansome St.

SAN FRANCISCO.

To Inventors.

To secure the services of able, reliable and every way efficient attorneys to properly prepare and present the case of an applicaot for a patent at Washington, is an important item with those who have important inventions. It is not always that young inventors know just where to find such agents. Dewey & Co., the publishers of this paper, have been the leading patent solicitors in the United States west of the Mississippi for over twelve years past. Their specifications and principal business is done by able and experienced partners in the firm. They refer with pleasure to thousands of patentees for whom they have secured valued patents. Their pamphlet circular, containing hints and information to inventors, will be sent free on application at the office, No. 224 Sansome street, S. F.

The Scientific Press Engraving Company.

As has been announced in our columns, this company is prepared to do fine wood engraving on favorable terms. Mr. E. Schultze, managing partner, served a thorough tuition in his branch of art in Germany and New York, and has since had over seven years' experience in designing, drawing and engraving in California. Customers can place their orders in Mr. Schultze's hands with the full assurance of receiving satisfaction as to quality of work and fairness of price.

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The Large Circulation of the MINING AND SCIENTIFIC PRESS extends throughout the mining districts of California, Nevada, Utah, Colorado, Arizona, Idaho, Montana, British Columbia and to other parts of North and South America. Established in 1860, it has long been the leading Mining Journal of the Contioent, its varied and reliable contents giving it a character popular with both its reading and advertising patrons.

SANTA CLARA, CAL., April 6th, 1875.

MESSRS. DEWEY & CO.—*Gents:*—We have just received Patent No. 160,545, for J. T. Watkins & Co's Mammoth Road Grader, which was patented through your Agency. It is the neatest and best that we have ever received. We feel proud of it and thankful to you for the care and attention that you have given it, and when we have anything to do in that line of business we will surely give you a call. Very respectfully,

J. T. WATKINS & Co.

WOODLAND, CAL., Aug. 8th, 1876.

MESSRS. DEWEY & CO.—*Gents:* Your letter containing the patent for my Centennial churn has come duly to hand, and you will please accept my many thanks for the prompt manner in which you attended to the business intrusted to your care, and I will take great pleasure in recommending you to any one having anything to attend to in your line. I am having a number of the churns put up, which will be ready for sale in a few weeks. Yours truly, JAMES ROOT.

MESSRS. DEWEY & CO., San Francisco:—Please find enclosed post-office order, for which please send MINING AND SCIENTIFIC PRESS. I have been a close reader of the PRESS for three years, and regard it as the foremost mining periodical in the Union. I am glad to notice the circulation of the PRESS is increasing here and is highly prized by our best mining men. H. P. Central City, Colorado.

GOOD PRINTING INK.—We prefer Chas. Eneu Johnson's printing inks, having need them on this paper for the past four years. H. S. Crocker & Co., printers, stationers, blank book and paper dealers, are Johnson's S. F. agents.—DEWEY & Co., Publishers.

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MINING ENGINEER AND METALLURGIST.

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This work is unequaled by any other published, embracing the subjects treated. Its authority is highly steemed and regarded by its readers; containing, as it does, much essential information to the Miner, Millman, Metallurgist, and other professional workers in ores and minerals, which cannot be found elsewhere in print. It also abounds throughout with facts and instructions rendered valuable by being clearly rendered together and in simple order. It contains 120 diagrams, illustrating machinery, etc., which alone are of the greatest value. PRICE REDUCED TO $5.

IMPROVED.—Dewey & Co., publishers of the MINING AND SCIENTIFIC PRESS and the RURAL PRESS, now have the leaves of both these sixteen page sheets cut and stitched, which is an improvement that all readers of that otherwise inconvenient form of journal will appreciate very much. Every farmer would be a gainer were he to subscribe for the RURAL. It is decidedly a valuable paper, and the SCIENTIFIC PRESS is no less so to mining men.—Inyo Independent.

$1,000 CHALLENGE ORE FEEDER.

Backward in coming forward—C. P. Stanford fails to come to time on the challenge of $1,000 to test the merits of his ore feeder as against mine. The challenge is still open to him or any one else. Gentlemen, put up or shut up. JOSHUA HENDY,

49 and 51 Fremont street.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Office Cascade Blue Gravel Mining Company—NOTICE:—A meeting of the stockholders of the Cascade Blue Gravel Mining Company will be held at the office of the company, 311 California street, rooms 3 and 4, second floor, San Francisco, Cal., on Monday, November 20th, 1876, at two o'clock P. M., for the purpose of disposing of the company's stock, and authorizing the sale of the entire property of the company, with any other business that may come before said company. R. F. KNOX, President,

J. M. BUFFINGTON, Secretary.

San Francisco, Oct. 13th, 1876.

Eagle Quicksilver Mining Co.—Location of works Santa Barbara county, Cal. Principal place of business, San Francisco, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 30th day of September, 1876, an assessment (No. 9) of two hundred and fifty ($250) dollars per share was levied upon all the shares of said company, payable immediately, in gold coin of the United States, to the Secretary, at his office, rooms 5 & 6, No. 302 Montgomery street, San Francisco, Cal.

Any shares upon which said assessment shall remain unpaid on Wednesday, the 25th day of November, 18 6, shall be deemed delinquent, and will be duly advertised on Saturday, the second day of December, 1876, for sale at public auction, and unless payment shall be made before, will be sold on Monday, the fourth day of December, 1876, as provided by the articles of agreement of said company, to pay the delinquent assessment, together with cost of advertising and expense of sale. By order of Board of Trustees. WM. H. WATSON, Secretary.

Mariposa Land and Mining Company of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 7), levied on the seventh day of September, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

COMMON STOCK.

Name.	No. Certificate.	No. Shares.	Amount
Adams, Thomas	A 4	60	$ 50 00
Brumagim, J H	unissued	550	650 00
Brumagim, J H	426	25	25 00
Brumagim, J H	427	25	25 00
Brumagim, J H	1112	100	00 00
Brumagim, J H	1113	100	100 00
Brumagim, J H	1114	100	100 00
Brumagim, J H	1117	100	100 00
Brumagim, J H	1118	100	100 00
Brumagim, J H	1119	100	100 00
Brumagim, J H	1121	100	100 00
Bound & Co	unissued	600	600 00
Brumagim, Linda Queen	A 1	1	1 00
Brumagim, Stuart	A 2	1	1 00
Brumagim, Fred P	1270	100	100 00
Brumagim, Fred P	1271	100	100 00
Brumagim, Fred P	1272	100	100 00
Brumagim, Fred P	1273	100	100 00
Brumagim, Fred P	1274	100	100 00
Brumagim, Fred P	1275	100	100 00
Brumagim, Fred P	1276	100	100 00
Brumagim, Fred P	1277	100	100 00
Brumagim, Fred P	1278	100	100 00
Brumagim, Fred P	1279	100	100 00
Brumagim, Fred P	1280	100	100 00
Brumagim, Fred P	1281	100	100 00
Brumagim, Fred P	1282	100	100 00
Brumagim, Fred P	1283	100	100 00
Brumagim, Fred P	1284	100	100 00
Brumagim, Fred P	1285	100	100 00
Brumagim, Fred P	1286	100	100 00
Brumagim, Fred P	1287	100	100 00
Brumagim, Fred P	1288	100	100 00
Brumagim, Fred P	1289	100	100 00
Brumagim, Fred P	1290	100	100 00
Brumagim, Fred P	1291	100	100 00
Brumagim, Fred P	1292	100	100 00
Brumagim, Fred P	1293	100	100 00
Brumagim, Fred P	1294	100	100 00
Brumagim, Fred P	1295	100	100 00
Brumagim, Fred P	1296	100	100 00
Brumagim, Fred P	1297	100	100 00
Brumagim, Fred P	1298	100	100 00
Brumagim, Fred P	1299	100	100 00
Brumagim, Fred P	1300	100	100 00
Brumagim, Fred P	1301	100	100 00
Brumagim, Fred P	1302	100	100 00
Brumagim, Fred P	1303	100	100 00
Brumagim, Fred P	1304	100	100 00
Brumagim, Fred P	1305	100	100 00
Brumagim, Fred P	1306	100	100 00
Brumagim, Fred P	1307	100	100 00
Brumagim, Fred P	1308	100	100 00
Brumagim, Fred P	1309	100	100 00
Brumagim, Fred P	1310	100	100 00
Brumagim, Fred P	1311	100	100 00
Brumagim, Fred P	1312	100	100 00
Brumagim, Fred P	1313	100	100 00
Brumagim, Fred P	1314	100	100 00
Brumagim, Fred P	1315	100	100 00
Brumagim, Fred P	1316	100	100 00
Brumagim, Fred P	1317	100	100 00
Brumagim, Fred P	1334	100	100 00
Brumagim, D Walton	A 9	2	2 00
Castelano & Co, A V	60	100	100 00
Castelano & Co, A V	65	100	100 00
Close, David	346	100	100 00
Colbrou, W T	473	100	100 00
Colbron, W T	474	100	100 00
Dunnell, T L	unissued	25	25 00
Govanter, J A	44	100	100 00
Holmes, A B, Jr	unissued	100	100 00
Hallgarten & Co	unissued	50	50 00
Holmes, P W	432	1	1 00
Hamburger, J C	438	50	50 00
Hoyt, E P	1223	100	100 00
Hoyt, E P	1224	100	100 00
Hoyt, E P	1225	100	100 00
Kennedy, Hutchinson&Co	476	100	100 00
Kenedy, Hutchinson&Co	1207	100	100 00
Kennedy, Hutchinson&Co	1208	100	100 00
Loth, M	411	50	50 00
Loth, M	412	50	50 00
Moore, Silas H	1215	100	100 00
Moore, Silas H	1216	100	100 00
Rodwell, C M	1132	100	100 00
Rodwell, C M	1133	100	100 00
Rodwell, C M	1134	100	100 00
Rodwell, C M	1135	100	100 00
Rodwell, C M	1136	100	100 00
Rodwell, C M	1137	100	100 00
Rodwell, C M	1138	100	100 00
Rodwell, C M	1139	100	100 00
Rodwell, C M	1140	100	100 00
Rodwell, C M	1141	100	100 00
Rodwell, C M	1142	100	100 00
Rodwell, C M	1143	100	100 00
Rodwell, C M	1144	100	100 00
Rodwell, C M	1145	100	100 00
Rodwell, C M	1146	100	100 00
Rodwell, C M	1147	100	100 00
Rodwell, C M	1148	100	100 00
Rodwell, C M	1149	100	100 00
Rodwell, C M	1150	100	100 00
Rodwell, C M	1151	100	100 00
Rodwell, C M	1152	100	100 00
Rodwell, C M	1153	100	100 00
Rodwell, C M	1154	100	100 00
Rodwell, C M	1155	100	100 00
Rathborne, R Wm	117	100	100 00
Rathborne, R Wm	119	100	100 00
Rathborne, R Wm	120	100	100 00
Rathborne, R Wm	121	100	100 00
Rathborne, R Wm	123	100	100 00
Rathborne, R Wm	124	100	100 00
Rathborne, R Wm	125	100	100 00
Rathborne, R Wm	126	100	100 00
Rathborne, R Wm	127	100	100 00
Rathborne, R Wm	128	100	100 00
Rathborne, R Wm	129	100	100 00
Rathborne, R Wm	130	100	100 00
Rathborne, R Wm	131	100	100 00
Rathborne, R Wm	132	100	100 00
Rathborne, R Wm	142	100	100 00
Rathborne, R Wm	143	100	100 00
Rathborne, R Wm	144	100	100 00
Rathborne, R Wm	145	100	100 00
Rathborne, R Wm	146	100	100 00
Rathborne, R Wm	424	25	25 00
Rathborne, R Wm	158	100	100 00
Rathborne, R Wm	159	100	100 00
Rathborne, R Wm	160	100	100 00
Rathborne, R Wm	174	100	100 00
Rathborne, R Wm	177	100	100 00
Rathborne, R Wm	181	100	100 00
Rathborne, R Wm	182	100	100 00
Rathborne, R Wm	183	100	100 00
Rathborne, R Wm	184	100	100 00
Rathborne, R Wm	185	100	100 00
Rathborne, R Wm	186	100	100 00
Rathborne, R Wm	187	100	100 00
Rathborne, R Wm	188	100	100 00
Rathborne, R Wm	189	100	100 00
Rathborne, R Wm	190	100	100 00
Rathborne, R Wm	195	100	100 00
Rathborne, R Wm	203	100	100 00
Rathborne, R Wm	206	100	100 00
Rathborne, R Wm	213	100	100 00
Rathborne, R Wm	240	100	100 00
Rathborne, R Wm	247	100	100 00
Rathborne, R Wm	248	100	100 00
Rathborne, R Wm	249	100	100 00
Rathborne, R Wm	250	100	100 00
Rathborne, R Wm	251	100	100 00
Rathborne, R Wm	252	100	100 00
Rathborne, R Wm	253	100	100 00
Rathborne, R Wm	287	100	100 00
Rathborne, R Wm	288	100	100 00
Rathborne, R Wm	307	100	100 00
Rathborne, R Wm	310	100	100 00
Rathborne, R Wm	311	100	100 00
Rathborne, R Wm	312	100	100 00
Rathborne, R Wm	313	100	100 00
Rathborne, R Wm	314	100	100 00
Rathborne, R Wm	315	100	100 00
Rathborne, R Wm	316	100	100 00
Rathborne, R Wm	378	100	100 00
Rathborne, R Wm	381	100	100 00
Stern, Philip	unissued	100	100 00
Stern, Joseph	unissued	200	200 00
smith, Morris H	unissued	200	200 00
Stone, Geo. F	unissued	200	200 00
Stern, Chas	unissued	100	100 00
Sistare, Geo F	48	100	100 00
Sistare, W H M	116	100	100 00
Thorpe, William	431	1	1 00
Thorpe, Louise E	A 7	1	1 00
Thorpe, Louis W	A 8	1	1 00
Thorpe, Caroline A M	A 12	1	1 00
Thompson, Andrew L	1220	100	100 00
Thompson, Andrew L	1221	100	100 00
Thompson, Andrew L	1222	100	100 00
Van Schaick & Co	unissued	1000	1000 00
Van Schaick & Co	69	100	100 00
Van Schaick & Co	70	100	100 00
Van Schaick & Co	71	100	100 00
Van Schaick & Co	1333	100	100 00
White, Morris & Co	unissued	100	100 00
Weed, Ed H	1255	100	100 00
Wollberg & Co	unissued	100	100 00
Weeks, W A	unissued	100	100 00
Watson, A A	468	15	15 00
Weil, Henry	1245	100	100 00
Weil, Henry	1246	100	100 00

PREFERRED STOCK.

Ambleman, Edgar M	unissued	100	100 00
Baldwin, J C	A 13	16	16 00
Bloomingdale, M	unissued	202	202 00
Bernheimer, I & S	unissued	135	135 00
Brumagim, J H	unissued	100	100 00
Brumagim, Mark	3	1	1 00
Block, Henry	55	100	100 00
Block, Henry	A 31	67	67 00
Block, Henry	A 32	63	63 00
Block, Henry	A 33	5	5 00
Block, Henry	A 34	1	1 00
Block, Henry	1243	100	100 00
Block, Henry	1244	100	100 00
Block, Henry	1245	100	100 00
Block, Henry	1246	100	100 00
Block, Henry	1247	100	100 00
Block, Henry	1248	100	100 00
Block, Henry	1249	100	100 00
Block, Henry	1250	100	100 00
Block, Henry	1251	100	100 00
Block, Henry	1252	100	100 00
Block, Henry	1253	100	100 00
Block, Henry	1254	100	100 00
Block, Henry	1255	100	100 00
Block, Henry	1256	100	100 00
Block, Henry	1257	100	100 00
Block, Henry	1258	100	100 00
Block, Henry	1259	100	100 00
Block, Henry	1260	100	100 00
Brumagim, Lily White	A 1	1	1 00
Brumagim, Fred P	1276	100	100 00
Brumagim, Fred P	1282	100	100 00
Brumagim, Fred P	50	3	3 00
Brumagim, Fred P	1286	100	100 00
Brumagim, Fred P	1287	100	100 00
Brumagim, Fred P	1288	100	100 00
Brumagim, Fred P	1289	100	100 00
Brumagim, Fred P	1290	100	100 00
Brumagim, Fred P	1291	100	100 00
Brumagim, Fred P	1292	100	100 00
Brumagim, Fred P	1293	100	100 00
Brumagim, Fred P	1294	100	100 00
Brumagim, Fred P	1295	100	100 00
Brumagim, Fred P	A 52	70	70 00
Brumagim, Fred P	1296	100	100 00
Brumagim, Fred P	1297	100	100 00
Brumagim, Fred P	1299	100	100 00
Brumagim, Fred P	1300	100	100 00
Brumagim, Fred P	1301	100	100 00
Crawford, Geo R	unissued	100	100 00
Connett, W H	128	100	100 00
Clarke, J P	A 36	50	50 00
Copp, P A	1285	100	100 00
Davis, Geo F M	1283	100	100 00
Eigenbrodt, Wm E	A 3	1	1 00
Eigenbrodt, Wm E	A10	15	15 00
Ford, Augustus	unissued	270	270 00
Girdler, Chas A	unissued	100	100 00
Greenleaf, Norris & Co	A14	10	10 00
Greenleaf, Norris & Co	15	35	35 00
Greenleaf, Norris & Co	1202	100	100 00
Greenleaf, Norris & Co	1203	100	100 00
Greenleaf, Norris & Co	1204	100	100 00
Greenleaf, Norris & Co	1205	100	100 00
Greenleaf, Norris & Co	1207	100	100 00
Greenleaf, Norris & Co	1208	100	100 00
Greenleaf, Norris & Co	1209	100	100 00
Greenleaf, Norris & Co	1210	100	100 00
Hollins, Harry B	unissued	100	100 00
Harriot & Noyes	A37	25	25 00
Harriot & Noyes	A38	25	25 00
Hoyt, Ann A	A11	14	14 00
Hoyt, E P	1216	100	100 00
Homans, E C	1198	100	100 00
Homans, E C	1212	100	100 00
Jov, Joseph F	unissued	135	135 00
Litchfield, Edwin C	unissued	405	405 00
Landon, Chas G	unissued	161	161 00
Loring, James B	135	100	100 00
Monroe, & Co, E S	unissued	200	200 00
Monroe, E S	A 4	50	50 00
Oppenheimer, Ed L	unissued	70	70 00
Olcott, Horatio L	207	100	100 00
Patton, Wm L	unissued	67	67 00
Rathborne, R Wm	unissued	200	200 00
Rathborne, R Wm	139	100	100 00
Rathborne, R Wm	140	100	100 00
Rathborne, R Wm	161	100	100 00
Rathborne, R Wm	162	100	100 00
Rathborne, R Wm	163	100	100 00
Rathborne, R Wm	164	100	100 00
Rathborne, R Wm	165	100	100 00
Rathborne, R Wm	197	100	100 00
Randolph Bros	unissued	63	63 00
Rodwell, C M	1118	100	100 00
Scott, Wm B	1109	100	100 00
Scott, Wm B	1110	100	00 00
Scott, Wm B	1111	100	100 00
Scott, Wm B	1112	100	100 00
Scott, Wm B	1113	100	100 00
Scott, Wm B	1114	100	100 00
Scott, Wm B	1115	100	100 00
Scott, Wm B	1116	100	100 00
Scott, Wm B	1117	100	100 00
Scott & Co, Wm B	A 9	6	6 00
Scott & Co, Wm B	1102	100	100 00
Scott & Co, Wm B	1103	100	100 00
Scott & Co, Wm B	1104	100	100 00
Scott & Co, Wm B	1105	100	100 00
Scott & Co, Wm B	1106	100	100 00
Scott & Co, Wm B	1107	100	100 00
Scott & Co, Wm B	A 12	45	45 00
Underhill, Fred	unissued	100	100 00
Van Schaick & Co	unissued	47	47 00
Weed, Ed H	A 35	35	35 00
Weed, Ed H	1268	100	100 00
Weed, Ed H	1269	100	100 00
Weed, Ed H	1270	100	100 00
Weed, Ed H	1271	100	100 00
Weed, Ed H	1272	100	100 00
Wolberg & Co	unissued	130	130 00
Woodman, Cyrus	unissued	100	100 00
Weil, Henry	241	100	100 00
Weil, Henry	242	100	100 00
Weil, Henry	243	100	100 00
Weil, Henry	244	100	100 00
Weil, Henry	247	100	100 00
Weil, Henry	248	100	100 00
Weil, Henry	249	100	100 00
Weil, Henry	250	100	100 00
Weil, Henry	251	100	100 00
Weil, Henry	252	100	100 00
Weil, Henry	253	100	100 00
Weil, Henry	453	10	10 00
Weil, Henry	A 54	50	50 00

And in accordance with law, and an order of the Board of Directors made on the 7th day of September, 1876, so many shares of each parcel of such stock as may be necessary will be sold at public auction at the office of the company, Room 33, Nevada Block, No. 309 Montgomery street, San Francisco, California, on Monday, the 6th day of November, 1876, at the hour of one o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

LFANDER LEAVITT, Secretary.

Office, Room 33, Nevada Block, 309 Montgomery street, San Francisco, Cal.

Amusements.

GRAND OPERA HOUSE, Mission Street, near Third. Open every evening with first-class Dramatic Company. Box Office open from 9 A. M. to 10 P. M. Doors open at half past seven. Commence at eight o'clock. SNOWFLAKE.

CALIFORNIA THEATER, Bush Street, above Kearny. Open every evening with the best Dramatic Company in the United States. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance. Doors open at half past seven. Monday, September 4th, EDWIN BOOTH.

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HAWKINS & CANTRELL,

MACHINE WORKS,

210 & 212 Beale St.,

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MANUFACTURERS OF

Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horse Power.

N. B.—Jobbing and Repairing done with Dispatch.

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Foundry and Iron Works.

HINCKLEY & CO.,

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Quartz, Flour and Saw Mills,

Hayes' Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard, San Francisco.

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Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:

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Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors:

Joseph Moore, Jesse Holladay, C. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary
24v1-qy

THOS. PENDERGAST. HENRY S. SMITH.

ÆTNA IRON WORKS.

MANUFACTURERS OF

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and MACHINERY,

OF ALL KINDS.

Fremont Street, bet. Howard and Folsom,

SAN FRANCISCO.

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THE

Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,

Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

☞ All kinds of Machinery made and repaired.

24v22-3m JOSEPH MOORE, Superintendent.

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EUREKA FOUNDRY,

Light and Heavy Castings of Every Description Manufactured.

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Ventilating and Illuminating Tile,

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Established for the Manufacture of

RAILROAD AND OTHER IRON

—AND—

Every Variety of Shafting,

Embracing ALL SIZES of

Steamboat Shafts, Cranks, Piston and Connecting Rods Car and Locomotive Axles and Frames,

—ALSO—

HAMMERED IRON

Of every description and size.

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MANUFACTURERS OF ALL KINDS OF

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ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGON AND SQUARE NUTS, WASHERS, BOLT ENDS, TURN-BUCKLES, ETC., ETC.

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IRON FOUNDERS.

Quicksilver Condensers and Furnace Castings.

Sole manufacturers of the Hepburn Roller Pan and Callahan Grate Bars, suitable for Burning Screenings.

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Dunbar's Patent Self-Adjusting Steam Piston PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

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Brass Foundry & Pump Factory.

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☞ Special attention paid to Brewers', Distillers', Beer and Hot Liquor Pumps and Wine Pumps. Particular attention paid to AIR PUMPS, also to

DIVERS' SUBMARINE PUMPS.

Artesian Well Pumps Made to Order.

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All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells, and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch

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J. H. WEED. V. KINGWELL.

California Machine Works,

119 BEALE STREET, SAN FRANCISCO.

BIRCH, ARGALL & CO.,

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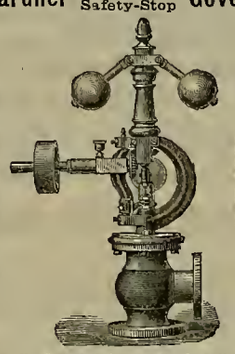

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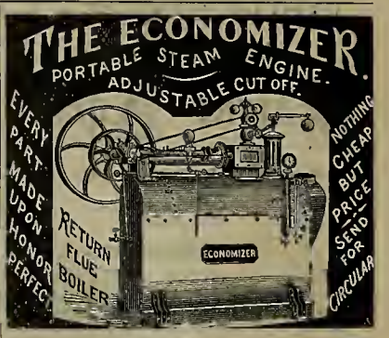

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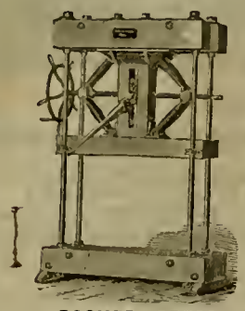

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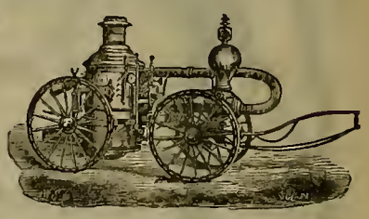

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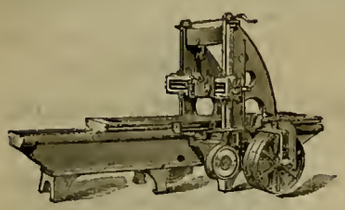

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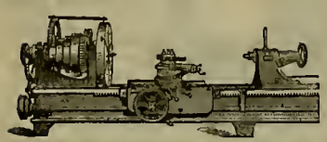

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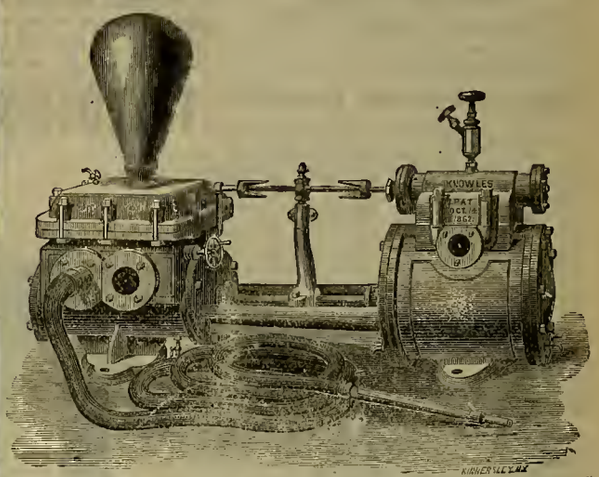

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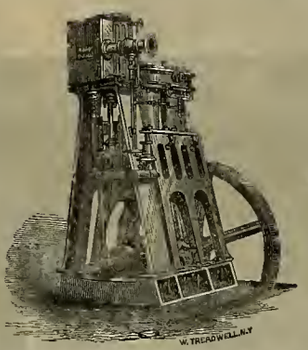

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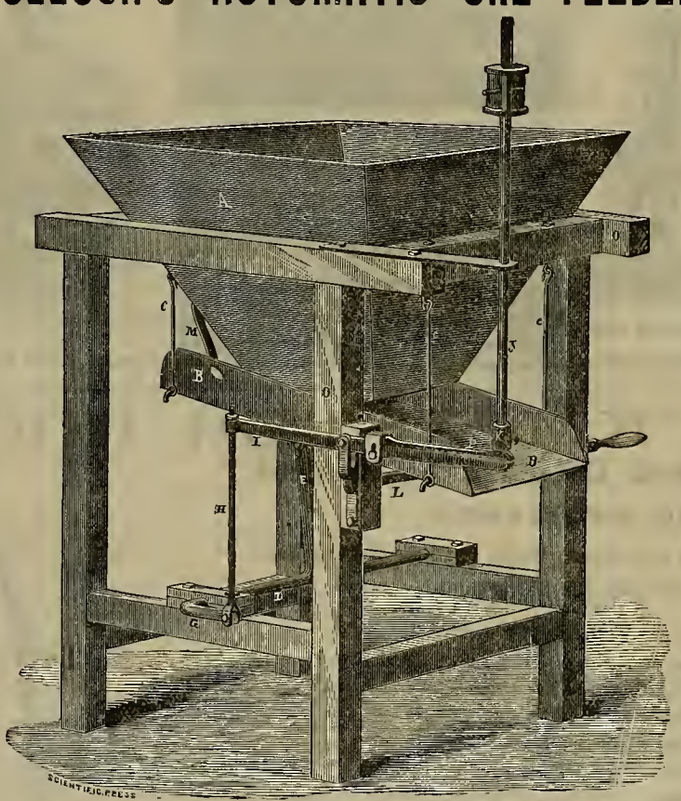

The TULLOCH AUTOMATIC ORE FEEDERS have been practically tested during the last year and a half in 40 mills, of from five to 80 stamps each, and have, in every case, given perfect satisfaction. The Tulloch machine is so constructed that the drop of the stamp feeds the ore in just such quantities as the stamps require. Each drop regulates the supply required for the next drop, whether it be more or less, and this is the true principle of an automatic feeder. The tray moves longitudinally, and a stationary scraper forces the material forward at each backward movement of the tray, thus insuring the perfect feeding of all classes of ore, whether it be dry or wet.

We append a few extracts from the many testimonials which we have received from mill men and practical mining men, of the effectiveness and positive action of the Tulloch Feeder. We do not depend solely upon these testimonials, as we are aware that testimonials are easily secured for almost any machine, but the high character of the parties certifying to those herewith given, will establish their value and genuineness:

Mr. Jas. G. Fair has 28 in use; says: I regard them superior to any Feeder with which I am acquainted; I consider no mill perfect without them. Mr. E. R. Burke, Sumner mine, Kern county, has 16: They never get tired; no man living can feed a battery as well; they save us in labor alone $48 a day. Mr. Green, of the Phœnix mill (12), Amador, writes: The first machine we had is working away; is as good as ever; have not spent a dime on it; in use 14 months; you need fear no competition on wet ores. Mr. W. H. Armstrong, of Consolidated Virginia mill: We are running 60 stamps with your Feeders; they give unbounded satisfaction; they have not cost the company one dollar since starting up. Mr. H. C. Bidwell, Supt. Green Mountain and Gold Stripe companies, Plumas county, writes: From the start they have done splendidly; no trouble whatever; requiring but little attention; a boy can manage them; the saving in both labor and castings is fully one-half over the old style of feeding by hand. Mr. Preston writes: I have four of your Automatic Self Feeders, and my mill men each and all say they are the best they have ever used. They are an improvement on all I have ever seen, being simple in construction, and good for either wet or dry crushing; refer to over 40 mills using them; they are guaranteed to give perfect satisfaction. Send for circulars.

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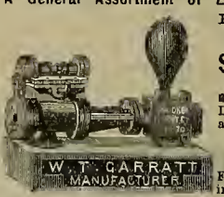

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, NOVEMBER 4, 1876.

VOLUME XXXIII. Number 19.

Improved Hand Fire Engine and Hose Carriage.

In the accompanying engrevings we illnstrate an improved hend fire engine and hose carriage combined, which has been especielly constructed with a view to meeting the reqnirements of towns and villages and isolnted factories which do not afford the facilities of steam or the advanteges to he derived from a system of waterworks. Hand engines, as nsnally oonstrncted, reqnire a large gang of men to operate them, making them comparatively nseless in loealities where 40 to 50 men cannot he assemhled at a moment's notice.

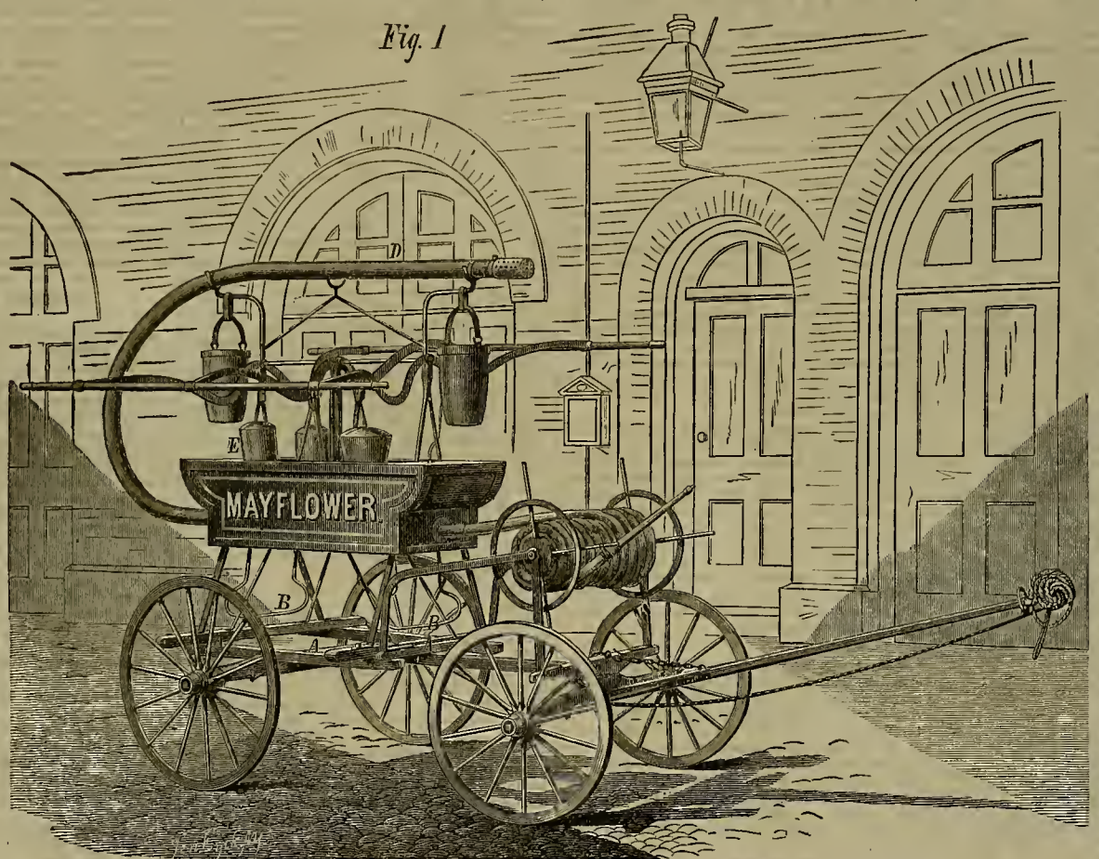
The engine herewith represented, we are informed, can be operated by from two to fourteen men, according to the amount of water and the dis'ance the stream has to be thrown. Two men can readily draw it over all common grades. At present the mennfactnrers are building one size only, the entire eqnipment weighing only 500 ponnds, the hose reel having capecity for 800 feet of one and and a half inch hose.

In readiness for fire, the engine is always mounted on the carriage, as shown in Fig. 1, while Fig. 2 shows the engine as detached from the hose cerriage, with leading hose run ont. Upon an alarm of fire being given, the first man or two at the engine house starts for the scene of ection with the mechine. Upon arrival the engine is disconneoted from the carriege or hose reel hy simply turning three clamp fingers, which drop into loops, at *A*. Two men then lift the engine from the carriage, it weighing alone only 325 pounds, by the hendles, *B*, setting it upon its own ways, *C*, as shown in Fig. 2, leeving the hose carriage reedy to nnreel the hose. The hose being always conpled to the engine, no time is lost, as the first sweep of the brakes, after the snction, *D*, is dropped into the weter, starts the stream. The engine is so light that it cen he lifted and set over a well, cistern or reservoir. It really needs no priming, although a priming hucket is provided at *E*, leading by e stop-cock into the pipe running from the suction to the cylinder. This wonld prove advantageons shonld the valves, throngh non-use, become dry. The engine has, of course, two cylinders, the diameter of each being fonr inches, the throw heing six inches, thus giving a powerful stroke, the brakes moving throngh a circle of two feet nine inches.

Both air chamber and water chamber are copper, and the valves are composition. The hind wheels are 36 inches high, the forward ones being 32 inches, and the latter swing under the reel, allowing the machine to be turned in its own length. Twelve feet of two and a half inch suction hose are provided, with which are used one and a helf inch leading hose with half inch nozzle.

We are informed thet with 14 men the mechine hes thrown e half inch stream 156 feet horizontally, drawing water perpendicularly 12 feet, and discharging throngh 100 feet of hose. This range of stream is, as will he seen, snfficient to cover an ordinary factory, warehouse, or dwelling, enabling fires on roofs to be extinguished by the mechine stationed on the ground outside.

Fig. 1



HALL HAND FIRE ENGINE AND HOSE CARRIAGE.

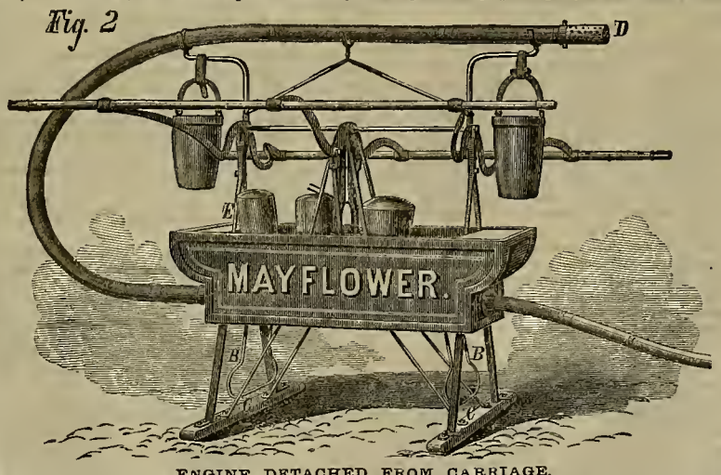
The makers furnish the epperatns with 12 feet of snotion hose, hrass strainer, draw rope, spanners for suction and leading hose couplings, two fire buckets, oil osn, eto. The complete machine, in readiness for the npplication of leading hose, is sold for $350 at their mennfactory. The inventor is A. M. Hell, Malden, Mass., end the mennfecturers are S. C. Forsaith & Co., Manchester, N. H.

A man employed by the Spring Valley company at Cherokee, was hlown np and instantly killed on the 24th of October. It seems he went to the magazine while the men were at dinner to get a certridge, end while there the explosion took place, instantly killing him.

A sad accident occurred at Hite's Cove, on the 20th instant. An Italien, named Giobaptista Munsente, employed at the Hite mine, was attending to the drum at the opening of the shaft in the 125-foot level, and in sn ungnerded moment he was hy some meens caught and drewn into the drum and crnshed to death. When discovered there were 40 coils of rope wound around him.—*Mariposa Gazette.*

It has been reported that a quicksilver mine in Napa county, principally, if not altog ther owned by the residents of Walnut Creek and vicinity, has been sold to an English company for a handsome round sum, which will give eech of the shareholders a moderate fortnne.

Fig. 2



ENGINE DETACHED FROM CARRIAGE.

Paul's Dry Process.

In enother column will be fonnd an advertisement in reference to this process, and from Mr. Paul's declaretions we shonld think it well for our quertz miners to investigete the merits of this redical chenge in the working of gold end silver ores. This process bas been before the public for years, bnt not in its present perfected form, although the principles involved ere the same, viz.: dry and fine pnlverization and dry amalgamation. The whole thing now being perfected hy several new petents, procured throngh the Mining and Scientific Press patent agenoy, Mr. Peul has built and is now running in this city e complete mill on a practical scele, whioh will setisfy the most skeptical, either one way or another, as to its value or nselessness.

Thet Mr Paul is giving satisfaction is best evinced by the mills already built snd now building, the last being for Oregon. This is a ten-stamp battery with everything in the most complete style and after the most approved plans. This mill was for the Lncky Qneen mining compeny, and is the most perfect mill of its style and size on the coest. The whole operetion is antomatio and will reqnire bnt two men to menage it. The perfect working of onr ores, whereby from 85 to 95 per cent. of the metel can be extracted cheaply, as Mr. Paul claims to do with his process, certainly must make the mining interest the most profitable of any brench of indns-try on the Pacific Coast.

The prinoiple set forth hy Mr. Paul, that to secnre a proper percentage the ores mnst be worked dry, is agreed to by many who have investigeted the snbject closely. Now that Mr. Paul has bnilt a mill in this city on a scale which must be accepted as practical, its merits can be accurately tested by those who desire it, whether believers in the principle or not. He is now in a position to work ore by the ton, and those whose ore is worked may personally snperintend the whole operation and judge of its efficiency. Mr. Peul is confident that he can work ore muoh more cheaply than it is at present done, and et the same time do it more effectively. Persons desirons of having ore worked or testing the process, may address Mr. Paul or come to the city with their ore.

The Lick Estate.—In the Probate Court Mr. Hall McAllister, attorney for John H. Lick, has filed a petition in the matter of the estate of the lats James Lick, setting forth the facts of his death; that he died intestate, leaving surving no wife, and that the petitioner is the only son and sole heir of the deceased; that he is now 58 yeers of age; that the deceased left valuable property in the oity and oonnty of San Francisco of a valne nnknown to the petitioner; thet the petitioner is willing to act as the Administrator of the estate of the decedent. He therefore asks that the letters of edministretion be issned to him npon the estate of the late James Lick, deceased. This is the first step in the litigation which will ensue over the property of the lete James Lick.

Silver bullion was quoted in London Wednesday at 53¼d per onnce.

Pacific Coast Railroad Notes.

The Reno *Gazette* says that a project for building a prismoidal railroad direct from Reno to Virginia is now nnder consideration hy certain partiea who have the energy and mesns to successfully carry it ont. It is thought that the farmers along the line from Reno to the foot of the Geiger grade, would, for a small cousideration, grant the right of way, and from there the road would go via Lonise creek into Virgiaia. To construct such a road would only require $2,700 per mile, exclusive of rolling stock, etc., so that altogether not over $75,000 wonld be required to build and stock it. A prismoida 60 miles iu length is now in operation in West Virginia and works satisfactorily. Seth Martin and others of Truckee are about to build one from Truckee to Martin's mill, a distance of 14 miles, which will ultimately be extended into Sierra valley. It is the mill men in and around Truckee who are agitating such a road from Reno to Virginia. They claim that they cannot now compete with Yerington, Bliss & Co., of Carson, for the lumber trede of Virginia. But a prismoidal rosd would enable them to land their lumber, timber, etc., so that a ready market would be fonnd for all they saw. The enterprise is likely to assume shape soon, and we hope the projeot will be pushed throngh.

The gross earnings of the Central Pacific railroad company for September and for the first nine months of the year are thus reported:

	September.	Nine Months.
1874	$1,371,700	$10,305,200
1875	1,567,600	12,567,000
1876	1,886,000	13,143,200

The business of the road has been steadily increasing ever sinoe its oompletion, in 1868. This is true with reference to both local and through traffic, partionlarly the former. The through business is divided with the Union Pacific and other roads, and is not always of a profitable character, though no freight is carried without some remuneration. It is the local busiuess, however, that pays the best.

Last week the Board of Directors of the Sonoma and Marin reilroad company formally transferred their franchise and property to Col. Peter Donahue, of the San Francisco and North Paoific railroad. The terms of the sale are that Col. Donahue is to pay the Sonoma and Marin railroad $85,000, the amount already expended; this amount to be paid in coin, and the transfer to take place to-day, upon the surrender of their stock by the stookholders, or else the stockholders will be allowed stock in the San Francisco and North Pacific railroad to the amount of their subscriptions. The purchaser is to pay in coin for all outlays made by the Sonoma and Marin railroad company; to assume all existing contracts, and to carry them ont in good faith. The road from Petaluma to Sau Rafael is to be bnilt and completed on the present line of snrvey by the 1st of May next, or as near thereto as can be accomplished. While substantially maintaining the present line of survey of said road, Col. Donahue may vary and modify the same in unimportant and minor points, where so advised by his engineer. An early train is to be run between Petaluma and San Francisco, not later than 7 A. M. daily, and one train between San Francisco and Petaluma as late as 4 P. M. He also agrees to exonerate and release all subscribers and stockholders upon the assignment and surrender of their respective subscriptions and stock, from all liability and responsibility as snch snbscribers and stockholders.

The completion of the North Pacific Coast (narrow gauge) railroad, from Saucelito to the Russian river, which will soon be effected, will havo the effect of opening up one of the largest available bodies of redwood timber in California—timber of the very finest quality. A. D. Moore, President of the railroad company and copartner of John Gawne, of Stockton, owns a tract of 10,000 acres of timber land on Knowles' creek, near Russian river, and has organized a corporation called the New Tyrone mill company, which has built extensive mills that will be in operation in abont 20 days. The Stockton *Independent* announoes that estimates based on a recent survey of the lands of this mill compauy indicate that there are at least 500,000,000 feet of lumber thereon to be cut. With this quantity made readily available there need be no immediate fears of a lack of supply of this valuable timber. The trees in this region are of a very large size, those measnring 45 feet in circumference at the base being frequently met with.

The highest trestle bridge on the Pacific coast is the one in course of construction aoross Brown canyon, two miles northwest of Freestone, on the line of the North Pacific Coast railroad. It will be 135 feet in hight from the bed of the oenyon, and 600 feet in length.

The *Foothill Tidings* of Grass Valley aays: Oar little narrow gauge began running to this place on the 17th of April last, and to Nevada City on the 22d of May. An official statement of the receipts and running expenses to September 30th givea the following pleaaant exhibit to stockholders: Receipts for five months, $45,397.90; expenses for aame length of time, $20,977.40; balanoe of receipts over expenses, $24,420.50, being equivalent to $53,505.68 per annum; less interest on $325,000 bonds, at eight per oent. per annum, $26,000; leaving a balance of $27,695.68 per aunum for a sinking fund for a final redemption of the honds and distribution to the stockholders, not estimatiag the increase of traffio reasonably expected from the natnral increase in the businesa and popnlation of the district.

Parties from the line of the railroad inform the Visalia *Delta* that the construction outfit of the Southern Pacific railroad has been sent to Goshen and Delti, prepsratory to laying the road from the former place toward the lake. Five hnudred Chinamen and abont forty heavy teams, with camp equipage, ties, rails and other stock, sre lodged along the railroad preparatory to immediate nction.

An extract from a letter written by a prominent gentleman of Oregon says: Things look more favorable for railroad oonnection between Umatilla and Ogden, or Sioux City. The Oregon Pacific railroad, combining with the O. S. N. Co., and I hear capitalists of Portland and San Francisoo, propose to take hold of it, and push the enterprise to a successful conclusion.

Advices from Victoria, B. C., state that the Bntte inlet party of railway surveyors is jnst in. They report an extremely favorable route for the Canadian Pacific road by that inlet. Three parties are now surveying the canyone of Fraser river. They have abont one month'e work ahead, at the conclasion of which the surveya will be definitely closed and the route proclaimed.

There is prospect of the Isthmus Transit railway being built from Utter City to Coqnille next summer. California capitalists have advanced $6,000 toward the surveys.

Another Big Shaft on the Comstock.

When it is taken into consideration, says the Gold Hill *News*, that the permanent dip of the Comstock is to the east, that the experience of the past has demonstrated the necessity of deep mining, and that work through inclines is alwaya prosecuted at a great disadvantage and with considerable loss of power, aside from that expended on the increase of distance, the reason for the general movement of hoisting works to the east will at once become apparent. The Yellow Jacket has at last joined in the general movement in that direction and arranged for the privilege of sinking an eastern shaft.

This arrangement has been effected with the North Chipman mining company, the locatiou of which is a little south of the Europa and east of the Yellow Jacket and Crown Point. The North Chipman lies at the east end of the tunnel east of Fort Homestead, and the looation is in every respect desirable for the purpose of sinking a large permaneut shaft for prospecting and working purposes, like that of the Chollar-Norcross-Savage shaft company. It has the additional advantage of being directly on the main track of the Virginia & Trackee railrosd, so that supplies of timber, lumber, wood, etc., can be delivered at once where wanted.

The North Chipman company have already a three-compartment shaft sunk on their ground 100 feet. This is to be enlarged to the requisite size for deep and extensive operations, and csrried ou down. The work will be conducted on a grand scale, and will be pnshed ahead with the greatest energy. It is not inteuded to discontinue operations from the old shaft of the Jacket. The work of development will go on in the seme manner as is being done in Consolidated Virginia and the C. & C. shaft, where the new and old workiugs are of about equal use and importance.

The Paris Exposition.—From the offi iel circulars just published by the French government, we extract the following regulations for the coming exhibition at Paris in 1878: "All foreign commissious constituted at the request of the French government are invited to correspond with the Commissioner General. In each section devoted to the exhibits of the same nation the objects exposed are divided into nine groups, as follows: First, works of art. Second, education, instructiou, material and processes of the liberal arts. Third, farniture and its accessories. Fourth, silks, cloths, etc., raw material and manufactured. Fifth, industrial products. Sixth, nseful results of mechanical industry. Seventh, alimentary products. Eighth, agriculture. Ninth, horticulture. A special hall is devoted to retrospective and ethnological exhibits. French or foreign exhibitors will he furnished with space free of cost.

The Silver Commission.—The Uuited States Monetary Commission is now organized as follows: Senators John P. Jones, of Nevada; Geo. S. Boutwell, of Massachusetts; Lewis V. Bogy, of Missouri; Representatives R. L. Gibson, of Louisiana; Richard P. Bland, of Missouri; George Millard, of Michigan; Hon. William S. Groesbeck, of Cincinnati; Prof. Francis Border, of Cambridge, expert; Alex. Delmar, of Philadelphia, Statistician and Corresponding Secretary; George M. Weston, of Boston, Recording Secretary. The Commission is now in session in New York, taking evidence. A Snb-Committee will shortly start for this coast to take evidence with regard to the prodnction of the precioua metala in Califoruia, Nevada, etc., and in reference to other matters intrusted by Congress to the Commission.

Dueing the last two years profeasional duck hunters have bired the lakea in the vicinity of Sacramento for the hunting aeaaon, and prevented amateura from shooting thereon. In some instances thoy made money by the transaction, but aa a general thing did not. The result promises to be that the competition for the possession of the best shooting grounds will cause the rent to become so high that the hnnters will not bave as large incomes as they did before they begau renting.

Tuscarora District.

A oorrespondent of the Elko *Independent* says: The Tusosrora mining district bids fair to be *the* mining distriot outside of Virginia. On my arrival in Tuscarora I was taken in charge hy Messrs. Raines, McNally, O'Briter and McCain of the Hornet, Young America, Grand Prize, Young America South aud Ophir, who courteously showed me over the mines and vied with each other in showing me all that could nossibly be seen. The district lies on a rising slope from Independence valley, and conld he driven over with a team at neerly all points. It hes more the appearance of prairie land, and a miner would as soon look over a plowed field for oroppings as to look over the district for them. And it is owing to their absence that the district has been simply known as a placer gold oamp.

The Young America company first obtained a ledge bearing gold with some silver, and even after that was discovered some years elapsed before another ledge was found. About 14 months ago Colonel De Frees, while on a trip to Cornucopie, stopped at Tascarora and was taken by the appearance of the camp, went out prospecting, and noticing some float rock on what was called Porphyry hill, sunk for the ledge and strack it. The peculiarity of the ore puzzled him and others, and they tried it in a forge, and found that it readily blistered, showing silver at all points. They then had assays made which ruu np into the hundreds, and snrprised the best miners. Prospectors flocked in, and one discovery quickly followed nuother, till to-day Tuscarora has a brighter prospect then White Pine had. Its ledges are well-defined, walls regular, and are beyond doubt true fissure veins. The Hornet, Young America and De Frees ledges run a little east of north and west of south, with a westerly dip. The Convia ledge, upon which is situated the Grand Prize and the Graud Deposit, hoth run a little north of east and sonth of west, having also a westerly dip. The walls in all cases are well-defined, composed of granite and sienite, and csrry down without a break. The ledges vary from four to six feet. The pay streak runs from six iaches to the full width of vein.

The writer saw many places in the De Frees, Grand Deposit, Hornet and Buckeye where it showed over five feet of ore. There is not a ledge struck in the distriot that does not show horn silver, it appearing within two feet of the surface, and the formation of the ooutry is such that large ore bodies mnst certainly be discovered. It is only a question of time. The Grand Prize, De Frees, Hornet and Young Amerioa are evideuce of this view. There are many miues that lack capital to open them to fully demonstrate their thorough merit. The Young America and Grand Prize have both erected hoisting works and are under the superintendence of thoroughly competent men. The former are putting in timbers in their working shaft and preparing for the winter, having already laid in their wood. The Grand Prize is sinking a working shaft in a thorough manner (being a double compartment one).

The De Frees will put a donkey engine in their tunnel, carry their shaft down 150 feet from their lower level and run a drift north expecting to strike a heavy body of ore, it showing rich in the north drift of the second level. The ledges all carry heavy clay selvages, and where the ore body pinches out are easily traced. The camp is a lively one, and discoveries are constantly being recorded, the hardy prospectors making time count. The roads are in good oondition and the probabilities are, will be nntil the first of December.

The elevation of the camp is about 7,800 feet above the sea level, and the Tuscarora moantains are about 1,100 feet above it. The ascent ia gradual, trees and croppings discernable at a few points only. Ledges are being fonnd two miles west on the slope and parallel with Tuscarora. The ore carries gold, silver, pyrites of iron and manganese; is free milling ore, easily worked and mined. Below the water level no doubt sulphuret ores will be fonnd.

Wood is $10 per cord delivered, and sage brnsh $5 per load; water plenty.

The Hornet, of which E. P. Raines, Frank Hamilton and Judge Berry ere the ownere, is sacking rock which goes up in the hundrede. The gentlemen contemplate erecting within 90 daye a 10-etamp mill. Mr. Raines is busily engaged grading for the foundation and driving the work with a will. There is plenty of work awaitiug them, being fully exposed from the De Frees, Youug America, Grand Prize and other mines, 2,000 tons of ore. The Grand Prize continnes its shipment of the 100 tona spoken of hefore.

The camp is well worth a viait, and should be examined closely and critically; any one doing so can form but one opinion as to its prospects.

Pontoons.—The *Railway Age* saya: "The device of pontoon bridges, now so snccessfully in operation on the Mississippi, will prove a very great help to railway building. It removes the objectiona urged with force against the obstruction of navigable streams by fixed bridges with massive piers, against which boats are liable to be wrecked, and affords a cheap and unobjectionable method of crossiug rivers by wagon and foot passage as well as hy rail. So ekill continues to vanquish the obstacles in the way of the free and speedy communication of distaut regions with each other.

Holcomb and Bear Valley Mines.

Oar friend, Mr. George O. Tiffany, who has returned from a tour among the mines of the Bear Valley, Holcomb and adjacent mountains, informs ns that the Gold Hill mine, which has been closed for some time, is now about oommencing operations on an extensive soale. Engineers and workmen from San Francisco arrived and commenced putting the 40-stamp mill in repair on the 23d inst., under the charge of Mr. McMasters, a well known mining expert. The town of Gold Hill, situated 7,100 feet above the ocean level, was a thriving camp, employing three or four hundred men, when the mill oeased operating. In a few days the town was deserted. Now the influx is enlivening the streets, and the busy hum of the machinery of a mining camp in prosperous condition is again heard. A new stamp mill is on the ground, in the Ord district, under the superintendence of Mr. Whitlatch. The Lone Valley mines are being prospected extensively, and the Blue lead, owned and worked by Messrs. Bicknell, Tiffany, Cox and others, is in a promising oondition. This lead has been opened 150 feet in depth and 30 feet on the ledge, at right angles, and is a true fissure vein. We understand that it is the intention of the company to ountinue their work. Altogether, the mining prospects in that region are promising. The Holcomb valley mines, which are situated 8,250 feet above the sea level, have been extensively worked in former times as placer mines. Within the last three years large sums of money have been expended in the Holcomb valley mines, and the latest and most approved maohinery has been introduced. Mr. John Haley, of this oity, in oonnection with a company of London capitalists, has expended over $100,000 in prospecting and erecting machinery in Holcomb valley, and over $2,000,000 in placer and quartz gold have been taken from an area of about 100 acres. Work is at present suspended in the mills here, in consequeace of the near approach of winter, which commences early at this great elevation, and snow falls six feet deep on a level, thus interrupting miniug operations. Altogether the prospect is most promising for the next year, and our city will reap substantial benefits from that source.—*Los Angeles Express.*

A Queer Discovery.

For some years the existenoe of a large deposit of micaceous iron, east of the east fork of the Hassayampa, some 16 or 18 miles south of Prescott, has been known, and assays of it have been made from time to time, but nothing more valuable than iron discovered until one day last week, when a Mexican came to town and sold to Wm. M. Buffum some 15 ounces of silver bullion, which he afterwards seid he extracted from seven pounds of this ore, samples of which he showed. An assay was made by Blake of the samples brought in, which gave $447.10 in silver and $715.79 in gold. Wand and Saffenberg, with the Mexican, went to the mine on Thursday, and brought in some of the ore. Kelly made an assey of it, and found no trace of any metal but iron. Blake tried another piece and obtained $1,541.99 in silver and $25 11 in gold, aggregatiug $1,567.10. Martiu Saffenberg, on Monday, again went to the mine and selected a sample himself, with which the Mexican had nothing to do. This he brought in, and Kelly made an assay of it, and fonnd $1,410.32 in silver and $108.76 in gold, aggregating $1,579.08. Blake then assayed a piece taken from a very large chunk, brought in by Wand & Saffenberg, and found $680.18 in silver and $12 54 in gold; another gave only $3.14 in silver and only traces of gold.

No one at all acqnainted with the brittle iron ore, as it is called in California and Nevada, would ever suspect this to contain anything but iron and mica. Some have called it plumbago, from the fact that it is quite black and shines with a bright metallic luster. It is easily pulverized, and when rubbed in the hands has the appearance of being mixed with oil. For this reason many have given it the name of stove-blacking, which it very much resembles. Altogether it is a curious discovery, and puzzles the asseyers and experts, who are unable to tell any more about it than those who make no pretensions. It may be that an entirely new mineral has been discovered.—*Arizona Miner.*

South Comstock.—The Gold Hill *News* says: Work was resumed on this old established mine last Monday, under new and favorable auapices. Situated as it is upon the main Gold canyon section of the Comstock, just above Devil's Gate, and in the immediate vicinity of the Silver Hill Justice, Lady Washington and other prominent mines of that locality, its prospects and future should be just as good as the rest. A shaft has been sunk to the depth of 300 feet, and from it a drift was run away to the westward, cutting a large width of very promising vein matter, but no paying ore was found. Water coming in too freely to contend with to any advantage, work was suspended last April. Since then the water has subsided, owing doubtless to the assisting drainage of other mines, and the company having recaperated their strength, now propose seeing the thing out. Mr. J. C. Lennon has been appointed superintendent, and commenced the active discharge of his duties on Monday. He is having the boiler, engine and other works overhauled and in a day or two will begin readiness to start up. It is proposed to hoist out the water, sink the shaft a hundred feet or more deeper.

MECHANICAL PROGRESS.

Points on Incrustation.

A short examination, given by J. F. Ronan in *Iron*, of the various remedies against incrustation which have been proposed, will not be uninteresting, although it results in the conviction that most of them are unsatisfactory.

Sal ammonia, proposed by Ritterbrandt, and hydrochloric acid, are both open to the objections that their preventive action is only partial, and that they have the power of seriously injuring the boilers and connections.

Crude pyroligneous acid has been suggested for action upon carbonates alone, while petroleum has been extensively used in the United States with a measure of success, not only in preventing incrustations, but also in removing those already formed. Its action has not as yet been investigated, as far as I am aware, but it is probable that its effects are due to the decomposition of hydrocarbons. This seems to be borne out by a report by the chief engineer to the steam boiler and inspection company of Hartford, United States, who states that "petroleum works better where sulphate of lime predominates than in waters impregnated with carbonate of lime. We would not," he says, "advise it in connection with this latter." This simple fact renders it useless in the majority of boilers using fresh water in this country.

Oxalate of soda and tannate of soda were proposed by Dr. Rogers in America, in order to form, by decomposition of the lime salts, insoluble oxalates and tannates; but these would seem to increase the amount of solid matter precipitated, and, although proposed some years ago, to have been little used.

Lime and zinc have been used with some degree of success, but their action is confined to combining with the carbonic acid of the bicarbonats of lime. On sulphate of lime they have no action.

The object in view in the proposed use of starchy and gelatinous matters has been to prevent scale forming, by enveloping the precipitated or crystallized solids with gelatinous covering, and so to delay their settling by diminishing their weight. But M. Bidard's observations on the effects of the presence of organic matters (especially in so-called "anti incrustators," or compounds for preventing incrustation) at once sweeps the field of all remedies of an organic composition, proving them to be injurious by doing the very thing which they are supposed to prevent.

Soap acts upon both carbonate and sulphate of lime, but the quantity appears to be increased by the formation of lime soap, and thus the boiler is made filthy; a corrosive crust is sometimes formed, and priming and other evils also result from its use.

Recently a substance called "Burfitt's composition" has been patented for the prevention of boiler incrustation, but it has been found to consist essentially of organic matters, and, moreover, has rather increased than prevented incrustation where it has been used.

Two other methods of prevention have also been devised, and seem to be founded upon the fact which Prof. Mills informs me was first observed by J. Y. Buchanan, that barium chloride decomposes sulphates and liberates the carbonic acid in water.

One of these, called "De Haen's process," which consists in the use of barium chloride and milk of lime, is now extensively used in Austria and in Krupp's works in Prussia. A recently published statement of the comparative costs of working on this system, and with water containing gypsum, without an added re-agent, shows that to purify 33 cubic meters of water, when containing five parts gypsum in 100,000, the cost is 6d., and when containing 30 parts gypsum the cost is 3s. Practical working with this process for 12 months with one or two boilers showed an increase of expenditure of 500 florins, against which was to be placed the saving in fuel resulting from absence of incrustation, and reduced repairs from the same cause.

The analysis of deposits which have been found to accumulate in the steam pipes, etc., where these processes have been used, impress me with the idea that these methods are, however, open to serious objections in practical working on account of the formation of salts of barium.

There is, however, one system of working which has yet to stand its trial, but which it is perhaps not extravagant to consider as inseparably connected with the advancement of engineering science and appliances upon which alone it depends. That is the working of land boilers in connection with surface condensers, and so supplying them with pure water.

COST OF STEEL RAILS.—The *Railway Age* says: We notice the recent sale of 500 tons of steel rails by the Harrisburg (Pa.) mills, at the extraordinary low price of $36 a ton. Steel rails also are now at their lowest figure, a sale of 10,000 tons for the Southern Pacific being reported at $49, at the mills, while in 1867 the price was $172, and in 1873, when the trouble began, it was $120. Considering these figures, and the corresponding reduction in the cost of grading, locomotives, cars, buildings, etc., now is evidently the time for anybody who wants a railroad to build it—unless he prefers to get it cheaper yet by buying one in, ready made, at a foreclosure.

To Secure Perfect Round Bars.

It is not necessary to say anything about the importance to the millwright, engineer or machine-maker, of having his round iron really round, and, what is of equal or even greater importance, straight; nor is it necessary to speak of the difficulty the iron-maker experiences in endeavoring to supply to the user such an article. In spite of all the care and skill that can be exercised in the rolling mill, the ordinary round bar leaves it as a somewhat imperfect and but approximate cylinder, neither truly round nor truly straight.

Mr. Edmund Butler, in an essay published in *Iron*, gives the following points of English progress toward securing perfect bars: It is a comparatively easy matter to straighten a bar which is heat in one uniform curve from end to end, but it is the short bends, crooks, or "dog-legs," which are the main difficulty, the presence or absence of which makes a bad or good round bar; and these which appear to be more or less inevitable in all rolling, can only be effectually removed while the bars are still hot, for with cold straightening there is always a tendency in the bars to revert to their original form when the skin is removed in the lathe. The production of a machine to accomplish the desiderata now in question has long occupied the attention and taxed the ingenuity of the ironmaster, particularly for the larger sizes, and many schemes have been initiated and tried, but the machine now under notice is the only one known to the writer which effectually removes "dog-legs," and produces round bars sufficiently straight to be used for most ordinary purposes without being turned in the lathe.

The original idea of which this machine is the embodiment is due to Mr. J. Robertson, of Glasgow, though the same idea seems to have occurred almost simultaneously to Mr. G. W. Dyson, of Sheffield, and it is the general arrangement of the latter which has been adopted, though, since it passed out of the hands of these gentlemen, many improvements and additions—the results of practice and experience—have been made, which have given it the success it has now attained.

The bars are passed while still hot from the rolls between two revolving discs having bevelled faces, which, when brought together so as to compress the bars between them with the degree of force thought necessary, rotate them, and, at the same time, traverse them forwards, also by a mechanical arrangement backwards, so that the whole length of the bar is acted on by one continuous movement, and the bars come out straightened and planished. In doing this, moreover, two other important results are produced, the most palpable of which is that the scale, instead of being rolled in, as might be supposed, is entirely removed and the surface is made smooth.

The skin is brought to a very high degree of cleanness and smoothness, so much so that a mere rubbing with emery cloth, or if the bar be put into the lathe, with emery stick, polishes it as though it had been turned and polished in the ordinary manner. In some small samples on exhibit, one end is left blue, as from the machine, and the other end is polished as just described, in order to show the inappreciable difference in diameter between the two portions. This is already done practically, and shafting is now running which has been put up without being turned, while other shafting, after being put up in the same manner, has been polished in its place; and, again, the bars have been put into the latter and finished with the file and emery stick without being turned. To carry the finishing process still further, if the bars, after being allowed to go cold, are passed again through the machine several times, the blue skin disappears, and the bars come out actually bright.

NEW STEAM NAVVY.—Messrs. Alexander Chaplin & Co., of Cranston Hill, Glasgow, are now exhibiting a steam excavator intended for use in the cuttings of railways and other similar operations. The machine, though powerful in its action, is simple in construction. On one end of a strong malleable iron frame mounted on wheels, are placed an upright boiler and double engine which drives a large drum, with groovee for receiving the main chain of the crane, which latter is supported on the other end of the frame. The main chain raises up and works a counterchaft, which, by means of pitch wheels and another chain, sets in motion a friction brake and the necessary gearing. These together set in action a powerful arm connected with the digger or bucket, driving it into the soil. On the necessary hight being attained, the crane is slowed either to right or left until the bucket is over the wagons intended to remove the earth. A trigger is then drawn, the bottom of the bucket falls out, and the load is deposited in the wagon. On lowering, the bottom relocks itself by automatic action. It is claimed for the machine that it results in great economy of labor, as it can perform the work of 80 men and needs only two to manage it.

LARGE PLATE OF CAST STEEL.—There has been rolled at the Black Diamond steel works a plate of cast steel of the following dimensions: 28 feet long, 42 inches wide by three-quarters of an inch in thickness, weighing 3,075 pounds. The plate was a very perfect one, and was rolled from the ingot to the dimensions named on one heat. It has been sent to the Centennial.

ENGLISH AND AMERICAN LATHE WORK.—The correspondent of an English paper at the Centennial says: The process of turning is different in England and America. In some kinds of work it would be the same, but generally the cut taken here is much less. A light cut and high speed seems to be the plan followed, and the result, all things considered, seems to justify the method when applied to practice here. Round iron or steel to two and a half inch diameter is turned "on one-sixteenth of an inch," as it is called—that is, the finishing and rolling dimeters have only this difference. Standard dimensions for shafts, and we may add for all turned work in most engineering shops, is by odd sixteenths, instead of by eighths as with us, and there is no doubt much gained, besides a saving of material, by working on such close dimensions.

SCIENTIFIC PROGRESS.

A New Earthquake Theory.

F. G. Fairfield in the *Phrenological Journal* notes that the recent observations of an Italian scientist, that the number of earth-tremors per year in southern Europe ranges as high 5,500, and the occurrence of such tremors may always be foretold by the barometer, seem likely to lead to important consequences as concerns the existing theory of volcanic action, and particularly as respects the intermittent activity of volcanoes. It has been demonstrated long since, in so far as anything not observationally verifiable can be, that the degree of internal heat, augmenting foot by foot according to the calculated rate, that must obtain at the earth's center, would, under the existing doctrines of geology, be sufficient to convert all known solids in bodies so explosive that a crust 1,000 miles in thickness would present little more obstacle to their violent expansion than a sheet of paper; and yet volcanoes have been dwelt upon as in some vague manner evidencing a molten state of the earth's interior. The possibility of accounting for volcanic action on the principal of atmospheric pressure had not, previous to the important discovery of a definite relation between earth-tremors (comparatively imperceptible earthquake waves) and the barometer, occurred to scientific men. The leading points of such a view, as it seems likely to supersede the existing one in the immediate future, may be briefly mapped out. By making a topographical outline of the surface of any of the existing continents transverse to its mountain ranges, the reader will readily see that the pressure of the atmosphere is exercised at an angle from the lowest point in the slope to the top of the range, in such a manner as to press the two ribs of the slope, not uniformly toward the earth's center, but inward toward each other; while, as one ascends toward the top, the density of the atmosphere and its pressure rapidly diminish. For example, the angle of pressure as respects the Andes range is a constantly shifting one from the Atlantic coast of Brazil on the one hand, and from the Pacific coast on the other. This angle may be ascertained at any point by drawing a line (or supposing one to be drawn) perpendicular to the plane of pressure at that point. The actual force with which the sloping sides of the Andes range are thus pressed downward and inward toward each other for hundreds of miles, while, owing to diminished density of the air, the pressure at the top is comparatively small, may be readily calculated. A heavy mass of snow on the sloping sides of the roof of a New England farm-house in winter, furnishes, on a small scale, no inapt illustration of the nature of the problem under consideration; and the yearly sag of such a roof, if the rafters happen to be weak, with its inward inclination on each side, tells exactly at what point the pressure is strongest. Now, as all these lines of atmospheric pressure, drawn perpendicular to the planes of the two mountain sides, meet beneath the mountain itself, the reader will be able to see very readily that, whether volcanic or not, every mountain is the seat of an almost inconceivable heat-generating force. This force, however, is not incalculable, but may be readily ascertained with mathematical exactness. An idea of its vastness may be obtained by simply considering that the atmospheric pressure of the whole continent of South America is practically concentrated along the line of the Andes range. These considerations explain why it is that earth-tremors usually travel toward, not from mountain ranges.

ON MOLECULES.—Different surfaces of the same crystal have a different solubility. This is one of a number of facts that have an interesting bearing on the mechanical theory of heat, as M. Pfanndle has shown in a recent paper to the Vienna academy. The growth of certain parts of a solid in a liquid, at the cost of others, without the liquid being supersaturated or the temperature varied; the transformation of powdered iodine into large crystals, when surrounded by its vapors (at constant temperature); the gradual crystalizing of solid amorphous bodies, etc., may all be included, he says, in one general view—that of the struggle for existence among molecules. Darwin's principle holds good in the world of molecules. Those forms (combinations) are preserved which have the most favorable conditions of existence. If the latter change, so do the former. Those chemical compounds tend to be preserved which are united by the strongest affinity. But here, also, the right of the stronger does not always obtain. Just as in the animal world certain forms are preserved because they have the power of escape or concealment, so in chemical processes, spite of stronger affinities, those products are often preserved which, by reason of their volatility, escape decomposition, or those which can withdraw out of the region of colliding molecules and entrench themselves in crystals.

Science in England and France.

At a late meeting of the French association for the advancement of science, M. Dumas, the president, made the following points on science in France and England: "In 1851 I was present in London at the first exhibition, and I soon found that among my fellow members of the different juries, the great number and importance of the French articles exhibited in the industrial arts were soon acknowledged, especially in those which depend upon science. England had the largest chemical works in the world, and there was no lack of able, practical men. But France had long possessed schools like the Ecole Polytechnique and the Ecole Normale, affording the highest class of chemical instruction, and whose pupils, in their after life, imparted to the various manufacturing works the benefit of the lesson taught at them. A very eminent English juror acknowledged the superiority in the following terms: 'England has erred so far in doing too little for science, which is money; henceforth let us follow the example set us by France.' Similar also was the expressed opinion of one of the English juries—that on the silken and other fabrics of Lyons. This fact once acknowledged, and there rose at once schools of science and art throughout the British Isles. There exists in that country a body—the British association for the advancement of science—always in the van, leading and guiding the efforts of science. To us, with its lengthened existence of nigh half a century, it affords a model. Under its auspices has English science assumed and preserved its high position. It contains among its members not merely the men of science, but also those bearing noble names long known and respected throughout the land, many of whom, together with the late Prince Consort, it has placed upon the list of its presidents. The British association at its very commencement marked out for itself its course, which it has unhesitatingly and unremittingly followed ever since—to stimulate, without in the slightest degree interfering with existing institutions, in all parts, the efforts of the votaries of science, to urge on and aid the efforts of individual research. One striking contrast exists between the world of science in France and in England. In the latter, until of late years at least, all the universities end important seats of learning were away from the capital, while in France all science centered in Paris, the provincial schools and universities being deemed but of secondary importance. To remedy this, to extend the domain of science and to restore to the provinces some of their ancient scientific eminence, is one of the objects of the French association for the advancement of science. France must not forget that science is a great power, and that its effects are visible in every branch of social and domestic life. When the Revolution of 1792 isolated us from the rest of Europe, and left us at once destitute of all those external products on which we had so much depended, it was to our men of science that we looked to remedy these wants, and persons of such eminence as Lavoisier, Berthelet and Chaptal labored with their own hands to fill the void. To science are due those terrible engines of war, and like-wise the steem engine, which has peaceably revolutionized all our manufacturing and our domestic life. Science also it is that causes the noisome tar, the refuse of our gas works, to afford us some of our brilliant dyes and some of our most delicate perfumes, and shows that in the production of a stearine candle there also lies a substance so terrific in its effects as is nitroglycerine. Science follows us everywhere, whether we like it or not. It must be our companion, to possess it or be possessed by it. If ignorant of it we are its slaves, if learned it obeys us."

LUNGE'S PROCESS OF MAKING SPONGY IRON.—Spongy iron for the precipitation of copper is prepared by Lunge from the residual products of pyrites extraction. These are heated in masses of 1,016 kilos., mixed with 305 kilos. of coal, in a reverberatory furnace, the heated gases of which first pass over the charge, and return to heat the hearth indirectly from below. The furnace is made in three sections, in the first of which the mixture remains from nine to twelve hours, in the second 18, and in the third 24. The end of the reduction is tested by dropping a titrated solution of sulphate of copper on one gramme of sample, stirring, and noticing how much of the solution is exhausted by the iron, taking a drop out from time to time and testing for copper with a polished knife-blade. The product is passed through tubes closed against the air into receivers having accurate fitting covers, allowed to cool for 24 hours, ground, and sifted. The copper solution is set in motion by a Korting's blast on addition of the pulverized iron.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company	1 W'k to Oct. 12.		1 W'k to Oct. 19.		1 W'k to Sept. 26.		1 W'k to Nov. 2.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	25c	....	....	....
Advance	....	....	....	....	....	....	....	....
Alpha	46⅜	41	45½	42	43½	43½	46	44
Alta	2	....	2	1⅜	3	2½	2¾	2
Amador Flat	....	....	....	....	....	....	....	....
Amar'n Flat	1	....	....	....	....	....	....	....
Andes	2	1⅜	2¼	1⅜	2½	2	2⅛	2
Alps	....	....	50c	....	....	....	50c	....
Amazon	....	....	....	....	....	....	....	....
Balt'm'e Con	2¾	2¼	2½	2⅜	2½	2	2	1⅞
Belcher	21	16½	19¾	18½	19¾	18¾	18¾	16
Belmont	2	....	2	....	2	....	....	....
Best & Bel	45	39¾	45½	42	49¼	44¼	49	44¼
Buckeye	....	....	....	....	....	....	....	....
Bullion	35¾	33⅛	37½	34	35¾	35¾	36	34
Caledonia	9⅞	8⅞	11	9½	10¾	10	11¾	9¼
California	61	58	59½	51½	59¼	57	57½	56
Challenge	2¾	....	....	....	....	....	....	....
Chollar-Pot	79½	71	83	78½	81½	76	79	76
Confidence	15	13¾	16½	15¼	16	15¾	....	....
Con Imperial	4¾	3¾	4.05	3.90	4	3.80	3.85	3.57½
Con Virginia	5¼	4⅝	5¼	4⅞	5⅝	5⅛	5¼	5⅛
Crown Point	11⅞	10½	13	11½	11¾	11½	11¾	9⅞
Ocoo Con	....	....	....	....	25c	....	40c	25c
Daney	....	....	....	....	....	....	....	....
Dayton	....	....	4½	....	5	4½	5	....
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka(G V)	....	....	....	....	....	....	....	....
Eureka Con	15¼	12¾	14¼	13½	14	13¼	13	12¾
Exchequer	14¼	13½	14¾	14	15½	14½	15⅝	14¾
Europa	....	....	....	....	....	....	....	....
Gila	65c	50c	60c	....	75c	65c	70c	65c
Globe Con	....	....	....	....	....	....	....	....
Goldan Char	1¼	....	1⅜	....	1	....	1	75c
Gould & Car	14⅝	13	15	13⅜	16	14¼	15¾	13⅜
Hale & Nor	8½	7¼	8¾	7½	9	8¼	8½	7½
Ida Elimore	....	....	....	....	....	....	....	....
Jefferson	....	....	50c	....	25c	....	25c	....
Julia	6¾	5½	7¾	6⅞	7¾	7	7¼	6¾
Justice	18½	16⅜	26⅞	17½	25¾	24	24½	23
Jackson	4	3⅞	4¾	4	5	4¾	5	4¼
K K Con	3	....	....	2¾	2½	....	....	....
Kentuck	11½	10½	11¾	11	13	12	13¾	10½
Knickerb'k'r	50c	....	50c	....	....	....	....	....
Kossuth	2	1¾	2½	2	2½	2¼	2½	1¾
Lady Bryan	30c	25c	75c	2°c	80c	60c	75c	50c
Lady Wash	3	2	3	....	3	2½	....	....
Leo	....	....	....	....	....	....	....	....
Leopard	8¾	8¼	8¾	8	8¾	7½	7	6½
Leviathan	90c	80c	....	....	75c	....	....	....
Mahoney	....	....	....	....	....	....	....	....
Mansfield	....	....	20c	....	....	....	15c	....
Meadow V'y	25c	....	27½c	20c	25c	15c	5c	....
Mexican	26	23½	28	25¼	25⅞	25½	28¼	26¾
Midas	....	....	....	....	....	....	....	....
Mints	20c	....	20c	....	....	....	....	....
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	37½c	....	....	....	....	....	....	....
New York	1½	1	1¾	1	1½	90c	1	95c
Niagara	....	....	15c	10c	19c	1½c	14c	13c
Northn Belle	21	19	25	20¾	24	22	23½	24¾
New Coso	....	....	27¾	23¾	29¾	24½	25½	23½
Occidental	2⅞	2¾	....	....	....	....	....	....
Ophir	47	40¼	55	43	54	47½	51½	49¼
Old Gold Hill	....	....	....	....	....	....	....	....
Overman	78¼	74	85	80	83	79	84½	80
Pacific	....	....	....	....	37½c	....	30c	25c
Phil Sheridn	2	....	3½	1⅜	3	2¾	2⅝	2½
Ploche	....	....	....	....	....	....	....	....
Poorman	29c	....	27½c	25c	25c	20c	15c	10c
Prospect	1½	87½c	1	93c	90c	65c	1¼	60c
Prussian	....	....	....	....	....	....	....	....
Ray & Ely	5¾	5¼	5½	....	6	5¾	5½	....
Rock Island	....	....	....	....	1¾	1¼	1	....
Rye Patch	....	....	....	....	....	....	....	....
Savage	16	12	16	13	15	12½	14½	12
Seg Belcher	....	....	75	70	....	....	70	....
Sierra Nev'da	11⅞	11	13½	11⅞	13	11⅞	12	11
Silver Hill	7¾	7½	9¼	7½	9½	9	9⅜	9
Sth Chariot	....	....	....	....	....	....	50	37½c
Socoor	25c	10c	15c	....	25c	1 c	52c	....
Union Con	11¾	10¼	13¾	12½	14	12½	13½	12
Utah	19	14	19½	16½	18¾	16½	18	16
Wells-Fargo	20c	15c	20c	15c	17c	15c	....	....
Woodville	1¾	1⅜	1¾	1¼	1⅝	1¼	1¾	1¼
Yell'w Jacket	24½	21	25¼	23⅜	25¾	23⅜	23¾	20½

Sales at S. F. Stock Exchange.

FRIDAY, A. M., OCT. 27.

100 Andes	2
280 Alpha	45½@46
80 Bullion	.36 @35½
425 Best & Bel	.48¾@48
135 Belcher	18¾@18
60 Baltimore Con	2
160 Caledonia	.10¾@10½
615 Crown Point	11½@11⅜
315 Con Imperial	3 @3½
720 California	.57¼@57½
50 Chollar	.18½@18
10 Cromer	2
1025 Con Virginia	.53@53⅜
100 Cosmopolitan	45c
20 Challenge	3
100 Dardanelles	2
140 Exchequer	.15¾@15⅛
705 Gould & Curry	.15⅝@15
250 Julia	.7¾@7⅛
165 Justice	24¼
100 Kentuck	.13¾@13¼
120 Lady Bryan	.75c
830 Mexican	28¾
300 Niagara	.15c
330 New York	1¼
1060 Ophir	.49¾@49⅝
225 Overman	84
200 Savage	14¼
240 Sierra Nevada	.11¾@11⅞
160 Silver Hill	.9⅝
10 Sth Belchar	23
235 Union	.13¾@13⅝
40 Woodville	2¼
385 Yellow Jacket	.23½@23⅜

AFTERNOON SESSION.

50 Alps	56c
100 Alpha	45
165 Best & Belcher	.45¾@45⅝
195 California	.57¾@57⅝
680 Coso Con	.28@30c
100 Con Virginia	.53⅜@53¼
80 Eureka Con	13
100 Con Thomas	45c
100 Genesee Valley	.2.20@2
280 Gould & Curry	15¾
320 Gila	70
125 Hussey	.37½c
1060 Justice	.24@24¼
25 K K Con	3
295 Kentuck	.14@14⅜
1645 Leopard	.7@7¾
70 Mexican	.28½@28⅝
280 Meadow Valley	.5¾
70 Manhattan	15½
150 Modoc	.5¼@5⅜
490 Northern Bella	.22@24¾
240 New Coso	2¾
480 Ophir	.49¾@50⅜
20 Overman	83½
25 Savage	.14¾@14⅝
120 Sierra Nevada	11⅝
150 Union	13⅜

SATURDAY, A. M., OCT. 28.

300 Andes	2⅜
75 Alpha	43½
205 Best & Belcher	.48⅞@48¼
165 Belcher	.19¾@19½
390 Baltimore Con	2
125 Bullion	36
580 Caledonia	11⅜
590 California	.57⅜
105 Crown Point	.11⅜@11¼
705 Con Virginia	.5¼@5⅜
1035 Con Imperial	.3.82½@3.80
125 Chollar	19
500 Cosmopolitan	.37½@40c
100 Exchequer	.15¼@15⅜
105 Gould & Curry	.15⅜@15⅝
5 Hale & Nor	8⅝
100 Julia	7¼
70 Justice	.24¼@24⅜
660 Kentuck	.14¾@14½
350 Kossuth	2½
90 Mexican	.28¾@28⅝
25 Meadow Valley	.5@5¼
180 Crown Point	.10¾@11
627 California	.5⅝@5¾
640 Con Imperial	.3.77½@3.80
250 Cosmopolitan	.48@50c
10 Dayton	5
100 Dardanelles	2
200 Exchequer	.15¾@15½
290 Gould & Curry	.15¾
760 Hale & Nor	8
985 Justice	.24@24⅛
45 Julia	7¼
25 Kentuck	.13¾@13½
50 Kossuth	1¾
115 Lady Bryan	.50@70c
200 Leviathan	.75c
300 Lady Wash	2¾
175 Mexican	.28½
50 Nav York	.95c@1
500 Niagara	.12c
3 Overman	83
410 Yellow Jacket	.22¾@22½

AFTERNOON SESSION.

60 Alps	.50c
240 Alpha	45½
215 Best & Belcher	.48@48¼
125 Belcher	.17¼@17
50 Crown Point	.10¾@10½
200 California	.57¾@57⅝
50 Con Virginia	.53⅞@53¾
120 Con Imperial	.3.80@3.85
160 Exchequer	.15@15⅝
160 Eureka Con	.13@12¾
380 Gould & Curry	.14¾@15
420 Gen Thomas	.62½@50c
45 Hale & Norcross	.8¼
350 Hussey	.59c
200 Jefferson	.25c
50 Jackson	4½
1735 Lady Bryan	.65¼@60c
65 Mexican	28
575 Poorman	.15
35 Ray & Ely	5¾
60 Sierra Nevada	11⅝
80 Savage	13¾
100 South Chariot	.37½c
140 Union Con	.12¾@12½c
100 Yellow Jacket	.22@22½

WEDN'SDAY, A. M., Nov. 1.

580 Alpha	.45@44¾
80 Andes	2

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., OCT. 26.

205 Alpha	.45@45¼
985 Best & Belcher	.48¾@49
210 Bullion	36½
70 Belcher	.18¾@18½
590 Crown Point	.11½@11¾
1125 Con Imperial	3 90
2585 Con Virginia	.53⅞@54⅛
1100 California	.58¼@58⅜
435 Caledonia	.11¼@11½
145 Exchequer	.15¼@15⅜
1030 Gould & Curry	.15⅞@16¼
205 Hale & Nor	.8½@8¾
11-0 Justice	.24¼@24⅜
25 Julia	7¼
975 Kentuck	.12¼@13¾
615 Lady B	.62½c
48 Mexican	.28¾@28⅝
780 Ophir	.54@53⅝
220 Overman	.83@84¼
10 Savage	.14¾
475 Sierra Nevada	.11⅞@12
750 Succor	.10@12½c
30 Utah	19
610 Union	.13½@13¾
250 Yellow Jacket	.23⅝@23¾

AFTERNOON SESSION.

50 Alta	2½
1 0 Andes	2⅞
225 Baltimore	2¾
75 Coso Con	.26c
875 Con Virginia	.52¾@53
275 California	.57¾@57
200 Cromer	2¾
30 Challenge	3
100 Eureka Con	13¾
700 Gila	.70@65c
80 Genesee Valley	2.15
250 Ge des & Bertrand	1⅜
100 Jackson	4¾
400 Kossuth	.2½ @ 2⅝
500 Knickerbocker	.35@30c
1615 Leopard	.7¾@7⅝
100 Lavinthan	.15c
75 Meadow Valley	.4@10c
200 Manhattan	15⅜
380 Modoc	.5@5¼
195 Mansfield	.18@20c
915 Northern Belle	.23½@24¼
50 New York	1¼
1800 New Coso	.2⅞@3c
1000 Niagara	.15@16c
10 Con Virginia	.53¾@54
145 Overman	.84¼@84¾
100 Ophir	.49½@49¾
200 Poorman	.18c
200 Panther	.20@23c
125 Prospect	1
200 Pacific	.37½c
75 Raymond & Ely	.5¼@5½
510 Rock Island	1
105 Sierra Nevada	.11¾@12
245 Silver Hill	.9⅝ @ 9¾
50 Sanator	.62½c
100 Trojan	60c
100 Wells Fargo	18c
175 Woodville	2
35 Woodville	2¼
530 Yellow Jacket	.23½@23⅞

Pacific Board—Latest Sales.

WEDN'SDAY, A. M., Nov. 1

65 Alpha	.44¾ @ 45
50 Atlantic	2½
180 Andes	.2@2⅛
60 Belcher	16⅞
80 Best & Bel	.45½@45⅞
165 California	.51½@51¾
55 Con Virginia	.51¾ @ 51⅞
200 Colmopolitan	.47½c
495 Crown Point	.10¾ @ 9⅞
410 Con Imperial	.3 65@3.70
130 California	.56½@57
600 Gen Thomas	.50c
200 Hussey	.37½c
160 Jackson	1½
200 Justice	.24@24⅝
50 K K Con	3
10 5 Leopard	.6¼@6
155 Mexican	28
660 Manhattan	.15½@15⅜
300 Modoc	.4¾@5⅛
635 Northern Belles	.27@29¾
200 New Coso	.2½ @2⅝
5 Overman	84
590 Ophir	.51½@50⅝
200 Poorman	19
150 Savage	.13¾@13⅝
200 South Chariot	.37½c
315 Union Con	.12¾
635 Yellow Jacket	.22@22⅜

TUESDAY, A. M., OCT. 31.

330 Alpha	.46@45½
225 Andes	.2⅝ @ 2
125 Alta	.2@2⅛
120 Bullion	35
125 Belcher	17¾
255 Best & Belcher	.48@48¼
300 Baltimore Con	1⅞
150 Caledonia	.10⅝@10⅜
1110 Con Virginia	.53@54⅜
585 Baltimore Con	1¾
30 Belcher	18½
500 Best & Belcher	.4¼ @ 4 5⅝
45 Bullion	34½
500 Best & Belcher	.4¼ @ 4 5⅝
200 Con Virginia	.51⅝@52
395 Crown Point	.9¾@10⅝
685 California	.56¾@56⅝
500 Con Imperial	.3.85@3.60
610 Caledonia	.9⅞@9¾
700 Cosmopolitan	.42½@45c
100 Confidence	15
20 Dayton	9
370 Exchequer	15
150 Florida	.50c@
590 G & Curry	.14@14¼
255 Hale & Nor	.8@8¼
445 Julia	.7@6¾
65 Justice	23¾
110 Kentuck	.11
1300 Lady Bryan	.65c
100 Mexican	.28¾@28½
100 Confidence	15
20 Dayton	9
370 Exchequer	15
150 Florida	.50c@
590 G & Curry	.14@14¼
255 Hale & Nor	.8@8¼
445 Julia	.7@6¾
65 Justice	23¾
110 Kentuck	.11
1300 Lady Bryan	.65c
100 Mexican	.28¾@28½
10 New York	1
225 North Con Vir	.1½@1⅝
790 Ophir	.49¾@49¼
205 Overman	.81½@81
255 Sierra Nevada	.11¾@11⅝
200 Pacific	.20c
550 Rock Island	1
565 Savage	.13¼@12¾
1135 Sierra Nevada	.11¾@11½
30 Silver Hill	9
10 New York	1
225 North Con Vir	.1½@1⅝
790 Ophir	.49¾@49¼
205 Overman	.81½@81
255 Sierra Nevada	.11¾@11⅝
200 Pacific	.20c
550 Rock Island	1
565 Savage	.13¼@12¾
1135 Sierra Nevada	.11¾@11½
30 Silver Hill	9
10 0 Trojan	.25c
510 Union	.12¾@12¼
40 Utah	.17@16
40 Woodville	2
530 Yellow Jacket	.21¼@20¾

AFTERNOON SESSION.

10 Alpha	.44¾
185 Belcher	.16¾@17
210 Best & Bel	.46¾ @ 46⅜
300 Crown Point	.11¾@11½
870 Con Virginia	.52¼@52⅜
440 California	.57@57½
350 Coso Con	.3@40c
100 Caledonia	.11¼
670 Con Imperial	.3.85
100 Eureka Con	.12¾
40 Gen Thomas	.87½c
100 Gould & Curry	.14½@14
705 Gila	.65c
370 Gold Chariot	.10@5c
100 Hussey	.71½c
230 Justice	.23⅞@23⅝
200 Julia	.4¾
20 Julia	.6⅞
655 Leopard	.6⅞@6¾
130 Mexican	.27½@27
200 Manhattan	.15½@15¼
570 Modoc	.5@5¼
780 Northern Belle	.23@27½
100 New Coso	.3⅛
160 Ophir	.50@50⅝
200 Overman	.10½@80c
100 Panther	.20c
10 Ray & Ely	.5⅜
1520 South Chariot	.37½@50c
460 Savage	.12⅞@13
150 Yellow Jacket	.21¾

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., NOV. 2.

300 Alpha	.44@44½
425 Baltimore Con	1¾
410 Best & Bel	.44¾@47
625 Belcher	.16@16¾
90 Bullion	34
850 Justice	.23@23½
20 Kentuck	.11⅝
4 0 Lady Bryan	.60@65c
230 Mexican	.26¾@26⅞
405 Ophir	.50 a 50¼
95 Overman	.80@80½
100 Rock Island	1
420 Savage	.12½@12¾
468 Sierra Nevada	.11@11 ¾
85 Utah	.16@16½
80 Union Con	.12@12⅝
2110 Y Jacket	.20¼@20¾

AFTERNOON SESSION.

185 Alnha	44¾
100 Alps	.50c
100 Andes	2
100 Belcher	.16⅝@16¾
325 Best & Belchar	.45¼@45½
520 California	.56¾@56⅝
75 Con Virginia	.51
300 Coso	.4@
200 Empire Mill	.25c
230 Exchequer	.14⅝@14⅞
200 Gould & Curry	.14¼
100 Gold Chariot	.7⅝
210 Hale & Norcross	.7⅞
50 Jefferson	10c
70 Kossuth	1⅝
100 Lady Wash	1½
100 Leopard	.6⅝
200 Leviathan	.15@70c
100 Mint	.12c
140 Manhattan	.15¼@15⅜
440 Modoc	.5¾@5⅝
1145 Northern Belle	.27@26¾
01 New Coso	.2⅜
220 North Con Vir	1½
325 Ophir	.49½@50
50 Panther	.22c
1430 Prospect	.1⅜@1⅝
3 0 S Chariot	.37½c
136 Savage	.12¼
490 Trojan	.90c@1
40 Woodville	.2¼
315 Yellow Jacket	.20¾@21

AFTERNOON SESSION.

59 Alpha	.45
125 Andes	.2⅝
125 Alps	.40c
50 Belcher	.16⅝
50 Best & Bel	.46¼
15 Bullion	34
4 California	.56½@57⅛
60 Con Virginia	.5 ⅝ 52
310 Con Imperial	.3¾@3⅝
4 0 Cosmopolitan	.42½@45c
30 Golden Chariot	.10¼@10⅜
30 Ex hequer	.15
75 Gould & Curry	.14¾
200 Golden Chariot	.62½@58c
35 Hale & Norcross	.8
55 Kentuck	.12¾
310 Con Imperial	.3¾@3⅝
4 0 Cosmopolitan	.42½@45c
30 Golden Chariot	.10¼@10⅜
30 Ex hequer	.15
75 Gould & Curry	.14¾
200 Golden Chariot	.62½@58c
35 Hale & Norcross	.8
55 Kentuck	.12¾
20 Leopard	.6⅝@6¾
170 Lady Bryan	.72½@10c
30 Leviathan	.80c
90 Mexican	.27
3 0 Mar-Bea	.80@35c
650 Monumantal	20 21c
200 Nevada	.30@25c
150 Ophir	.50½ @ 49¾
6 0 Phil Sheridan	.2⅝@2½
100 Prospect	.1⅜@1⅜
60 Rock Island	1
1850 Rising Star	.3@3c
130 Savage	.13¾ @ 13½
320 Sierra Nevada	.11¾@11⅝
20 Silver Hill	9
250 Sutro	.30c
50 Superior	.5c
100 Trenton	.10¾@10½
2250 Trojan	.75c@1
460 Union Flag	.13¾@13½
110 Union	.12¾@12¾
200 Wells-Fargo	.13
100 Woodville	.1¾
110 Yellow Jacket	.22@2.3¾

AFTERNOON SESSION.

59 Alpha	.45
125 Andes	.2⅝
125 Alps	.40c
50 Belcher	.16⅝
50 Best & Bel	.46¼
15 Bullion	34
4 California	.56½@57⅛
60 Con Virginia	.5 ⅝ 52
310 Con Imperial	.3¾@3⅝
4 0 Cosmopolitan	.42½@45c
30 Golden Chariot	.10¼@10⅜
30 Ex hequer	.15
75 Gould & Curry	.14¾
200 Golden Chariot	.62½@58c
35 Hale & Norcross	.8
55 Kentuck	.12¾
20 Leopard	.6⅝@6¾
170 Lady Bryan	.72½@10c
30 Leviathan	.80c
90 Mexican	.27
3 0 Mar-Bea	.80@35c
650 Monumantal	20 21c
200 Nevada	.30@25c
150 Ophir	.50½ @ 49¾
6 0 Phil Sheridan	.2⅝@2½
100 Prospect	.1⅜@1⅜
60 Rock Island	1
1850 Rising Star	.3@3c
130 Savage	.13¾ @ 13½
320 Sierra Nevada	.11¾@11⅝
20 Silver Hill	9
250 Sutro	.30c
50 Superior	.5c
100 Trenton	.10¾@10½
2250 Trojan	.75c@1
460 Union Flag	.13¾@13½
110 Union	.12¾@12¾
200 Wells-Fargo	.13
100 Woodville	.1¾
110 Yellow Jacket	.22@2.3¾

California Board—Latest Sales.

WEDNESDAY, A. M., Nov. 1,

50 Alpha	.45½@45⅝
100 Alta	.2@2⅛
100 Andes	.2½
190 Belcher	.16⅞@16¾
75 Best & Bel	.46½@46¾
50 Bullion	.34½
300 Baltic	.25½@2c
250 Union	.12¾@12⅝
250 Yellow Jackat	.21

AFTERNOON SESSION.

160 Alps	.45c
85 Belcher	.16⅞@17
80 Best & Bel	.46¾
820 Coso Con	.40@3 ½
200 Crown Point	.10½@10¼
225 California	.57¼@5 ⅞
100 Con Imperial	.3¾
300 Con Virginia	.52½@52⅝
100 Cosmopolitan	.45c
130 Eureka Con	.12¾@12½
30 Gould & Curry	.14¾
385 Gould Char.ot	.6@7¾c
660 Gila	.70c
200 Huesey	.30c
120 Julia	.7
60 Justice	.23⅞
100 Kentuck	.12¾
200 Mansfield	.18c
100 Mexican	.27½
80 Manhattan	.15½
170 N Modoc	.5¼
100 Northern Belle	.2 @27¾
10 Ophir	.50¾
50 Rock Island	1¼
20 R & Ely	.5½
50 Sierra Nev	.11¾@11⅝
50 Union	.12¾
50 Yellow Jacket	.21¾

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt.	Levied.	Deling'nt.	Sale.	Secretary.	Place of Business.
Andes S M Co	Washoe	7 25	Sep 15	Oct 21	Nov 8	M Landers	307 Montgomery st
Baltimore Con M Co	Washoe	12 1 00	Oct 6	Nov 8	Nov 27	C A Sankey	331 Montgomery st
Belmont M Co	Nav	9 50	Sep 18	Oct 24	Nov 21	W H McClintock	419 California st
Bullion M Co	Washoe	1 2 50	Sep 22	Oct 23	Nov 13	J S Kennedy	419 California st
Cherry Creek M Co	Nev	7 30	Oct 3	Nov 10	Dec 6	D F Verdenal	409 California st
Crown Point M Co	Washoe	28 1 00	Oct 26	Nov 29	Dec 24	J Newlands	4 9 Califo nia st
Dayton G & S M Co	Nev	5 1 00	Sept 8	Oct 13	Nov 3	W E Dean	419 Calif rnia st
Equitahla Tunnel & M Co	Utah	13 20	Sept 7	Oct 14	Nov 1	C S Healey	Merchants' Ex
Exchequer M Co	Washoe	11 *1 00	Sep 23	Oct 25	Nov 15	J S Kennedy	419 California st
General Thomas M & M Co	Nev	3 50	Oct 27	Dec 20	Dec 30	W Willis	309 Mo tgomery st
Globe Con M Co	Washoe	9 25	Oct 27	Nov 30	Dec 20	W F Bogart	402 Montgomery st
Golden Chario M Co	Idaho	16 50	Oct 26	Nov 13	Dec 26	W P Shaw	408 California st
Hala & Norcross S M Co	Washoe	52 1 00	Oct 10	Nov 14	Dec 5	J F Dishmer	Nevada Block
Ha sey Con M Co	Nev	2 20	Oct 28	Nov 23	Dec 11	H E Brown	426 California st
Jefferson S M Co	Nev	2 50	Oct 11	Nov 16	Dec 11	C A Sankey	331 Montgomery st
Julia Cons M Co	Washoe	1 1 00	Sept 11	Oct 16	Nov 6	A Noel	419 California st
Julia G & S M Co	Washoe	23 3 00	Sept 11	Oct 16	Nov 6	A Noel	419 California st
Justice M Co	Washoe	19 5 00	Sep 14	Oct 18	Nov 7	J S Kennedy	419 California st
Lady Bryan M Co	Nev	13 50	Sep 15	Oct 17	Nov 7	W H McClintock	419 California st
Meadow Valley M Co	Ely Dist	13 75	Sep 29	Nov 6	Dec 4	T W Colburn	418 California st
Mexican G & S M Co	Washoe	2 50	Sep 5	Oct 11	Oct 31	L McCoy	419 California st
Mint M Co	Washoe	15 15	Oct 12	Nov 15	Dec 7	D A Jennings	401 California st
Mitchell G & S M Co	Nev	10	Sept 7	Nov 6	Nov 25	A O Hammond	401 California st
Monitor Belmont M Co	Nev	— 25	Oct 17	Nov 20	Dec 18	B B Minor	309 Montgomery st
Nisgara M Co	Washoe	3 25	Oct 3	Nov 4	Nov 24	W R Townsend	309 Montgomery st
North Careon M Co	Nev	5 10	Oct 3	Nov 6	Nov 27	W A Van Bokkalan	320 Sansome st
North Con Virginia	Washoe	5 25	Sep 21	Oct 25	Nov 14	J Maguire	419 California st
Overman M Co	Washoe	36 3 60	Oct 21	Nov 25	Dec 15	Geo R Edwards	414 California st
Panther M Co	Nev	3 25	Oct 4	Nov 8	Dec 5	F Swift	419 Calif rnia st
Pioche S M Co	Ely Dist Nev	14 50	Oct 5	Nov 8	Dec 1	F Y Smith	419 California st
Poorman G & S M Co	Idaho	7 25	Oct 23	Nov 27	Dec 16	W Willis	309 Montgomery st
Prospect M Co	Washoe	2 50	Sep 21	Oct 31	Nov 17	J P Moore	426 California st
Senator S M Co	Washoe	14 50	Sep 19	Oct 24	Nov 13	J H Sayre	330 Pine st
Sierra Nev da M Co	Washoe	46 1 00	Oct 24	Nov 28	Dec 15	W W Stetson	309 Montgomery st
Silver Hill M Co	Washoe	9 1 00	Sep 18	Oct 24	Nov 14	W E Dean	416 California st
St Patrick M Co	Cal	12 50	Sep 18	Oct 23	Nov 15	D F Verdenal	409 California st
Succor M & M Co	Washoe	16 50	Sep 26	Oct 31	Nov 22	W H Watson	302 Montgomery st
Trojan M Co	Washoe	3 10	Oct 20	Nov 21	Dec 11	D Wilder	328 Montgomery st
Yellow Jacket M Co	Washoe	24 1 00	Oct 28	Dec 4	Jan 3	G W Hopkins	Gold Hill

* $12.50 old stock; $1.00 new.

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Atlantic Con M Co	Nev	1 25	O

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE.

Barnes' Mine.—Alpine *Chronicle*, Oct. 21: Edward Barnes, of Petaluma, owner of the old Rogers claim in Hope valley, lately arrived at the mine with supplies, with the intention of starting up work immediately. Several companies are being organized in San Francisco for the purpose of working mines in the vicinity of the Barnes claim, and we predict lively times in mining affairs in that district next summer.

Jumping.—Jumping of mining claims and timber ranches is the order of the day in Alpine county. In some cases such practices are sanctioned by public opinion as right, but there are too many instances where parties are carrying on the business for the purpose of being bought off. A wholesome lesson in court might check indiscriminate jumping.

Heavy Storm.—A heavy rain storm set in on the morning of Tuesday last and continued, accompanied by a heavy gale, during the whole of Tuesday night and until about 9 A. M. on Wednesday. The storm, notwithstanding its severity, did no particular damage in this vicinity.

The Lady Franklin.—This shaft is down 50 feet. Sinking has ceased for the present, in order to grade a site for a building to be erected immediately over the shaft. At the above depth the prospects are very flattering.

Struck It.—Alpine *Chronicle*, Oct. 28: We hear that the ledge has been struck in the 400-ft level of the Exchequer mine, and it is said to be as large and rich.

The Advance.—The pump recently placed in the lower level not working satisfactorily, a new one has been ordered from San Francisco.

The Lady Franklin.—Having finished grading, superintendent Meagher has commenced the erection of a building for the hoisting works. The sinking of the shaft will be prosecuted with energy through the winter.

Frame Up.—The frame of the new mill for the I X L company is up—except the engine room addition. The stormy weather this week has interfered with work very much. To-day the boilers being placed in position.

AMADOR.

Another Tunneling Venture at Volcano.—Amador *Ledger*, Oct 28: In our last issue we gave an item about the tunnel of the Volcano gold gravel company, to tap the Volcano basin and enable it to be worked with hydraulics. This week the Moyle company has also started work upon their tunnel, intended to accomplish the same result. It is not at all probable that both enterprises will be prosecuted to completion. Indeed, if one of them ever gets through it will exceed the expectations of many. There is little doubt that considerable gold yet remains in the basin, sufficient perhaps to pay for the cost of the tunnel, and leave a handsome profit besides. The Moyle tunnel will not be so costly an undertaking as the other. The distance to be tunneled is not so great, neither will it drain the basin to so great a depth. Between the rivalry of the two companies, we hope to see one of them reach the goal, and reap an abundant harvest of gold for their labor and expense.

Horrible Calamity.—Amador *Dispatch*, Oct. 28: Last Sunday morning about half past seven o'clock, four men working in a shaft at the Oneida mine started up out of the shaft, and when they were about 70 feet up, the rope broke above the ground and let the men fall back, and about 1,000 feet of rope covered them. Two of the men—Messrs. John Troovoich and James Forshey—were inside the bucket and fortunately were not killed, but were very seriously hurt. The other two men—Messrs. John Ludemann and John Gardner—were outside the bucket and were killed—the latter being terribly mutilated and instantly killed—the former not dying until he was brought out of the shaft. They were not brought out until about ten o'clock. The hoisting rope rusted in the mine was old and rotten and could almost be picked to pieces with the fingers, and there is no doubt but that it was the gross negligence of the company that caused this very sad affair.

BUTTE.

Skippea Gold Mining Company.—Oroville *Mercury*, Oct 27: Work has again started up on the Skipper mine, near Dogtown. The company intend to erect a 10-stamp mill on the property, with all the new patent appliances for saving gold and sulphurets. Two automatic self-feeders will supply the battery with rock, and two Schofield concentrators will be put in to save sulphurets. Mr. Mathis, the superintendent of the new company and one-quarter interest owner in the mine, has accomplished considerable in procuring capital to invest in quartz while times are so dull. The company have satisfied themselves that the mine is good, the ledge a large one. And from the showing made by a four-stamp mill, which Mr. Mathis has been running on the rock for the last nine months, they think they have an excellent property. And if the 10-stamp mill proves as they anticipate, 20 more stamps will be added. There is a chance for work for some good men at the mine, who understand working in quartz. Five carpenters began work on Sunday last, getting out lumber for the new mill building, and everything will be pushed to a speedy completion.

Ditch Hill Mines.—Cummings hill is again in high favor with the stockholders of these diggings. Last summer the lead was lost, and despite the many efforts made to find it, failed to yield any return to the owners. But once again all is serene, and good pay dirt is being taken out of the main tunnel and occasionally handsome nuggets are found. Last week we heard of one carload of dirt paying $140. This is a good mine and merits the confidence felt in it by the gentlemen who advanced the money necessary to open it up. In the immediate vicinity are the Carriboo, Providence Hill and Sunnyside claims, all of which ought to return large profits to their owners.

INYO.

Shut Down.—Coso *Mining News*, Oct. 28: The New Coso furnace is shut down for the present in consequence (so it is said) of breaking the fan of their blower. Previous to this mishap they were turning out an average of 50 bars every 24 hours. The breaking of the fan (?), however, happened very opportunely, as it will give them a chance to fit up their croquet ground, the mallets and balls having arrived on Wednesday last; also their "shuffle-board," intended, no doubt, for the benefit of chaps who are receiving large salaries and who have so little to do that they need some exercise of that kind. One of the brass weights for the shuffle-board was lost some days ago, otherwise the game would have been started before. It has arrived, however, per Wells, Fargo & Co.'s express, and the game will undoubtedly be started at once. When the boys begin to shove the weights on the shuffle-board the New Coso stocks will be shoved up to a higher figure. When superintendents are dissatisfied with their salaries and engage in side-games, keeping saloons, hoarding horses, etc., compelling men to spend their earning with them on penalty of being discharged, is it to be wondered at that their stocks do not appreciate in the market? Out upon such humbuggery! We have good mines here, but we want men of sense and capacity to run them, and we don't think it is necessary to go to France or Canada to find superintendents to manage them. This sort of thing accounts for the dull times in Darwin.

Rex Montis Mine.—Inyo *Independent*, Oct. 28: An important development was made in the Rex Montis this week, and of course Manager Holt feels highly elated. The value of this discovery will readily be perceived when it is understood that now a safe estimate can be made of the extent of the chimney and approximate number of tons of high grade ore which was struck in the upper tunnel. The upper tunnel is in 112 feet, cutting 90 feet of its length in ore. Some 75 feet lower down is the second level, where the men have been at work for some time, the object being to find this same body of ore and obtain some idea of its extent. Monday last Mr. Holt predicted they would strike it in 24 hours; this was after they had gone about eight feet without a sign of ore. Holt staked his mule to a snowbank and awaited results; and sure enough he had not to wait long till they did strike it, and rich at that. Now it only requires a simple geometrical calculation to size the pile between the two levels. An assay was made from a specimen about the size of a man's head which gave a clear assay value of $500 per ton, about the average for all high grade ore. As long as the weather permits the ore will be packed down to the mill, there being enough now in sight to keep it running a long time, and to its full capacity.

KLAMATH.

The Mines.—Cor. Lake County *Bee*, Oct. 28: Our mines are principally quartz. The Black Bear mine is the most profitable, and is worked in the most scientific manner. The company has built a boiler outside the mine, and conduct the steam in pipes 1,200 feet to the engine, and steam pumps in the bottom of the lower levels. The shaft is down 260 feet, and paying better the farther they descend. The Yellow Jacket, belonging to the same company, and worked through the same tunnel, is opening finely upon a large body of very rich ore. This mine has paid well, but the chief characteristic is the quartz is found in bunches. As the company descends upon the ledge the mine is less broken and the bunches are larger. It is deduced from this that in 100 feet more descent the ledge will be continuous and the wall unbroken. The Klamath quartz mine is being opened by John Daggett. This company has heretofore done too much dead work to be profitable, but they were ambitious of a full development at an early period and were lavish of their means. This is one of the best appointed mines in the State, and can be worked very economically. The Evening Star is paying well. This is a four-stamp mill and has proved an excellent investment since it started. That it does not pay better is for the reason that it has no more stamps. The ledge is 12 feet thick.

MARIPOSA.

Washington Mine.—Mariposa *Gazette*, Oct. 21: On Wednesday morning last we visited this mine, where we met Mr. George E. Webber, Jr., the gentlemanly superintendent, who kindly furnished us with the following interesting items pertaining to this valuable property, which is, without doubt, better and more judiciously managed than any of the kind in California. The mine, mill, hoisting machinery and chlorination works are all in excellent order. One hundred and twenty-five men are employed in and around this mine and mill. All in that section are benefited from the product of this mine. The mill is run by steam power and contains 20 stamps, and is kept in motion day and night, crushing 30 tons of rock per day. The yield averages $15 per ton. The crushing never ceases excepting for repairs, which seldom occurs, and the days for cleaning up the gold, which takes place every two weeks. The company is well fortified against any and all emergencies that might cause a detention for a time in extracting the ore from the mine. They have at this time upwards of 1,500 tons of ore upon the dump. The ore taken from this mine contains a large percentage of sulphurets, which are concentrated at the mill. They are saved up during the summer months, and some time during the winter or spring they are roasted and chlorinated. The company has on hand at this time about 200 tons of sulphurets, which will yield from $75 to $80 per ton. The company is well provided for the winter with all necessary supplies. There is also piled up in the yard adjoining the mill 2,500 cords of wood—enough to start a wood yard on a small scale. The portion of the county in which this mine and mill are situated, commonly known as the Quartzburg and Hornitos quartz mining district, is literally threaded with gold bearing quartz veins, none of which, except the Washington mine, have ever been thoroughly prospected. A great deal of prospecting has been done in that vicinity every year since 1849 up to the present time, and a great amount of gold has been found and extracted from the croppings of many veins. We venture the assertion, however, that with the exception of perhaps two or three veins, there cannot be found a shaft sunk to exceed 30 feet. In other words, the Washington mine stands alone, and is the only one in that neighborhood that has been properly worked, thereby developing a mine which could not at this time be purchased for half a million dollars. The intrinsic value of this mine was ascertained simply by sinking a shaft; and if the amount of labor that has been spent by many claimants of veins, in digging coyote holes upon the outcroppings of veins, had been expended in a well directed and skillful manner sinking shafts, there would have been many other than the Washington that would have been yielding gold in fabulous quantities

NEVADA.

New Works.—Nevada *Transcript*, Oct. 27: New hoisting works have been put up on the Pittsburg mine, in place of those recently destroyed by fire. The company owning the mine have labored under a great many difficulties in reopening it, but we hope and believe they will be amply rewarded when they do get down to regular work. The Nevada mine, under the superintendence of Wm. Berry, is doing splendidly. It does not fail to pay a nice little dividend each week, and the prospects of the mine were never as good as now. The owners of the Providence mine are erecting works in which to use the Monnier process. The mine is so thoroughly opened that when all the gold in the rock can be saved, it will yield just about any amount that may be called for. There is rock enough stripped to last for a year or two without doing any dead work.

A letter from San Francisco tells us that Skiff Murchie was still there when it was written, negotiating for the sale of the mines belonging to his family. All that is needed to make a first-class paying property up there, is coin to open out and put up machinery with.

Mining Property in Demand. — Nevada *Transcript*, Oct. 26: We find the following inquiry in the Grass Valley *Union*: "What can 1,000 shares of, together with one-half the number of shares, in the mine of the North Extension of the Allison Ranch Franklin mine be had for? Address lock box No. 13, Nevada City, Cal." A year ago we presume that the property inquired about could have been bought for a song. Now it is, no doubt, very valuable. The Allison Franklin is a new mine located near Allison ranch, and on the north extension of the old Allison Ranch mine, which was probably the richest quartz mine ever worked in the State. The Allison Franklin is on the north extension of the old mine, and it is proving itself richer, if possible, than the old one was in its palmiest days. There have been 500 tons of rock taken out, all of which paid way up into the hundreds. A new mill has been erected, and will be ready for work in about three weeks. The extension inquired about, it may reasonably be supposed, is as rich as the original, and can probably be opened without assessments. Hence we conclude that the owners will consider it valuable property. This is only one instance showing the advancement in value of mining property of the county, and the inducements which the county holds out for prospectors and capitalists wanting to invest in mining property.

The South Yuba Canal Sale.—Nevada *Transcript*: A great many owners of hydraulic claims in this vicinity have been troubled about the sale of the South Yuba canal company to Alvinza Hayward, anticipating that in the future they could not get as much water from the company as they have in the past. It is the intention of the company to supply water in this vicinity in a greater quantity than heretofore, if the demand requires it, and also to run the water to Blue Tent in quantities sufficient for their use. Mr. Hayward's water bills for his claims in Placer county have averaged in the neighborhood of $100 000 each season, and yet he has not been able to get all he required. The property was offered to him for $510,000, and knowing that it was a matter of but a very few years he would pay out that much for water, it was better for him to buy the whole property right out. We also understand that Hayward contemplates acting with the greatest liberality, and intends to accommodate to his utmost ability all those who have dealings with the company.

PLACER.

Mining Items.—Dutch Flat *Forum*, Oct. 26: Since our last issue the weather has been favorable for outside work, and the owners of the various claims in this vicinity have been busily engaged preparing for water. The reservoir of the South Yuba canal company, near Alta is nearly completed. It is built in a very substantial manner, and there will not be any risk in filling it the first season. This reservoir will be of great convenience in distributing water to the various claims in this section, and will save the company much water which would otherwise be lost.

Baker Claim.—The Yankee tunnel has been completed to the Baker claim, and is now connected with the Baker shaft. The men driving the branch tunnel broke through on Saturday last. This is the third shaft on the line, is 150 feet in depth and is situated about 2,100 feet from the mouth. Through it the Baker, Wisconsin and Michigan claims can be washed to the bedrock. Men are now engaged constructing sluices in the tunnel below, and we may soon expect to hear that the Baker claim is ready for washing.

Elmore Hill Claim.—The superintendent is driving three powder drifts, one of which is a long one, extending across the channel, for the purpose of prospecting. The gravel proves to be much richer than any washed off last season, and it is believed that the product the coming season will be very large.

The Franklin, Boston, Lakamp, Yankee, Central and Summerset claims are in working order and waiting for water. At Gold Run the Miners' ditch company and South Yuba canal company have been making extensive repairs on their ditches, by the construction of new flumes in place of the old ones.

PLUMAS.

Genesee Quartz Mine.—Plumas *National*, Oct. 21: On the south side of Genesee valley is located the mine called by the above name. It has been steadily worked in a remarkable way since 1859, and we believe, has always paid liberally for the labor expended. The mine was first worked as a hydraulic claim, the gold which had escaped from the decomposed quartz having made the ground from the ledge to the level of the valley very rich, and as high as $40 to the man per day was realized in some portions of the ground which was sluiced off. The washing done in this way developed many small quartz veins, exceedingly rich. A small horse arastra first commenced crushing the rock, and rock which paid hundreds of dollars per ton was run through this primitive machine. The horse arastra was succeeded by a larger one, run by water, and of a capacity to crush about one ton of rock per day, and the company owning this mine realized considerable money by this slow way of working. The mine changed owners several times, and always at good figures. A six-stamp mill was put up, and we believe that the present owners have added four or six more stamps. The mine is now owned by an incorporated company, and is now called regularly in the San Francisco Stock and Exchange Board and also in the Pacific Stock Exchange, and considerable of it changes hands daily. We do not remember of an assessment having been levied for years, and in this respect it is an exception. Recently a new Board of Trustees has been elected, and in a few days the capital stock of the company will be increased from 25,000 to 100,000 shares. The intention of the managers is to prospect and develop the mine in a systematic manner, and we believe if the proper amount of labor is done, a body of quartz will be found, very extensive and as rich as any mine in the State can boast of. It must be there, for in all the rock taken from the Genesee mine in the past 17 years, there never was a pound that did not contain gold, and in many places it has been wonderfully rich. We are glad that it is now to be opened as it should be, for it will make a name that will be heard all over the coast.

Items.—Negotiations are now pending, and it is thought that an extensive mining operation will be commenced in the blue gravel lead, at Bell's Bar, before a great while. There never was a time when Quincy was half as thriving and prosperous as to-day. More improvement has been made the present year than ever before in the same length of time, and there is every reason to think that the season of prosperity will continue. Mr. R. Z. Bell intends to start for his home in Dubuque, Iowa, in a few days, and Mr. G. M. Compton will take charge of the mine. In all probability the machinery for working the mine will be up this fall. Mr. Knapp has been appointed superintendent of the Franklin company's mine, on Willow creek

SIERRA.

Brush Creek—*Mountain Messenger*, Oct. 28: Workmen are busily engaged at the Brush Creek mine, at the Mountain house. The pump was to be started last Thursday. Jas. Middlemiss is superintendent. Oscar Jones, one of the proprietors in the Bald Mountain, has returned from his trip to the Centennial, looking healthy and satisfied.

New Company.—A company of Downieville gentlemen have purchased the interest of Al. Bixby in the American Hill gravel mine. Judge Gale, we believe, still holds his interest. Preparations are being made to work the claim vigorously this season.

South Fork.—The South Fork have not yet decided what course to pursue to work their mine.

North Fork.—The North Fork company, of Forest City, have their shaft completed all but about 15 feet. It will be finished this week. The work on the tunnel is progressing satisfactorily and rapidly.

TUOLUMNE.

Mining Items.—Tuolumne *Democrat*, Oct. 28: The Soulsby mine is evidently making a profitable run, as the entire apparatus connected with it is in full operation and no complaints are made by the miners in regard to a lack of money. Quite a number of neat cottage residences have been lately erected at Soulsbyville by the workmen at the mine, and the signs of prosperity are plenty in this thriving mountain village. The company has erected a new boarding-house with all the modern improvements and with the surrounding structures presents an indication of activity which, if it continues a few months longer, will rank Soulsbyville with Columbia as the second town in the county. The Churchill mine, owned by Messrs. Esterbrook, Floyd & Leachman, in close proximity to the Soulsbyville mine, have commenced active operation, a shaft being sunk to a depth of 45 feet. The progress in this direction hereafter will be slow, from the fact that very hard rock was struck at a depth of 42 feet. The same activity prevails at the Ohio mine, the mining force having been increased considerably during the past few weeks.

YOLO.

California Quicksilver Mine.—Yolo *Mail*, Oct. 26: R. G. Hart, mine manager and assistant superintendent of the California quicksilver mine, paid a visit to our office on Monday evening. The management of the mine has been newly organized, with Mr. F. E. Smith, of Sacramento, as store keeper and clerk, and T. J. Fuqua supervisor of the ranch and teams. The inhabitants number about 125, and several new houses have been erected and families moved into them during the past season. They have added a new furnace to the works, which is just finished, and with their present capacity are doing more than any mine in the State in the production of quicksilver.

Nevada.

CORNUCOPIA DISTRICT.

The Mining Outlook.—Cor. *Silver State*, Oct. 23: In the future I see the Hussey, the Fishor, the Leopard, the Tiptop, the Mammoth and the Alameda assuming their places among the prominent and best paying mines of the State or coast. In proof of this look at the product of the Leopard in the last six months, as reported in the stock journals and seen in the bullion shipments. Jim Morgan was here the other day to spy out the land in the interest, I suppose, of the stock men below, but his mission was suspected and he could not get into the mine, and then he said he did not care, etc., and I think he was right, when the Leopard is paying dividends that ought to satisfy him. Its products exceed its expenditures, including the loss of the mill, which was burned down. In truth, we have the mining camp of northern Nevada.

EUREKA DISTRICT.

To Start Up.—Eureka *Sentinel*, Oct. 25: The Geddes & Bertrand mining company has leased the Pinto mill, which will be started up next Monday on ore from the company's mine at Secret canyon. There are 1,500 tons on the dump and plenty more in sight in different portions of the mine to insure a continuous run for an indefinite period. The mill has 20 stamps, and it is expected to work on an average 25 tons of ore per day. James Mes, an experienced mill man, has charge of the works at Pinto, while Mr. Jenkins has the management of affairs at the mine. Under the present management we predict for the Geddes & Bertrand a career of success unprecedented in the mining annals of eastern or middle Nevada.

OREANA DISTRICT.

Humboldt Company.—*Silver State*, Oct. 26: The Hurricane company have again started their furnaces, and will ship a carload of bullion to-night. Reports from the mine say it looks well, and is producing, with the force at work, ten or twelve tons of ore per day. The superintendent, John Williams, is a gentleman as well as an experienced miner and smelter, but the company is a little slow.

PEAVINE DISTRICT.

Rich Strike.—Reno *Journal*, Oct. 28: Day before yesterday we mentioned that extraordinary good ore was being taken from the Con. Poe mine, at Peavine. A letter from Superintendent Griffin to Secretary Brown, received yesterday, contains the particulars. The strike is in the south drift on the 150-ft level. Three assays have been made with the following results: No. 1, $1,957.11; No. 2, $1,056.37; No. 3, $376.34. This newly discovered body of ore is two feet wide. It is pleasant news to receive, and such as we anticipated. Next week the mill will start up crushing ore, and a satisfactory run is assured. In the mine everything is going along smoothly. The incline is being pushed ahead rapidly, and a large force will be kept at work in this part until a depth of 500 feet is attained. The silver lining of the Con. Poe cloud is beginning to show in sight.

REESE RIVER DISTRICT.

Connection Made.—*Reese River Reveille*, Oct. 23: Connection has been made between the 517-ft level of the Curtis shaft, and the 700-ft level of the Bowman incline, and the extraction of ore from the big chimney in the Panamint ledge, which lies between the two levels, will shortly be commenced through the Curtis shaft. That our readers may better understand the relative situations of the workings here mentioned, we will explain, that the 517-ft level of the Curtis is deeper than the 700-ft level of the Bowman incline. The Curtis shaft level is from a perpendicular depth and the Bowman level is from an incline depth. The body of ore was encountered at the 600-ft level of the Panamint, in which an ore chimney from three and a half to four feet in width was cut, carrying throughout a grade of ore sufficiently high to afford a large profit on its milling as taken from the vein without sorting. It was prospected to the depth of an additional 100 feet, showing the same width of vein and the same grade of ore all the way. To work it below the 600-ft level of the Bowman, and extract the ore through this prospecting incline, and thence through the Bowman incline, would have been inconvenient and expensive; so a cross-cut was run from the 517 ft level of the Curtis shaft, which tapped the bonanza at the 700-ft of the Bowman, and stopes have been commenced upward from that point, from which through the Curtis shaft, the ore can be cheaply and conveniently hoisted to the surface. All connections are now made and everything in readiness for operations, and in a few days the cages will be shooting up the shaft laden with their burden of precious metal hearing ores.

WASHOE DISTRICT.

Baltimore and American Flat.—Gold Hill *News*, Oct. 25: The ore vein recently struck in the east crosscut from the north drift on the 1050-ft level is still showing well. An upraise has been made which is showing ore of a good character, though what the extent of it is must yet be determined. Cross-cut No. 2 on the same level is also showing some ore. The east drift on the 1450-ft level is steadily advancing, the rock in the face showing strong indications of a near approach to the ore vein.

Aureola and Argentina.—New shaft down 77 feet this morning. The rock is becoming harder and more solidified, showing also better streaks of white quartz coming in among the red, and carrying a considerable amount of iron pyrites. Assays of this rock should also show gold.

Chollar-Potosi.—Daily yield, 100 tons of ore, the average assay value of which is $32 per ton. Sinking the main incline is making steady and fair progress. The pumps are kept running about three-fourths of the time. The new hoisting machinery at the combination shaft is completed, ready for use. The erection of the big pumping engine is going steadily forward.

Overman.—Sinking the main shaft is being pushed ahead at a very favorable rate, the speed attained being about two and a half feet per day. The immense new pumping beam is in place and the erection of the entire pumping machinery is fast approaching completion.

South End.—Sinking the shaft is being pressed ahead with the usual vigor. It is now down 274 feet, the bottom being in quartz and clay, mixed with porphyry. Some of this quartz gives good assays of both gold and silver, and the appearances are that at a depth of 200 feet more the shaft will cut the rich ledge of the Herald, which, without doubt, passes directly through the South End claim.

Sierra Nevada.—The south drift from the 1500-ft station is showing some very encouraging ore prospects. The north drift on that level is also passing through a much livelier and better character of quartz than has been encountered before in that direction.

Alta.—On last Saturday morning the large plunger lift pump at the 800-ft station burst, stopping the large pumping engine, and making it necessary to stop tha

sinking of the shaft until a new pump, which was immediately ordered, will arrive and can be put in place. This will cause a delay of about ten days' time. In the meantime, the water is being kept down in the shaft by bailing tanks.

SUCCOR.—The new hoisting engine is in position and will be ready to start up by Friday or Saturday of this week. It is necessary to start the hoisting engine first, in order to use it in lowering the heavy pumps and columns into the shaft.

LADY WASHINGTON.—The pumps are being placed in the best possible condition, to manage any influx of water. The main east drift at the 850-ft level is again being pushed ahead lively.

UNION CON.—The east and west cross-cuts from the north drift on the 1300-ft level are each advancing in very favorable ledge matter.

CON. VIRGINIA.—Daily yield, 450 tons of ore. The ore stopes on the 1400 and 1550-ft levels are looking finely. Especially is this the case with the ore stopes going north on the 1400-ft level. About 45 feet in width of these stopes is to-day yielding rich ore, which for richness was never exceeded by any considerable body of ore yet extracted from the mine. On the 1700-ft level the north drift is again steadily advancing, though slowly. The heat in face is intense. Additional blowers are being put in to furnish a better supply of air and drive the Burleigh drills. At the 1650-ft station of the C. & C. shaft the west drift to cut the ore vein is now drained perfectly dry, and is being pushed ahead with all the speed possible to reach the ledge. The mills are all kept steadily running up to their full crushing capacities. A large new ore dump is being constructed at the C. & C. shaft, and the side switch of the Virginia and Truckee railroad will be completed to the shaft in a very few days more, ready to commence the shipment of ore as soon as the ledge is reached.

CALIFORNIA.—Daily yield, 450 tons of ore. The ore stopes on the 1500 and 1600-ft levels are yielding splendid ore. On the 1500-ft level the ore breasts between cross-cuts Nos. 5 and 6 are extended directly across the vein, an opening drift being kept a few yards in advance. The breasts and this drift, which is now 30 feet in advance without yet having reached the wall, already have opened the vein to the magnificent width of 230 feet. How much wider it is at that point yet remains to be seen. The main south drift on the 1600-ft level is steadily advancing through the center of the ore vein, the face still in rich ore. This drift is making about two feet per day, and shows the ore vein to be a solid mass of rich pay ore as far as it has yet penetrated. The drifts and winzes on the 1300 and 1400-ft levels are all being put in the best possible repair. The mills are crushing the ore as fast as it is extracted. Sinking the C. & C. shaft is making the usual progress, the flow of water at the bottom being strong and keeping the pumps busy.

JUSTICE.—Daily yield, 160 to 165 tons of ore. The ore stopes are looking well at all points. The upraise in the ore body from the stopes on the 400-ft level is showing a fine body of ore which will yield from $60 to $80 per ton. The development of the ore body downward below the 600-ft level is proving it to be rich in stephanite and ruby silver, some of the choice pieces fairly glittering with the precious metals. On the 800-ft level a winze has been started in the ledge between cross-cuts Nos. 2 and 3, the bottom of which is yielding ore that assays rich in gold. The ore in the face of cross-cut No. 4 on that level is showing a steady improvement in quality. Cross-cuts Nos. 1, 2 and 3 on that level are steadily advancing in ledge matter of a highly encouraging character.

TROJAN.—The cage and shaft arrangements are now all right again, and the development of the mine is going ahead. The northwest drift at the 300-ft level is being pushed forward into the ore body, and excellent pay ore is being taken out. The same may be said of the upraise at that point. The main north drift is also being advanced again, and near the north end of it cross-cuts are being made both east and west.

YELLOW JACKET.—On the 2040-ft level a cross-cut has been started to the westward at a point 100 feet south of east cross-cut No. 1. Sinking the south winze below the 1940-ft level is making good progress. The north drift on the 1940-ft level, running to connect with the Imperial mine, is being pushed rapidly ahead. The grading has been completed from the railroad to the site of the new shaft, ready for a switch or sidetrack, which will be built by the railroad company at once.

OPHIR.—Daily yield, 300 tons of ore. The ore breasts show little if any change during the week. The north and south prospecting drifts on the 1650-ft level are steadily advancing, and are both looking more favorable for good ore developments than at any time in the past. Sinking the main incline is going rapidly ahead. The north drift on the 1700-ft level is steadily advancing, the face in very favorable ground. The ore dump at the head of the main incline is about completed.

BELCHER.—Daily yield, 300 tons of ore. The new pumping engine seems, so far as tried, to be all that was expected of it. The air and drain shaft, to connect with the south drift from the Crown Point on the 1700-ft level, is completed.

FLORIDA.—The shaft has been sunk since last report 13 feet. On Sunday last the bottom of the shaft cut the east clay wall of the ore vein, which is solid, well defined and indicates a more concentrated condition of the ore vein than the ledge has developed on the levels above.

AMAZON & GLASGOW.—Sinking the main shaft has been resumed with all possible vigor. The new pumping machinery is working with the utmost perfection, and is doing good service.

BULLION.—The east cross-cuts on the 1400 and 1500-ft levels are steadily advancing, the face of each being in ledge matter of a highly encouraging description. The east cross-cut on the 1600-ft level is also steadily advancing toward the ore vein. A south drift is being run from this cross-cut to connect with the main incline for air purposes.

JULIA.—The main south drift on the 1600-ft level is steadily advancing, the face still in quartz and low grade ore. This ore development so far to the south and east, the face of the drift being about 670 feet south of the shaft, is one of much value, and proves a concentration of the ore vein much farther to the south and eastward than was ever expected at that depth.

GOULD & CURRY.—The north compartment of the shaft has been finished down to the 1700-ft level. The south drift on that level has been again started up, and is making good progress. The east drift on the 1700-ft level is also cleaned out and repaired, preparatory to being again driven ahead.

BEST & BELCHER.—The most important move that we have to record of this mine is the starting of a cross-cut east a little north of the center of the claim on the 1700-ft level. This cross-cut will be driven in a distance of 50 feet, just far enough to make room for the use of the diamond drills, which will then be used to prospect the ledge and drain the water if any be found in the vein.

COSMOPOLITAN.—The Hope mill is kept steadily running, and the mine is showing more ore in sight at the present time than ever before. The stopes in the upraise above the adit level are yielding well, and the drifts both north and south from the winze below that level are in very good ore.

NEW YORK.—The pump compartment continues to be raised upon at the rate of seven feet per day, leaving some 260 feet yet to raise in order to complete the shaft to its full size from top to bottom. The excavations for the pump tanks are finished, and the tanks will be put in shortly.

MEXICAN.—The upraise on the 1465-ft level is showing more quartz of a better character. It begins to look as if a body of pay ore might yet be found in the unprospected ground lying to the east of all the old workings above the 700-ft level.

IMPERIAL CON.—The greater portion of the week has been spent in repairs to the incline hoisting engine, which consumed three days, and the laying of a track in the main incline with T rails of the best steel manufacture.

CROWN POINT.—Sinking the main incline below the 1800-ft level is making splendid progress. It is now down 1,880 feet. The south drift on the 1700-ft level, last Monday morning, completed the connection with the combination Belcher air shaft, completely ventilating the mine on that level and opening a drain for the water into the Belcher pump shaft.

HALE & NORCROSS.—Another of the large lift pumps has been put in 80 feet below the 1800-ft level, and will be ready to take the water this afternoon. This will do away with the use of the small steam pumps down to that depth, and it is confidently believed will enable a strong and immediate gain to be made on the flow of water at the bottom of the incline.

SILVER HILL.—Sinking the main incline is going forward at the rate of two and a half feet per day. The flow of water is not so strong. An ore shute is being constructed at the 650-ft station. This shute will soon be completed. The north drift on the 444-ft level is in a distance of 670 feet, the face in quartz and vein matter of very favorable description.

NORTH CON. VIRGINIA.—Sinking the shaft is being pressed ahead with all possible dispatch. During the week an accident happened by which a cable was run into one compartment of the shaft. It was all taken out and work resumed at the bottom in three hours' time after the accident.

HERALD.—The north drift on the 160-ft level last Sunday afternoon struck a continuation of the ore found a few days ago and which had apparently pinched out. The broken place in the ledge has been passed, and yesterday the ore was of as fine character as any that has ever been found in the mine.

WEST BELCHER.—The Vivian mill is engaged to run on ore from this mine, and ore extraction for this purpose is to be commenced forthwith. There is plenty of good pay ore developed in this mine at the 300-ft level, the up-raise above it and other points, to keep three or four mills running.

NORTH CARSON.—Main shaft now down over 400 feet, and the bottom all in the vein, showing splendid streaks of ore, some of which give very high assays, bidding fair to concentrate into a good paying ore body.

NIAGARA.—Sinking the main incline is making excellent headway. The bottom is in good working ground. It is down 489 feet. The machinery is working well.

SUPERIOR.—Excellent work is being done. The tunnel from the ravine to cut the ledge below the bottom of the shaft, draining the shaft and establishing good ventilation and ore extraction facilities at the same time, is progressing finely, and will reach the proposed intersection in the course of five or six weeks.

KOSSUTH.—The west prospecting drift on the 600-ft level is steadily advancing and is expected in a very short time to reach the ore vein. Some rich streaks of quartz and ore have already been encountered.

GLOBE CON.—Ore extraction from the old stopes and breasts will be commenced shortly, the main incline and ore shute being cleaned out and in readiness.

DAYTON.—The station at the 920-ft level is being opened as fast as the soft character of the ground will permit. The several cross-cuts on the 500-ft level are being steadily advanced, cross-cut No. 6 showing evident signs of a near approach to the ore vein.

ALPHA.—The laying of an iron track in the main incline of the Imperial shaft has stopped the hoisting of rock, and greatly interfered with the headway of the north drift on the 2000-ft level during the week past.

LEVIATHAN.—The north drift at the 600-ft level is still pushing ahead in very good ground, and passing through occasional streaks and bunches of good ore offshooting from the main ledge to the eastward.

CALEDONIA.—Sinking the main shaft is progressing at the rate of two and a half feet per day. The rock hoists well and the flow of water is still strong.

PROSPECT.—Main drift west from the 400-ft station is pushing ahead, still in hard rock. It is nearing the main ledge and should reach it soon.

SUTRO TUNNEL.—Total length of tunnel, from mouth to face of header, last evening, 14,787 feet. The face is now in harder rock than last week, but blasting and working better, requiring less trouble in timbering, and consequently allowing of faster advancement.

BUCKEYE.—The mine has been entirely shut down, with the exception of running the pumps to keep the water down. It is expected that everything will be in readiness to resume work at all points on the lower levels by the first of November.

MINT.—The shaft is now down 1,278 feet, the bottom in much softer material, being a mixture of clay, quartz and porphyry, of a highly encouraging character.

MOORE & MORGAN.—Shaft 60 feet deep, and contract let to sink it 100 feet deeper. The bottom is in very promising looking quartz, evidently the outside of the ledge.

WELLS-FARGO.—The new hoisting works building is completed. The engine and other machinery is on the ground ready for erection.

TWIN PEAKS.—Sinking the new shaft is making very good progress in favorable working ground.

WASHINGTON.—Sinking the main shaft is making excellent progress. The flow of water at the bottom is still giving some trouble.

UTAH.—Sinking the shaft is making good progress. It is now down 967 feet, the bottom still in good blasting rock. The flow of water is light and gives but little trouble.

ROCK ISLAND.—The flow of water at the bottom of the shaft shows a slight decrease, but still keeps the pumps steadily running.

SOUTH OPHIR.—Work is being commenced to sink the proposed new working shaft.

SAVAGE.—The pumps are kept busy, and the water is gradually though slowly being lowered. Only about 30 feet of gain has been made during the week.

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TELEPHONY.—On the evening of October 9th, Alexander Graham Bell and Thomas A. Watson conducted a series of experiments on a line of telegraph wire stretched between Boston and Cambridgeport, a distance of two miles, by which audible speech was conveyed from one end to the other in the most satisfactory manner, by the medium of electricity only. The explanations are not very clear, but it appears that "telephones" were placed at each end of the wire and a battery of ten carbon cells used. Articulate conversation then took place through the wire. The sounds, at first faint and indistinct, became suddenly quite loud and intelligible. The experimentors at both ends of the line took notes of what was said and heard, with a result entirely satisfactory in showing a marvelous degree of accuracy. The discovery of the system of talking by telegraph is due to Mr. Bell, of Boston.—*Alta.*

CHANGE OF SUPERINTENDENTS.—Mr. George Westfall, superintendent of the Trojan mine, has resigned his position, and James O'Donnell, well known to the mining men of the Comstock, has been appointed to fill the vacancy. Mr. O'Donnell is one of our best miners, having filled the position of foreman in the Yellow Jacket and Imperial mines for several years past, and is just the man to fill the office. Mr. G. A. Roth has been retained as Secretary.—*Gold Hill News.*

THE ENGINEER.

The Isthmus Canal.

An isthmus ship canal, by which vessels of any size could pass from the Atlantic to the Pacific Ocean, was an important point in our national schemes and dreams of commercial grandeur in the days when the project for the Suez canal seemed the vaguest possible speculation. But the Suez canal has been made, an enormous tonnage is passing through it yearly, while our great project has almost dropped out of men's thoughts; and though the government still maintains some sort of diplomatical relation to the great idea, it is not likely that an economical Democratic congress would give 25 cents for all the isthmuses and the two oceans together. Such is the consequence of economy when parties have it badly with a view to political effect. It will not answer to say that the Suez canal was built because it was in the soil of "effete" and "unprogressive" Egypt, and that ours was forgotten because we are so tremendously progressive and energetic and wide awake. We may better say that they had peace and we had war; and as we may always say of such great projects, "These are imperial works and worthy of kings." We may say here that the Khedive played the sovereign handsomely in his princely encouragement of a great enterprise, while we, the sovereign people, played the same character very meanly in a similar relation. Now, however, the isthmus canal project is brought to the attention of the world in new relations. There has recently been organized in Paris a body especially for the preliminary study of the subject, which body has ostensibly strictly geographical relations, but the practical nature of which is guaranteed by the fact that its president is M. Ferdinend de Lesseps, who made the Suez canal. The vice-president is Vice Admiral Ronciere le Noury, and the secretary, M. Leon Drouillet, an engineer. The nucleus of the body thus formed is a committee of the Paris geographical society, which invites the cooperation of all other geographical societies in the world, specifically to determine, by minute study of the geography of the isthmus, at what point and in what condition it is possible to make the canal. This body starts, of course, from the assumption that the enterprise has not hitherto been effected because of the contradictions involved in the numerous surveys made, and because of the impossibility of reconciling the various interests related to these surveys, and it further assumes that the very contradictions involved are an evidence of insufficient study of the country. Its proposition is to organize, by the thorough geographical study of the district. Its labor will certainly have the sympathy and encouragement of all who desire the success of the more substantial points of national progress.—*New York Herald.*

A New Style of Tunnel.

We read in the *Polytechnic Review* that John C. Trautwine proposes a new plan for constructing tunnels under rivers and the like. The following is the description of the invention: At the present time, when so many tunnels are being projected beneath the beds of rivers, or even of arms of the sea, any suggestions for diminishing the labor, expense, or well known hazard of such constructions is especially opportune. Mr. Trautwine's proposition is somewhat startling from its novelty. His broad proposition is to abandon the usual method of perforating the tunnel beneath the bed of the stream; and to construct it above water, upon a strong solid wooden platform several feet in thickness, which shall serve as a base for it to rest upon after it is finally deposited in its place. The tunnel and its platform are then to be sunk into a trench dredged across the bed of the stream for their reception. The depth of the trench may vary with circumstances; in some cases it may be so deep that when the dredged earth is thrown into it again the top of the tunnel will be entirely beneath the original bed of the stream. This will evidently be necessary when the full natural depth of the stream is required for navigation. When this is not the case, and the depth of the stream admits of it, the tunnel may be put partly beneath the bed, or may even rest upon it. In either case, the tunnel may then, if necessary, be surrounded and covered with earth and rough stone, to protect it from ice or other floating bodies, or from dragging anchors, etc.

When the bottom of the trench, or of the river bed, is soft, piles would generally be driven for the wooden base of the tunnel to rest on.

Only a very short tunnel could be sunk entire. A long one would be made and sunk in sections of perhaps 100 or more feet in length; and the short intervals, or joints between these sections, could afterward be filled up by means of divers or by coffer-dams, caissons, etc. In water of moderate depth the sections may be at once built on the very spot they are to occupy by means of coffer-dams. The most prominent advantages that present themselves to us in Mr. Trautwine's method over the common one are, first, the avoiding of the danger to the lives of the workmen (together with the delays and the expenses) attendant on the breaking in of the river bottom, or the sudden irruption of quick-sand, or spring of water. Second, that inasmuch as the tunnel need not be placed at so low a level, its excavated approaches may be materially shortened at a corresponding saving of expense. For instance, if the top of an ordinary tunnel has, for safety, to be placed say 30 feet below the bed of the stream, and if the excavated approaches to it be on a grade of one in 50 (or 106 feet to a mile) it is plain that the approach to each end must be 30 times 50 feet longer than would be necessary if the top of the tunnel were at the bed of the stream. In other words, the two excavations for approaching the tunnel by the old method must together be 3,000 feet longer than for one built on Mr. Trautwine's plan. If the more desirable grade of one in 100 (or 53 feet to a mile) be adopted, the difference becomes 6,000 feet, or more than a mile, in favor of Mr. Trautwine's plan; and where the top of the tunnel can be placed above the bed of the stream, the difference will be still more in his favor.

Another advantage in his method is that it obviates the necessity for the extreme care that must be taken to secure a perfect alignment for the tunnel, in order that the two halves of its length (commenced at its two ends) shall meet at its center.

Communication with Central Africa.

Mr. McKenzie's surveying expedition, which left England in June for the purpose of surveying the bed of the proposed inland sea, appears to have ended in a fiasco. *Iron* says: It seems to have been imperfectly provided with the usual and necessary appliances of a surveying expedition, and quarrels and secessions took place. After arriving at Cape Juby, enquiries were made for the "boccas" or supposed mouths of the inland sea formerly occupying the depression in the Sahara known as El Juf, and several of these were found about 40 miles to the north of the cape. The most likely one was the Bocca Grande, a rift in the rock-bound coast about three-quarters of a mile wide, and cut off from the Atlantic by a sand-hill about 40 feet high. It was seen to extend seven or eight miles inland, bounded by cliffs on each side, but whether it expands into the famous El Juf, or, indeed, whether its bottom is below the sea level or not, could not be ascertained. No levels were taken, either there or in the depression of El Juf; in fact, the latter was never seen. The expedition returned to Grand Canary early in August, and was broken up. This is the only account that has been yet received, and it is evidently not from a friendly hand; when the leaders return we shall perhaps hear more about what seems at present a tissue of helpless mismanagement. Against it, it is, however, pleasant to be able to set a successful a tempt to establish communication with the interior from Zanzibar, in connection with the projected establishment, by the London missionary society, of a station on Lake Tanganyika. It occurred to the directors of that institution that if the South African wagon, with its 3,000 pounds weight of stores and long string of oxen, could be successfully introduced, the difficulties of the route might be got over, and about the time that Mr McKenzie and his followers left London, the Rev. Roger Price had succeeded in taking a wagon to Mpwapwa, on the central plateau, in 26 days, finding neither jungle nor swamp, hill nor tsetse fly to hinder him.

TELEGRAPH EXTENSION IN AFRICA.—It is proposed to carry a wire to the cape across the African continent. There is at present telegraphic communication from Alexandria to Khartoum, a distance of 1,100 miles, and surveys have already been made for its continuance to Gondokoro. From Khartoum to Delagoa bay, where the South African lines terminate northward, is only about 2,600 miles, shorter than existing lines on the other three continents. The route would lead under the Victoria Nyassa and Tanganyika lakes, and thence down the Shire and Zambesi rivers to the sea, where a short ocean line would connect it with Delagoa bay or Port Natal. A branch would go from Ujiji to Zanzibar. Of the 1,500 miles or so of aerial line it is suggested that much might be erected without the expense of poles by taking advantage of the trees over thickly wooded tracts, which are frequent in tropical Africa. The difficulty would be to keep the natives from utilizing the wire in regions where iron is scarce and valuable, but this might be got over. The undertaking, if it could be established and kept in working order, would be exceedingly lucrative, and would in many ways aid in opening up Africa to commerce and civilization.—*Iron.*

NOVELTY IN MARINE ARCHITECTURE.—The Canadians find the ice which for nearly six months every year blocks the St. Lawrence a great barrier to direct European trade. How to overcome it is a problem their shipbuilders have been endeavoring to solve, and there has recently been launched at Quebec a vessel designed for making winter voyages down the St. Lawrence to Prince Edward island. If she is successful other and larger vessels on the same model may be built for European trade. She is named the *Northern Light*, and will be fitted for sea by November. She is sheathed with one of the hardest of woods—greenheart—and plated with iron. Her construction is such that there can be no right-angle pressure from ice on any part of the hull. The draft of water aft is 17 feet, and the screw is so placed that there will be at all times at least five feet of water above the upper blades, so as to prevent contact with ice. Her engines will be of 700 nominal horse-power.

Agricultural Experiments.

The progress of agriculture depends upon the dissemination of the truth which is now in the possession of the few, and the acquisition of new truth. If all our farmers possessed the secret of success which the few enjoy and act upon, the art of agriculture would be improved and elevated, and prosperity would be hight ened. If tha few, comparatively speaking, could increase their valuable possession of truth to the extent of which the industry is capable, the ecience of agriculture would be attained.

The way to gain truth is to search for it. It is to be determined hy experiment, by actual investigatiou. Tha true method of ascertaining facts is the scientifio method. It matters not whether tha experiment he conducted in the field, in the orchard, in the vineyard, in the stable or in the laboratory of the university; if it be conducted with a discriminating understanding of the conditions involved, and if the result be read in harmony with these conditions, it is a scientifio experiment. A useful fact is no better if discovered by a practicel farmer than if discovered hy a professor, nor is it any worse. In so fer as each guins the truth, each is doing something for the progress of agriculture. It is one of the hopeful signs of the times that thie oneness of truth, however gained, is becoming more widely recognized. It is hopeful that the oldtime warfare between the so called "practicel" und "scientifio" is passing away. One cannot succeed without the other.. True practice aud true science are mutually dependent in their efforts for the promotion of agriculture.

The value of experimental stations for the discovery of the science involved in uricultural operations is hecoming more generally recognized. The Eoropean stations are enriching our agricultural literature with most valuahle discoveries. These new facts, coming to the attention of the farmer through his newspapers and periodicals, are being applied to farm work. The intelligence of the farmer enebles him to adept the new truth to the peculisr conditions which surround him. The chenges in the application which he has to make require sometimes almost as great inductive skill as that which led to the original trnth, and the farmer becomes in turn an investigator, a discoverer.

In our own country the tendency toward the puhlio experimental stations is very marked at the present time. During the last two yeers a station, something on the European plan, has begun its work in Connecticut. New York is conducting some very valuable researches at Cornell university, and several uther Stetes, supplementing the endowment of the National Government, are pushing ahead for the truth involved in agricultural practice. The latest movement which we hear of comes from the Green Mountain Stete. One of the great interests of the State is the dairy, end the dairymen have an association which is one of the most wide awake in the country. The secretary of the society, Mr. O. S. Bliss, a gentlemen whom we know as one of the most enterprising and public spirited lehorers for progress, writes as follows concerning the need for action in the way of discovering new and valuable truth: "Appearances indicate that more of the principles of successful and economical dairying will be developed in tho next 10 years than are now known. This development will not be limited to the processes uf manufeoture and the marketing of the products, hut will extend to the details of tillage. hreeding, feeding, etc., embracing all the arts in any mesner suhsidiary to the dairy. Exact knowledge of principles and the effects of various practices is what we need and must have in the plece of vegne hypotheses and unfounded opinions. While the associetion should not relax any of its efforts to elicit information from any and every source as in the past, it should at once establish an experimental dairy farm, stocked and equipped, upon which a thoroughly competent and practical man may, by careful and exact experiment, sift every theory supposed to have a modicum of truth, hearing upon the material prosperity of the Stete."

We trust Mr. Bliss will succeed in his commendahle effort. And the question arises, what lesson may be drawn from this enterprise? If in old Vermont, where generations of farmers have lahored and do not yet understand the conditions under which they work and the agents they employ, there is need for public investigation and experiments for the public information, what ie the need here, where a single generation hae not finished ite work, and where the capahilities of the soil and climate are altogether beyond our underetanding of them? And what are we doing to possess ourselves of this knowledge? We are working with the most enlightened and progressive farming population of any State in the Union, and each year new agricultural triumphs are heing attained. We are extending our production and our commerce hy sending new produots to new markets. Thie ie good. But there are questione continually arieing which no man can answer because the anewer must he sought for hy most careful inveetigation and experiment. What are we doing ae a State to hestow upon our grand agricultural interest the benefite of a scientifio investigation of the thousand questions which ariee concerning the true practice under our new conditions?

Useful Information.

Hints for Grainers.

The following recipes are for mix ·· the ground colors for the following styles of graining:

Light Wainsoot Oak.—White lead and yollow ocher, mixed to the required tint. Some grainers prefer a perfectly white ground for very light oak for inside work, hut it is always difficult for any hut a perfect master of the art to proceed on u white ground, and the work, when completed, is apt to have a ohalky eff ct, even though a dark varnish be applied.

A Darker Wainscot Oak.—Mix white lead, middle chrome and yellow ucher.

Dark Oak.—White lead, Venetian red and yellow ocher.

Very Dark Oak.—White lead, raw sienna, burnt umher and Venetian red; or burnt and raw sienna, white lead and burnt umher.

These colors, mixed iu different proportiuns, will produce a multiplicity of tints suitable to receive the graining color, their strength heing. of course, determined by the greater or lesser preponderance of white leed.

Mahogany Grounde.—There are various uotions extant umongst grainers ae to the best grounds for mahogeny graining, some preferring a ground of a deep yellow cast, whilst others choose one approaching a bright red. The reds and yellows used are Venetiau red, red lead, vermilion, raw sienna, burnt sienna, orange chrome, middie chrome, etc. These colors can be mixed to the tint required, an addition of white lead being made in eaoh oase, as the positive reds and yellows are too powerful unless diluted in turn hy white. Venetien red, orange chrome and white lead are the colors most generally used, and these three will, according to their predominance or subordination, meke such a variety of tints that the most fastidious greiuer need have no misgiving that the result will not come up to his expeotation if he exercises due discretion in mixing the colors.

Rosewoon Gaounn.—Venetian red, vermilion and white lead. A little scerlet lake is added for superior work, but this of course is too expensive for general use. Some peinters mix with the reds a small quantity of raw sienna or chrome yellow.

Birn's Eye Maple.—White lead alone is preferred by some grainers, hut the majority of painters use a little yellow ocher to kill the rawness of the white, and this is much the better plan to adopt. Beginners are apt to make the ground too yellow, a mistake that should be avoided at the untset, as the varuish whioh has subseqnently to be coated over the work, will give trensparency and add a pale creamy tone, whereas, if the ground he too yellow, the result will be heaviness.

Satin Woon.—The preceding remarks apply equally to setin wood grounds.

For these light woods it is of the utmost importence to have the grounds paiuted with finely stained colors and perfectly smooth. Too much time can hardly he spent in their preparation.

Coal Dust Fuel.—The latest instance of successful experience with hurning coal-dust is as follows: The Ocean mill at Newburyport, Massachusetts, has for some time heen runniug upon coal dust es a fuel. For yeers they have kept an actuel accouut, with scales, of every barrow of coal wheeled into the fire-room, and the average weekly consumption showed 40 tone of broken coal on 18,000 pounds of cloth; average cost $7 per ton or $280 per week, which makes the oost of fuel per pound of cloth over one and one-half cents. Under the present arrangement, the weekly consumption is only 36 tons of pea and dust on 20,000 pounds of cloth, costing $3.50 per ton, or $126 per week, which makes the cost of fuel per pound of cloth less than six mills, showiug a saving of nearly one per cent. per pound. This mill is run entirely hy steam, and the cost of one and one-half cents per pound in hurning large coal does not vary from the cost of other mills in the same vioinity. Beyond the saving of fuel, the fire is much easier on the boilers, brickwork and fronts of furnaces, no repairs having heen made on any of the above since the arrangement was put in, and the grates are as perfect as when new. This one item almost pays the expense of the entire arrangement. The labor is not neerly as hard on the firemen, and the engineer hae the eteam under entire control. Again, if steam is drawn down rapidly, as in dye worke, it can be brought up again in a quarter of the time.

An Inch of Rain.—Few people can form a definite idea of what is involved in the expression—an inch of rain. It may aid such to follow this calculation: An acre is equal to 6,272,640 square inchee; an inch deep of water on this area will be as many cubio inchee of water, which ut 277,274 to the gallon ie 22,622.5 gallone. Thie quantity weighe 226,225 pounds, or 100.93 tone. One one-hundredth of an inch of rain is equal to one ton per acre.

For hurning sawdust in furnaces, keen grate low; grate surface large; grate hare thin; spaces hetween hars narrow; hegin firing with sticks of wood, then only with sawdust in a very thick layer, and it will burn without difficulty even if wet.

Cleansing Old Iron Water Pipes.—A short time ago the commissioners of Elgin resolved to cleanse the old iron water pipes, and reley them in those parts of the town where they would be of use. The first portion of the pipes (which have beeu in the ground for more thun 20 years, and very much incrusted) hes now heen cleeneed. The process was gone through at New Elgin, where a rough furnace was erected to meet the object in view. The pipes, two at a time, were laid into the furnace, and subjected to an intense heat for about helf an hour. The notion of the heat loosened the incrustation uf the pipes, and when the pipes were lifted out of the furnace the greater proportion of it at once fell off. The most troublesome portion of the work, however, remained to be done. The pipes had to he cleansed with a spring scruper, made to exactly fit the size of the pipe. After undergoing this work, the pipe was allowed to cool till it was in a fit condition to he dipped into a well some 12 feet deep, oontaining Smith's patent solution, where it remained for nearly a minute; after which it was taken out and presented all the appearanoes of a new pipe. By the adoption of this process the town will, it is said, he £300 richer than if the old pipes had been sold as mere metal, and new pipes bought to replace them.—*English paper.*

How "Hard" Water May be Made "Soft."—A late nnmber of the *Popular Science Monthly* contains an interesting article under the caption of "A Piece of Limestone," from which the following paragraph is taken, which contains a hint that may be useful to engineers, as well us to others who may desire to learn a simple process of rendering "hard" water "soft:" "But, though insoluhle in pure water, carbonete of lime is lightly soluble in water which is already charged with carbonic acid; and as all rain water hrings down carbonic acid from the air, it is capable of taking up carbonate of lime from the soils and rocks which it filters; and it thus happens thet all springs and rivers that rise in localities in which there is any kind of celoareous rock become more or less charged with carhonate of lime kept in solution by an excess of carhonic ecid. This is whet gives the peculiar cheracter to water which is known as 'hardness;' and a water hsrd enough to curdle soep muy he converted iuto a very 'soft' water (as the late Prof. Clark, of Aherdeen, showed,) hy the simple addition of lime water, which, hy combining with the excess of carhonic acid, causes the precipitation of all the lime in solution in the form of insoluhle carhonate, which gradually settles to the hottom, leaving the water clear."

Good Health.

American Physique.

I was talkiug the other day with a New York physician, long retired from practice, who, efter an absence of a dozen years in Eorope, has returned within a year to this country. He volunteered the remark that nothing had so impressed him, since his return, as the improved health of Americans. He said that his wife had been equally struck with it, und tha they had noticed it especially among the inhebitants of cities, among the more cultivated classes, and in particuler among women.

It so happened that within 24 hours almost precisely tne same remerk was made to me hy another gentleman of unusually cosmopolitan experience and past middle age. He further fortified himself hy a similar assertion made him hy Cherles Dickens, in compariug his second visit to this country with his first. In answer to an inquiry as to what points of difference hed most impressed him, Dickens said: "Your people, especially the women, look hetter fed than formerly."

It is possible thet in all these cases the witnesses may have been led to exaggerate the original evil, while thiuking it over, and so may have felt some undne reaction on their arrival. Oue of my informants went so far as to say thet he was confident that among his circle of friends in Boston and in London a dinner party of half a dozen Americans would outweigh an equally large English party. Granting this to he too hold a statement and granting the unscientific nature of all these statements, they still indicate a prohability of their own truth until refuted by feots or balenced hy similer impressions on the other side. They are further corrohorated hy the surprise expressed hy Huxley and eome other recent Engliehmen at finding ue a race more suhstantial than they had supposed.

My own impreesion has long heen that nature ie endeavoring to take a new departure in the American, and to produce a race more finely organized, more sensitive, more pliahle, and of more nervous energy; that thie change of type involves some risk to health in the procees, but promieee greater results when the new type should he estahliehed. I am confident that there has heen within the last 20 yeare a great improvement in the physical hahits of the more cultivated classes, at least, iu this country—hetter food, hetter air, better habits ae to hathing and exercise. The great increase of athletic games; the greatly increaeed proportion of seaside and mountain life in summer; the thicker shoes and hoote of women and little girls, permitting them to go out more freely in all weathere—these are among the permanent gains. Tha increased habit of dining late and of taking only a lunch at noon is of itself an eoormous gain to the professional and mercuntile classes, because it secures time for eating and for digestion. Even the furnaces in houses, which seemed at first so destructive to the very hreath of life, turn out to have given a new lease to it; and open fires are heing rapidly reintroduced, as a provision for enjoyment and health, after the main body of the house has been tempered hy the furnace. There has been, furthermore, a decided improvement in the hread of the community and a very general introduction of other farinaceous food. All this has happened within my uwn memory, and gives *a priori* prohahility to the alleged improvement in physique within 20 years.

And, if these reasoninge are still insufficient on the one side, it must he remembered that the facts of the census are almost equally inadequate when quoted on the other. If, for instance, all the young people of a New Hampshire village take a fancy to remove to Wisconsin, it does not show that the race is dying out because their children swell the birth-rate of Wisconsin, instead of New York. If in a given city the births among the foreign-born population are twice us many in proportion as among the American, we have not the whole story until we learn whether the deaths are not twice us many also. If so, the inference is that the sume recklessness brought the children into the world and sent them out of it, and no physiological inference whatever can he drawn. It was clearly estahlished hy the medical commission of the Boston Board of Health, a year or two ago, that "the general mortality of the foreign element is much greater then that of the native element of uur population." "This is found to be the case," they add, "throughout the United Stetes, as well as in Boston."

It seems to me that all our present physiological tendencies are rather favorahle than otherwise, and that the transplantetion of the English race seems now likely to end in no deterioration, hut in a type more high-hred, more finely organized, and also more comprehensive and cosmopolitan. All this without loss of health, of longevity, or of physical size and weight. And, if this is to hold true, it must he true not only of men, but of women.—*T. W. Higginson, in the Woman's Journal.*

Accidents to the Eye.

Particles of cinders, dust, or fragments of metal, often get into the eye, and cause a good deal of trouhle. Sometimes they are dislodged, and washed out hy the extra secretion of tears brought ahout hy the irritetion produced hy the hody. Sometimes this process does not give relief, and it is necessery to resort to some process of extraction. A popnlar, and often useful plan is to take hold of the lashes of the upper lid, separate it from the eyeball, so that the lashes of the lower lid will slip up in the space, acting as a hrush to the inner surface of the upper eyelid. This, of course, cannot remove anything, as a rule, from the eyehall. A hetter way is the usual one of holding a knitting-needle over the upper lid, close to and just under the edge of the orhit, then, holding it firmly, seize the lashes of that lid hy the fingers of the disengaged hand, and gently turn the lid upward and hackward over the needle, or substitute used. Movement of the eyehall hy the sufferer, in a strong light, usuelly reveals the presence of the intruding hody, so that hy means of the corner of a silk or cambric handkerchief, it can be detached and removed.

Should the foreign body be imbedded in the mucous membrane covering the eyehall or the eyelid (conjunctive), a steady hand and a sharp pointed instrument will usually lift it out.

The foreign body often cannot be seen, hut the person assures us that he feels it. Often he does not reelly feel the presence of the hody, as much as the roughness (really, a wound) left hy it. In such a case, or even if the hody has heen seen and removed, a soothing application to the injury is as useful as the same thing applied to a wound of the hend. Take a spoon or cup, heat it, and pour iu a few drops of laudanum. It will soon hecome dense and jelly-like. A few drops of water added will dissolve this gummy material, and the liquid thus formed may he applied hy the finger to the 'inside of the eye" as they say. The laudanum is opium diseolved in alcohol. The alcohol is somewhat irritating, hut is easily evaporated by the gentle heat, leaving an extract of opium, which is dissolved in the water afterwards added.

The comfort derived from this simple and always accessible preparation, after the injury to the eye hy a foreign hody getting into it, is of the most satisfactory kind. In no case nee any of the popular "eye waters," or "salves."

Not an uncommon accident is a fragment of lime in the eye. The delicacy of the organ, and the activity of this powerful alkali, require all that ie to he done to be done at once. Do not waste time hy attempting to pick it out, but neutrelize the alkali by a few drops of vinegar (which is dilute acetio acid) in a little water. A few drops of lemon juice, in a little water, will anewer just as well, if introduced, like the vinegar, into contact with the lime. Even when done rapidly, the ulceration caused hy the alkali will he some daye in disappearing. In all cases where lime hee entered the eye, even when these things have been used, no time should he lost in going to a surgeon.

MINING AND SCIENTIFIC PRESS

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San Francisco:

Saturday Morning, Nov. 4, 1876.

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A *Pioneer-Press* special from Bismarck says: General Miles had a successful fight after an unsuccessful council with Sitting Bull on the 21st and 22d on Cedar creek, killing a number of Indians. His own loss was two wounded. He chased the Indians about 60 miles, when they divided, one portion going toward the agencies and Sitting Bull toward Fort Peck, General Miles following. General Hazen has gone to Fort Peck with four companies of infantry and rations for Miles. Sitting Bull crossed below Fort Peck on the 24th, and had sent word to the agency that he was coming in and would be friendly, but that he wanted ammunition.

A COMPANY being formed in this city proposes to apply the district telegraph system of summoning messengers to an economical system of providing hacks and turnouts. A central carriage house will be established, with branch houses in various parts of the city, and carriages will be kept in waiting with coachmen in livery, ready at a moment's notice to respond to a summons. The charge per trip to the theater, or on any reasonably short journey, is not to exceed 75 cents.

THERE are now 108 deep-water vessels lying at the port of San Francisco Of this number 77 are ships, 26 barks, 1 brig and 4 schooners. The fleet going and coming to this port numbers nearly 500 vessels. Of the vessels now in port 54 fly the British flag, 5 fly the German, 2 the Norwegian, the French, Nicaraguan and Colombian flags ornament one vessel each. All the others, nearly one-half, flaunt the stars and stripes.

SEVEN large new canneries are in process of construction along the lower Columbia. Should the next fishing season prove favorable, more salmon will be caught and prepared for shipment than has ever before been done in any one year.

Prospecting Mines.

It may be stated as an axiom in mining matters, that always before starting reduction works, the mine itself should be opened in several places. The more thoroughly it is prospected the better, in order to be assured of a permanent supply of ore. We make this observation, so elementary in its nature, because we have observed that many persons have a false idea of metallic veins. They seem to think that a vein once opened should yield ores of a nearly uniform richness and do so uninterruptedly.

There is in this idea a very great mistake. Nature does not work with the uniformity which would be agreeable in this connection. A vein may "pinch," or may become quite poor without ceasing, on that account, to be valuable. It may remain barren for some time and then become more productive than ever. It is for want of taking into account these irregularities, not at all alarming in themselves, that we see, in the stock market and even in the mining districts, where they should know better, the stockholders seized with sudden panic. At a poor streak the stock of the unfortunate mine falls to a nominal price, and then on the first indication of ore as suddenly rises.

There is not one of our good mines which has not given numerous instances of this kind—pleasant, it is true, when the stock rises, but often disastrous when the reverse is the case. It is on account of these accidents so common, and even, we may say, so inevitable, that we recommend, when practicable, the opening of the veins in different places. When this is done a richer part may supply the deficiencies of others momentarily impoverished, and sudden fluctuations in value, in a measure, be checked.

The great difficulty is in newly opened mines where there is little capital to expend, a simple shaft or tunnel is considered sufficient to prove the worthlessness or value of the mine. But, where large companies go to work, they should in all instances take the money usually expended so lavishly in reduction works and prove their mine first, after which, if the mine is worth it, money will always be forthcoming for the works. So many mistakes of this kind have been made and so many thousands of dollars lost by a foolish policy, that it is the duty of the journalist to point out where the errors are made and, as far as he is able, endeavor to correct them.

One trouble is, that frequently when a little money has been expended on a single shaft and the prospects are doubtful, the owners become discouraged and give up the whole work, for fear of sinking money uselessly. This is of course judicious in some instances; in others it is sheer folly. A 30 or 40-foot shaft proves very little; but often, if a rich streak is struck in that distance, work will cease in the mine, big works be put up at great expense and every preparation made for carrying on operations on a large scale. Whereas, should poor ore be found the whole thing will stop from lack of confidence. Both of these methods are foolish; the rich ore may give out in a few feet, as may the poor; but were the mine properly prospected before much expense was incurred for works, the managers could determine on future movements with better judgment.

As an instance of how easily men may be discouraged in mining when everything is not as they hoped for, we may recall a circumstance in our recollection which occurred in the gravel mining region. A miner who had worked in the district in its palmy days had a cherished idea that under a certain hill ran the rich pay channel, which had been worked out in other mines and lost. As the district declined in prosperity he got a party of other miners, out of work, to sink a shaft with him over the place where his theory placed the channel. They worked off and on for some time and at last reached the gravel in the bottom of their shaft. It was very poor, and the prospect in the pan was so bad that they gave up in disgust without drifting a foot either way from the shaft. The miner who organized the undertaking, though not discouraged, had no one to help him and left the district. A few years after he explained the theory he had of the channel to some other people, who, having faith in his judgment, advanced the money necessary to run a tunnel into the hill to prospect the channel. This time work was undertaken systematically and carried out properly. The channel was struck and struck rich, and the mine has paid its owners very handsomely for several years, with every prospect of continuing to do so for some time. In the course of the work a drift was run out towards the old abandoned and caved-in shaft which had been sunk several years before, and about four feet from the bottom, where the previous prospectors had quit work, a pocket was struck which yielded over one hundred thousand dollars in gold. Had the men who first took hold of the enterprise not become so suddenly discouraged at their poor prospect, and at least prospected a little, they would have reaped a rich reward. It was found out in the course of operations that the poorest gravel in the claim was at the bottom of that old shaft, and had it been sunk a few feet either way from where it was, the result would have been entirely different. This illustration, one of the many which could be cited, only serves to show that a single spot in a claim, whether quartz or gravel, is not sufficient to prove its value, and that in all instances, where practicable, more extended operations should be carried on before approving or condemning a mine.

The Candelaria Mine.

The Candelaria mine, in Durango, Mexico, is one of those rich old Mexican mines, from which immense sums were taken out by the original owners who worked it a hundred years ago, but which never paid much after it fell into the hands of the American owners. This mine is owned by a New York company, who have worked it for almost 13 years, but never realized anything from it, although they are now likely to do so, as ore has been struck in the tunnel, the face of which is within about 350 feet, as near as can be calculated, of the spot where the richest ore was found by the Mexicans.

It is known that upwards of $50,000,000 were taken from this mine by the old Mexicans, but during some legal difficulty the mine was temporarily shut down, and filled with water, which the Mexicans never could get out. It was finally abandoned and left in that condition until the New York company in 1863 purchased the property and commenced work. The upper works were caved in and operations have been carried on in a desultory manner on different parts of the mine with but poor success. At best the Mexican miners will only work about five days in the week, and then numerous holidays even lessen the average. Bad ventilation has bothered the company and several times the enterprise came near being abandoned. The facilities of transportation are very bad and articles ordered in March, for instance, would not arrive at the mine until June. The history of this mine has been like most others worked by Americans or English in Mexico, all sorts of obstacles, unknown elsewhere, being interposed to prevent active operations.

Some work in running drifts on towards the old works has been done, but proved unsatisfactory. It was found that there was about 400 feet of water in the mine and that such extensive caves had taken place as to greatly hinder operations. It was resolved to do most of the work on a tunnel which would drain the mine. This tunnel was originally started by the Mexican engineer Garcia in 1810, but it was abandoned after 125 feet had been run. The New York company took hold of the tunnel in October, 1863, and have now only got in 1,250 feet. As may be seen by this, progress has been very slow in prosecuting work.

This tunnel, however, will effectually drain the mine to a depth of 900 feet from the highest croppings, and admit of the owners' working the ore where the Mexicans quit work. From the open cut on the hill to the bottom of the old workings is about 1,000 feet in depth. The tunnel run in 513 feet and struck the vein, then followed the vein 737 feet. Small stringers have been cut once or twice, which yielded well; but advices from there just received state that at last good ore has been struck in the heading. The 30 feet run through this ore body proves it to be no mere stringer, for it improves as entered upon. This will be good news to the New Yorkers who have waited so long for a return on their investment. It is estimated that the heading is now within about 350 feet of the center of the old mine, and the old ore body may be struck any day. The drilling is done by hand and only two men work in the face at a time, so that progress is necessarily slow. The vein itself varies from 30 to 60 feet in width, the pay ore being mainly next to the foot wall.

We have been shown plaster casts representing the spur in which this mine is situated, and also showing a section of the mine with the old and new workings, made by Mr. Temple, father of Mr. A. V. Temple, the present engineer of the mine. Drawings, maps, etc., having failed to give the New Yorkers a correct idea of their property, these models have been made and will be sent to them. They were made from data collected by the present and former engineers of the mine—Dahlgren, Rice and Wiedner. From these surveys sections for each 100 feet were made. Mr. Temple marked out these sections on a board, and with a fine saw cut the boards at the marks. The pieces of board were then put together and covered with clay, which made the model from which the cast of the "spur" was made. He then sawed through on a line with the vein, which gave a section of that. On the section are marked the cuts, drifts, shafts, winzes, etc. The details of old workings are somewhat indefinite of course, but a good general idea is given. The location of the tunnel is also shown. This idea is a good one and might be followed to advantage by many superintendents, as nothing gives so good an idea of the workings of a mine as a good model made to a scale.

GEORGE CUNNINGHAM, boss timberman of the Lady Washington mine, was killed on Monday by stepping into a compartment in the shaft just as a cage was coming down.

Remarks on Quicksilver.

[Written for the PRESS by SAMUEL PURNELL.—No. 4.]

The Usual Forms

Of condensers are simply large chambers, kept cool by water, in which the fumes are cooled below the boiling point of mercury, wherein such globules as are large enough to fall by their own weight are collected. This idea is carried out with many different forms, and such forms answer a good purpose for ores of moderate richness when the price of quicksilver is high, but they will arrest so small a portion of fumes from poor ores (for reasons already stated) that the smelting of such is unprofitable. In the hope to save these fine particles the chambers have been enlarged and multiplied, the currents of gases copiously watered or conducted in long and circuitous passages, the gases have also been passed through coke columns, into glass houses, etc., but all to little improvement. The small particles are still lost. These difficulties are so formidable, and there seems to have been so little success in meeting them, that some quicksilver men have despaired of ever finding a remedy, inventors and experimenters have ceased to invent and experiment, and the general conviction seems to be that, though the present manner of condensing is unscientific and barbarous, no relief is to be expected. At a European works quicksilver was found 10,000 feet from the condensers for a foot deep in the ground. A writer says (SCIENTIFIC PRESS, vol. 27, page 210): "The present wasteful and unsatisfactory method of treating cinnabar demands an entire change, more than half the mercury in the ore being lost to commerce. Why cannot science be brought to bear on this work as well as in the treatment of other ores?" Contrary to general practice, he claims that great space for condensation is not necessary, but that *coldness* was the main thing needed. This writer caught a faint glimpse of the true principles of condensation, but he was not able to follow up the idea.

To the author of this article it would seem that the

True Plan of Condensing

Poor quicksilver fumes rests with the adoption of a somewhat novel principle. Bearing in mind the difficulty, not to say impossibility, with present apparatus, of causing the very small and minute floating particles of mercury to cohere and unite to a mass which shall have sufficient size and weight to fall through the gaseous current, we shall see that to ensure success in condensation, we must depart from the old principles and forms and adopt a new principle and apparatus that will cause the uniting of these atoms and globules as they float in the gases. To accomplish this would seem to be simple. The vapors should be first cooled to about the usual degree, and then subjected to a violent rotary and compressing motion, within a closed chamber, that will cause the small particles to strike each other and cohere. This is a principle of Nature, and it must prove a success; it is illustrated every day in our atmosphere. The minute atom of watery vapor floating in the air does not fall in the shape of rain until the numberless small ones in company with it are cooled, agitated, rotated and compressed by the wind. The storms then roll along in spirals, each one aggregating others to itself, till soon enough have combined together to form a globule or drop of sufficient size and weight to fall through the air as a rain drop. Herein, then, lies also the

True Principle of Quicksilver Condensation,

And which will, sooner or later, be recognized as the only natural and complete one. For purposes of experiment an apparatus exemplifying this principle could readily be attached to the outlet of the ordinary condensers, where it would soon prove its utility.

The author does not claim any originality in mentioning this new principle of condensation. A short time since he was consulted upon the application of it to the condensation of quicksilver fumes, and the mechanical means to carry it into effect, by Mr. William H. Sterling, of San Francisco, who has applied for a patent on the principle or process, and for several forms of apparatus to operate it. The author was so far pleased with the invention that he has been much interested in its progress, and feels that he can safely advise those interested in quicksilver mines and furnaces to examine into it, and give it a fair trial, as he is confident that an apparatus constructed on the above principle (the *form* of which may be varied almost indefinitely) would at once relieve all the remaining difficulties of condensation, and enable poorer ores to be profitably worked than ever before, with but a probable loss of mercury in the condenser of less than 10 per cent. The expense of construction promises to be very much less than that of any of the forms of condensers heretofore in use.

Referring again to the object of this communication, this new principle of condensation is advanced in order to call the attention of quicksilver men to a most promising invention, and which seems likely to aid in the solution of the heretofore difficult problem of condensing fumes from poor ores, and to prevent the threatened extinction of this industry.

THE debt statement shows a reduction during October of $3,388,139. The amount of coin in the Treasury is $15,967,027; currency balance, $12 901,326; special deposit, $40,670,000; coin certificates, $33,283,100; outstanding legal tenders, $367,535,716.

Comstock Papers.

No. 8.

The Washoe Pioneers and Their Successors—Herman Camp and His Eccentric Fortunes.

Very unlike the men spoken of in the last number of these papers—the original locators of the Comstock lods—were their immediate successors, the parties who bought them out, paying what were at the time considered extravagant prices for their claims. Foremost among this more shrewd and better educated class of men was Herman Camp; not that he was the first to secure through purchase permanent ownership of a portion of the rich deposits on the great mother lode, this distinction being due to James Walsh and Joseph Woodworth, but Camp was the first to effect such a purchase, agreeing to pay for the interest secured a price denoting something like a proper appreciation of the worth of the new-found silver mines. Arriving in Washoe towards the latter part of July, 1859, Camp, who was a man of quick perception and possessed of a bold and speculative turn of mind, took in the situation at a glance and forecast the future of the country with wonderful correctness. He estimated the new ore find as being of the first importance, and rightly divined that an active mining industry would here grow up, requiring costly reduction works and a considerable town for its accommodation. Impressing these views upon other parties possessed of more money than their sanguine and eloquent adviser, he readily induced them to give him a contract for putting up a number of stone buildings in close proximity to the mines, no town site having as yet been laid out.

A Persuasive Talker.

Camp was not only an active, wide-awake sort of person, but a most persuasive talker; the fact that he succeeded in causing Comstock at their first interview, to deed over to him his entire interest in the Ophir ground for a moderate consideration, only one dollar of which was paid down, being sufficient evidence of his power in this respect. This transaction took place on the 6th of August, on which day the purchaser was duly installed into the premises and commenced taking out ore from the excavation already opened. That night Comstock, meeting with his companions, was so much badgered on the foolish bargain he had made, that he concluded, with their promised assistance, to go at once and take possession of the claim which he had, by a legally executed deed, transferred to another party, then in lawful and peaceable occupation thereof. This was accordingly done, and when Camp came in the morning to resume work he found the pit in the possession of an armed gang of ruffians, who threatened him with instant death should he attempt a forcible re-entry upon the ground.

A Fatal Mistake.

Being an eminently good natured and peace-loving man and feeling that he could by no possibility be in this manner ousted from his claim, Camp proposed that the matter he referred to a jury of miners, agreeing to abide by their decision in the premises, a proposition that his adversary readily acceded to, well knowing that he could give to this assemblage such a moral complexion as would insure a decision in his favor. The friends of Camp cautioned him against pursuing this course, pointing out the danger to which he would be exposed in doing so. Dr. Henry Degroot, who had long been acquainted with, and knew him to be an energetic, honorable man, well while and likely to perform all he had undertaken in his contract with Comstock, advised him strongly against submitting the question of his right to retain the ground to any such sort of arbitration, urging him to go at once to Genoa, the county seat, and put his deed on record, and then, if in fear of personal harm, to leave the country, trusting to the courts for the vindication of his rights, and the ultimate restoration of his property.

Not wishing just then to go away, and confident that but one result could be reached by the proposed tribunal, Camp preferred to submit to them the matter for settlement. As had been foreseen, this meeting, when it came to assemble, was made up mainly of Comstock's old cronies, a whisky-sodden set, who having already prejudiced the case, decided as a matter of course against Camp, who, in accordance with his pledged word, surrendered his deed and gave up the contest. In relinquishing his claim to this property the acquisition of a splendid fortune was defeated when already within his grasp. Camp afterwards acquired large interests in the Gould & Curry and other valuable ground on the Comstock lode, and but for attempting to carry too much and sometimes holding on too long, might have come out largely ahead; as it was his Washoe experiences benefited him but little in the end, his wealth when he came out having been reduced to the zero point, about where it stood when he started in.

James Walsh and Joseph Woodworth.

As already stated, these gentlamen bought no mining ground on their first visit to Washoe, which occured in the latter part of June, 1859. At that time their attention was mainly occupied with the mines at Gold Hill, the rich and easy working ores of which induced them to put up a series of arastras on Carson river for their reduction. Comstock had on various occasions importuned them to purchase his mining interests, but not until the 10th day of August did he succeed in making a sale to these partiss, the conditions of which have in these papers heretofore been mentioned. They also soon after bought into several other claims, ranking before the end of 1860 among the largest mine owners along the Comstock. During that year Judge Walsh parted with the greater portion of his interests, realizing fair but not extravagant prices therefor. Woodworth, who held on to the most of his, became very wealthy, being able at one time to sell out for a million of dollars. Extending his operations at a period when labor and material were enormously high, and the methods of ore reduction were as yet both costly and imperfect, he met with heavy losses, and finally retired from Washoe with but a remnant left of his once large fortune. Judge Walsh, who undertook to treat the refractory ores of White Pine and other interior districts, erecting expensive smelting works for that purpose, also lost much money, coming out of the country where he had at first succeeded so well, with an exchequer even more seriously depleted than that of his enterprising confrere.

RED-HEADED WOODPECKER.

Among the Men Who Became Largely Interested in the Comstock Mines.

Almost at the start, visiting them in person or purchasing on the representation of others, the following embraces perhaps a tolerably full list: Donald Davidson, after whom, because of the active and intelligent interest he took in the developement of the new silver bearing region, the most conspicuous peak in the Washoe range was named. General Allen, partner with Donald Davidson in the purchase of Ophir, the two being early and quite extensive buyers into that ground. George Hearst and William Morrison, the latter being for a time at first superintendent of the Ophir, William M. Lent and B. F. Sherwood, owning and afterwards operating jointly and pretty largely in Washoe properties. Richard Ogden and J. Downes Wilson, who bought freely at the opportune moment and, through judicious management, made a good deal of money, some of which was afterwards sunk in the erection and running of a mill, a perfectly legitimate but not at that day always profitable line of business. Erastus Sparrow and Joseph French, who bought the French & Sparrow ground at Gold Hill and soon after put up a large mill on the American ravine, which from the first proved and has for many years since been run as a successful concern. John O. Earl, Andrew B. McCreery, Alpheus Bull, all of whom got a good financial send-off through fortunate investments in Comstock ground. M. C. Hillyer, Henry G. Blasdell, afterwards Governor of Nevada, A. D. Perkins, Hiram Pierson, William F. Bryant, Louis Schloss, J. McKinty, E. S. Gross, William N. Thompson, H. H. Raymond, extensively engaged in ore reduction, with a disastrous ending; the man who long and worthily bore the most exalted of all titles, "Honest" John Atchison; J. Neely Johnson, Frank M. Pixley, who made the journey over the mountains on his famous mule in midwinter, bought and, what was equally important, sold at the right time, adding materially to his already quite large and fairly earned wealth. There were, doubtless, others whose names should be included in this list, though we cannot just now recall them to mind.

Dons With Earth

Of the persons here enumerated the following are deceased, nearly all of them having died with fortunes considerably reduced and some of them quite poor: Herman Camp, Donald Davidson, B. F. Sherwood, E. Sparrow, E. S. Gross, William N. Thompson, H. H. Raymond, John Atchison and J. Neely Johnson, the two last mentioned having died at Salt Lake City, where they had gone, the first to look after mining, and the other to attend to some legal affairs.

British Columbia Mines.—Advices from Fort Wrangel, dated September 30th, state that a large number of miners are waiting at Wrangel for steamers to bring them to Victoria. It is supposed there are 500 men yet to come down. The weather was fine at the mines, and a large number of claims were being worked. Several creek claims on Dease creek were paying well, and it is thought from prospecting that good hill diggings exist on that creek. Several good benches have already been discovered. Good hill diggings have also been found on Thibet creek. The prospects on Rosalie creek are encouraging, and a large number of claims will be thoroughly prospected next season. The yield of gold from the Cassiar mines is not so large as last year, but they are by no means worked out. Many of the old hands will return next season. Magnetic iron ore, with deposits of coal, fire-clay and limestone, have been discovered on the east coast.

Red-Headed Wood-Pecker.

The red-headed wood-pecker, shown in our illustration, is well known throughout the United States. They prepare their nests in the large limbs of trees, adding no materials to the cavity which they smooth out for the purpose. Sometimes several perforations are found in the same tree; but living trees are seldom occupied by them. The same tree is employed for years in succession by a pair of these birds. The eggs, usually six in number, are white, marked at the largest end with reddish spots, in which last particular they differ from all others of the genus.

The mocking bird alone exceeds this woodpecker in gaiety and frolic. It everywhere finds abundance of food and facilities for raising its broods. It is not much afraid of man, and will retreat but a short distance at a time from him, or even simply run around a tree or stalk, and peep from behind it at him; and this notwithstanding that man is its most dangerous enemy. So abundant and fearless are they at times in the Eastern States that a hundred have been shot in a day upon a single cherry-tree; for they not only feed upon the ripening fruit, but destroy immense quantities, even to the stripping of them. Pears, peaches, apples, figs, mulberries, and even peas are thus attacked. The corn, also, both when young and juicy and when near maturity, is a subject of their depredations. They also invade the abodes of pigeons, martins, and other birds, for the purpose of sucking their eggs. When their hunger is satisfied they are excedingly playful, chasing each other from tree to tree in curving sweeps, or following insects upon the wing. When they alight upon the ground they are quite agile, securing with ease the beetles seen from their perch. When the fruit is all gone their facility in detecting insects under the bark of trees is remarkable. Alighting upon the trunk one of them will stand motionless for a few moments; then he will strike the tree with his bill and again listen until he hears the motion of an insect or larva within, when he perforates the bark and devours his prey. In the season of ripe fruits their flesh is esteemed by many as rich food.

As a means of protecting fruits a bare pole is placed beside a tree, and reaching a little higher than its summit. Upon this the bird alights by preference, when a blow given to the pole below will produce such a vibration as will cause the bird to fall dead. In this connection we notice that Mr. Ralph Carr Ellison, of Durham, England, in an English journal, stating his success in expelling birds during the fruit growing season from his gardens by means of common cheap fire crackers and squibs, says: "My gardeners make use of a few, in different quarters of the ground, early in the morning; one or two occasionally during the forenoon, and then a more liberal discharge at three or four o'clock in the afternoon, when the birds again desire to feed. The sulphurous smoke that issues from the smoldering paper long after the reports are over deters the enemy by the scent of gunpowder and fear of fresh explosions far more effectually than would be supposed.

Items of Interest from the Mines.

In the Silver Hill mine the pump and column to connect the 444 foot station with the new water tank below the 650-foot station is all put in.

The superintendent of the Steptoe mine says: The ore body in Ready Cash is rapidly increasing in dimensions, and I am satisfied that in a week we will have as large a body of ore as any in the district. As I have stated before, this ore is not of a high grade, but will sell on the dump for from $10 to $20 per ton, and as it is of a soft character and cheaply mined, a large profit can be realized at these figures.

The developments in the Herald are quite flattering. The ledge in the bottom of the incline is four feet wide. The indications now are that the whole space between the two walls is fast filling up. The foot and hanging walls are six feet apart.

The furnace of the Modoc Consolidated is turning out from 100 to 110 bars of bullion per day.

The ore development in cross-cut number three, 800-foot level, of the Justice has very much improved.

The Silver City *Reporter* of October 29th says: "Superintendent William B. Gibbons, so well and universally liked here, has resigned the superintendency of the Brunswick mill, on the Carson, and Mr. Ross LaValliere of the Morgan mill has been appointed in his place. Superintendent Gibbons is one of the ablest mill men on the Comstock, and the Brunswick mill the boss mill on the Carson. We are sorry to see them separated."

A large blower is being put in the 1500-foot level of the Consolidated Virginia to reduce the heat on the 1700-foot level.

Work has again been commenced on the south drift, 1700-foot level, of the Gould & Curry mine.

The water is now out of the South Comstock mine, and a cross-cut has been started for the east ledge on the 300-foot level.

At Gold Run, Placer county, the Miners' ditch company is having a new string of extra heavy large pipe made to convey water from the ditch down into the Indiana Hill claim.

ISSUED OCT. 1st, 1876.

Testing and Working Silver Ores.

The above is the title of an illustrated work of 114 pages, for miners and prospectors by Chas. H. Aaron, which has just been issued by Dewey & Co. Mr. Aaron has managed to give many useful hints and suggestions, free from all technicalities, and in such a style as to be easily comprehended. It is written for the miner, with no chemical symbols or metallurgical technicalities to confuse those who are not chemists or metallurgists. The following summary of the contents of the work will give an idea of its scope:

Under the heading of the first chapter, "Testing Ores for Silver," we find paragraphs on ore formation, test for silver, with heat and water, acid or blow pipe. In speaking of testing for a process, the extent and richness of ore is considered, smelting ores, selecting and working sample, appliances for testing, roasting, etc. Under the head of "Working Ores" the author describes Aaron's process, has something to say of superheated steam, preparation of dichloride of copper and protochloride of copper, use of copper and iron, quantity of chemicals, carbonate of lime, chloride ores, amalgam, Patchen's process, etc. He also describes the methods of working roasted ores, treatment of base metals, stirring, heat of furnace, want of sulphur, etc. Under the head of "Leaching Processes" are the titles, Smelting, Mexican process, Kroencke's process, Chilean process, etc. Under "Pulverizing Machines" are described the arastra and its construction and operation, stamp batteries, screens, Crocker's trip-hammer battery, Paul's pulverizing barrel, Kendall's battery, Noice's pulverizer, a cheap rock breaker, etc.

In speaking of amalgamators the author describes a cheap amalgamator, grinding the ore, directions for making a barrel, preventing mechanical wear, use of quicksilver, copper in bars, Freiberg barrel, cheap barrel, trough, barrel on rollers, Aaron's amalgamator, separator, etc.

He describes an improved retort, roasting furnace, furnace tools and furnace building. Among the miscellaneous mention may be found Aaron's leaching apparatus, with two or three different arrangements a small mill, sampling tailings and settling tanks, dichloride of copper, etc. Mr. Aaron is a practical miner of long working experience on this coast.

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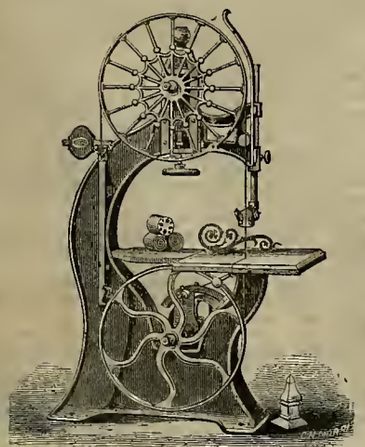

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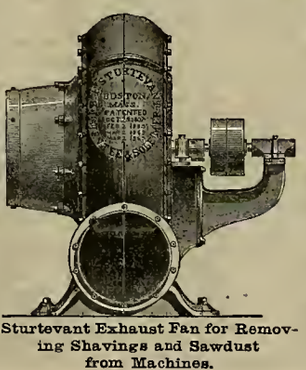

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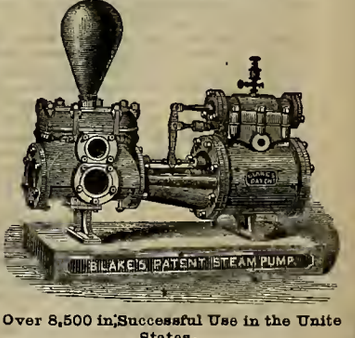

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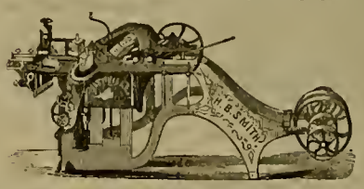

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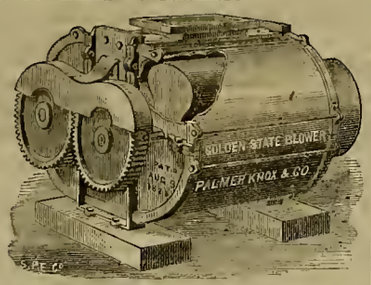

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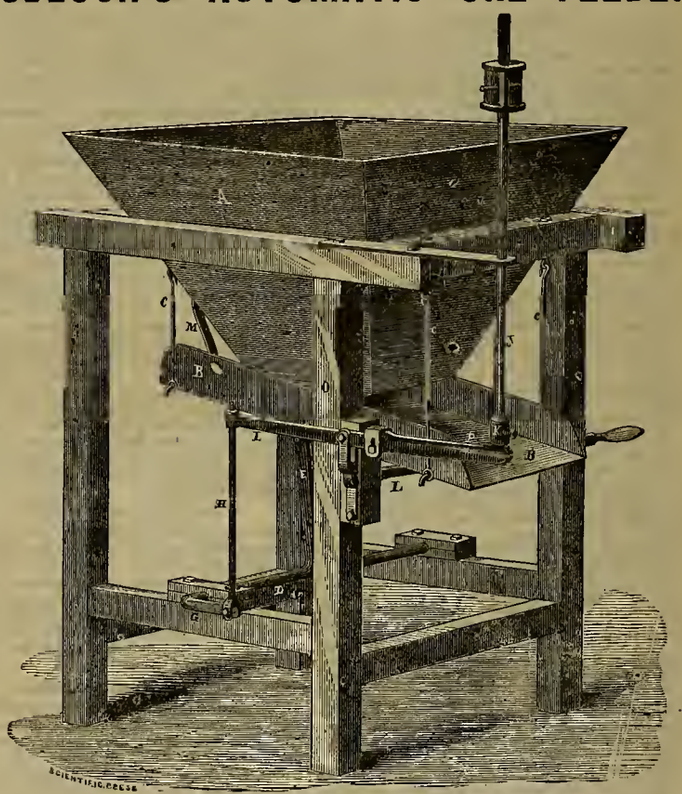

The TULLOCH AUTOMATIC ORE FEEDERS have been practically tested during the last year and a half in 40 mills, of from five to 80 stamps each, and have, in every case, given perfect satisfaction. The Tulloch machine is so constructed that the drop of the stamp feeds the ore in just such quantities as the stamps require. Each drop regulates the supply required for the next drop, whether it be more or less, and this is the true principle of an automatic feeder. The tray moves longitudinally, and a stationary scraper forces the material forward at each backward movement of the tray, thus insuring the perfect feeding of all classes of ore, whether it be dry or wet.

We append a few extracts from the many testimonials which we have received from mill men and practical mining men, of the effectiveness and positive action of the Tulloch Feeder. We do not depend solely upon these testimonials, as we are aware that testimonials are easily secured for almost any machine, but the high character of the parties certifying to those herewith given, will establish their value and genuineness:

Mr. Jas. G. Fair has 28 in use; says: I regard them superior to any Feeder with which I am acquainted; I consider no mill perfect without them. Mr. E. R. Burke, Sumner mine, Kern county, has 16: They never get tired; no man living can feed a battery as well; they save us in labor alone $48 a day. Mr. Green, of the Phœnix mill (12), Amador, writes: The first machine we had is working away; is as good as ever; have not spent a dime on it; in use 14 months; you need fear no competition on wet ores. Mr. W. H. Armstrong, of Consolidated Virginia mill: We are running 60 stamps with your Feeders; they give unbounded satisfaction; they have not cost the company one dollar since starting up. Mr. H. C. Bidwell, Supt. Green Mountain and Gold Stripe companies, Plumas county, writes: From the start they have done splendidly; no trouble whatever; requiring but little attention; a boy can manage them; the saving in both labor and castings is fully one half over the old style of feeding by hand. Mr. Preston writes: I have four of your Automatic Self Feeders, and my mill men each and all say they are the best they have ever used. They are an improvement on all I have ever seen, being simple in construction, and good for either wet or dry crushing; refer to over 40 mills using them; they are guaranteed to give perfect satisfaction. Send for circulars.

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(Continued from Page 302.)

Arizona.

MINING OPERATIONS.—Cor. Arizona *Miner*, Oct. 20: In mining the only operation worthy of notice is the Trench mine, 80 miles east of soutb, and the Yellow Jacket, 75 miles southwest of Tucson. The Trench is owned by Messrs. Archibald, Gardiner and Hopkins, and is one of the finest argentiferous galena lodes I have ever seen. It is first-class smelting ore, and was worked 100 years or more since by the old Jesuit Fathers. The ore averages $80 per ton in silver, and selected goes well up into the hundreds. The workings are two tunnels, of 200 and 300 feet, and several shafts, the deepest being 120 feet. The vein matter is seven feet wide, running east and west, and the lode has been traced and located over 20,000 feet. Fifty men are employed, of whom about one-third are whites and the rest Mexicans. Two Mexican furnaces are in operation, and two new improved ones will be in operation the coming week with prospects of eminent success. The Sea Serpent lode is 70 miles southwest from Tucson, another immense lode, traced and located for some 20,000 feet, the vein running northeast and southwest. The Emma mine, on this vein, owned by Thos. Ewing & Co., shows vein matter from 10 to 30 feet wide, and the ore assays from $50 to $800 per ton, and selected as high as $5,000 per ton. This mine is eight miles West of the old Cerro Colorado mine, and 15 miles north of the Sonora line.

THE Yellow Jacket mine, on the Ostrich lode, is 75 miles west of south from Tucson, and gold bearing. The owners, Dr. Handy, Bartlett & Co., are working this mine successfully, having a 10-stamp mill, and employing 40 to 50 men. The vein matter is 12 feet wide with a pay streak of over three feet, which works $20 per ton; depth of shaft, 60 feet; length of tunnels, 20 and 30 feet. They have also a parallel vein, 20 feet north, of equal size and richness to the main lode, and a tunnel in some 20 feet; capacity of mill, 15 tons per day; wood and labor both cheap, and a good supply of water. Six miles south is the Old mine, owned also by Dr. Handy, Bartlett & Co., a rich silver lode. And ten miles southeast of the Old mine, in the same mountain range, is the historic and noted Planches La Plata, a few miles across the line in Sonora.

Colorado.

SILVER PLUME CONCENTRATION COMPANY.—Colorado *Miner*, Oct. 21: These works are now running steadily, handling about 2- tons daily, and turning out a product of four to seven tons daily. The ore supply is good. and Superintendent Teal is well satisfied with the present status and future prospects.

MAGNET.—Geo. B. Thompson, who has lately returned from the Black hills, has leased this mine, and will set a force of 26 men at work next Monday. Large bodies of good ore are in sight, the workings are in first-rate shape, and development and extraction of ore will proceed rapidly.

BRIGHTON TUNNEL.—An important strike was lately made in this tunnel, showing a body of ore two to three feet wide, and as clean galena as we have seen in Colorado. Silver tests have not been made, but there is no doubt that it will pay largely. About 30 tons are now ready to send down, and the future daily output will be enormous.

COLORADO CENTRAL.—Mr. Weaver is working this famous mine to the best advantage, and extracting the usual amount of mineral. The ore is now running, first-class, 700 ounces, and second-class, 300 ounces, no other classes being made. At the present depth of 200 feet the need of a hoisting engine is severely felt, and when this is added, the production will be greatly increased. Rich streaks of brittle silver, showing crystals of baryta, are often met in the present workings.

PLANET MINING COMPANY.—This company intend to work a small force during the winter on the Gilman lode, developing their property. A fair amount of ore has been taken out from this vein during the past summer, and of good grade, and the lode holds good in length and depth.

GENEVA.—This active little camp is preparing vigorously for the winter's work. Jack trains are doing all they can, packing provisions and mining supplies, chiefly from Georgetown, to the different mines intended to be worked during the winter. The Revenue mining company intend to work a force of 10 or 12 men on their property, part driving the tunnel ahead, part drifting on the lodes already cut by the tunnel, and the balance sinking on the Celtic to make connection with their tunnel. By next season they will have a large amount of ground opened and will be able to produce a large quantity of ore.

ARAPAHOE COUNTY.—The ore reduction works of the Polar Star silver mining company, located in West Denver, and using the regular lixiviation process, are doing a good business, when the present state of the ore market is taken into account. The main supply of ore, some seven tons per day, comes from the Polar Star mine, Clear Creek county, and is supplemented by silver ores from other districts. Ores containing sulphurets of copper or iron pyrites are preferred. The process employed gives good satisfaction, and may safely be recommended as one of the most economical in use. From 500 to 600 ounces of silver, averaging some 900 fine, are daily produced at these works The number of men employed is 15, divided into 12-hour shifts.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

NEVADA M. Co.—Oct. 26th. Location: Comstock lode. Capital stock, $5,000,000. Directors, F. P. Lauterwasser, A. P. Kluit, Robert Nohlett, T. Green and M. E. Sterling.

DIAMOND M. Co.—Oct. 26th. Location: Pacific coast. Capital stock, $10,000,000. Directors, V. D. Smith, Geo. Turner, B. F. Bivins, Thomas Parker and Wm L. Duncan.

GOLDEN GATE S. M. Co.—Oct. 28th: Location: Gold Hill, Nev. Capital stock, $10,000.000. Directors—James R. Lee, P. H. Humphrey, Peter Mulloy, A. H. Boyden and J. J. David.

GULF OF CALIFORNIA OYSTER AND CANNING CO.—Oct. 31st. Object: To carry on the oyster and canning business in the Gulf of California, to plant and transplant oysters in the bays of San Diego and San Francisco, etc. Directors—Pedro Garcia, Don Ramon Jose Gonzales, Wm. S. Manning, A. Blacklock and S. J. Purrsglove. Capital, $1,800,000.

THE great meritime canal, connecting Amsterdam with the German ocean, was completed on the 1st inst., with an imposing ceremony, at which the King, members of the Cabinet and foreign representatives were present. The canal is 160 miles long, and has at the sea end a harbor covering 250 acres, which, however, is not quite completed.

THE official report of the battle with Sitting Bull, Pretty Bear, Bull Eagle, Standing Bear and other Indians on Cedar creek, states that the number of Indians known to be killed is five. The report concludes: "I believe this matter can be closed now by vigorous work. Some cavalry is indispensable."

A Few Notes From Utah.

[From our own Correspondent.]

"Round the rugged rocks the ragged rascals ran."

This fine specimen of alliteration may answer well enough for a text. The reader will not for a moment imagine that it could have any allusion to the "honest miner" (of course not,) in hot baste to jump some equally honest miner's claim. The rocks throughout Nevada, through which your correspondent has just passed, and generally within sight of the line of the Central Pacific, in the Territory of Utah, are rugged enough, in all consciences, but the rascals, if such are to be found, are certainly not more numerous nor more ragged in these sections than elsewhere. An application might be made of it to the somewhat tattered condition in which some of man's inner habiliments are occasionally found, and in this sense may be used as a theme under which some evils of a general character may be conveniently grouped, confined to no particular district, class, condition or race. The employee in the mine has been known to shirk many an hour's labor to the great detriment of the assessment-paying stockholder. The superintendent is sometimes accused of gross ignorance, or grosser negligence, or of almost unpardonable extravagance in his expenditures, if not laying himself open to charges of a much graver nature. The capitalist, taking advantage of the power his money possesses, frequently monopolizes the business of a whole district, and is sometimes charged with compulsory acts towards his employees, or others directly or indirectly dependent upon himself for business, which often amounts to the worst kind of extortion, to call it by a no more approbrious name. The mining shark, (as your correspondent has in a few rare instances found to his sorrow), is not always scrupulous as to statements for publication if he thinks his immediate interests will thereby be subserved, nor is he likely to be particularly conscientious in driving a bargain with a stranger to the district, more especially if a foreigner, on the principle, it is presumed, of the old Spartans, who thought it no wrong to steal from an enemy. Evils such as these are not unfrequently met with throughout the mining regions of the coast, and are not likely to be remedied, it is feared, until mankind learns that the true interests of the individual are inseparable from the interests of the whole; that right doing in a broad sense is the best policy. Many, however, will continue, regardless of the disastrous effects to the community, to take the desperate chances of winning on the exception to the rule.

While on My way from Nevada

To visit and report upon some of the mines of Montana Territory, leisure was afforded for reflecting upon these and some other evils incident to human nature as at present constituted, and to mining communities in particular, and it seemed as suitable an occasion as any for calling the attention of those most interested to them, in hopes that a remedy for a few of them might be suggested.

The First Mines Encountered

After crossing the eastern boundary of Nevada, were at Terrace station. A large mineral belt had been discovered only a few miles to the north, some 15 miles in length and five in width, on which at least 150 locations had been made. Like some of the districts of Eastern Nevada, the country rock is granite and limestone, the ores consisting principally of black sulphurets of silver, carbonates, chloridea, argentiferous galena and oxides of iron, said to be rich in both gold and silver. Assays were reported from $25 to as many hundreds—some as high as $6,000 to $7,000 per ton. A large proportion will probably require the smelting furnace, while some of it can be easily reduced by the stamps. The veins vary in size from 6 inches to as many feet, and have been opened from 50 to 250 feet in depth. Some of the ore had been shipped to Salt Lake and to Winnemucca for reduction, giving in both instances satisfactory results. Something was being done in the way of sacking for shipment, and 2,000 tons or more were on the dumps, believed to pay well for working, if the necessary mills and smelting works were on the ground. Wood and water were represented as abundant.

While at Corinne

I learned from Mr. H. House, who has charge of that end of the road, that about four miles of Portland, Dalles and Salt Lake railroad had already been graded, and that the work was being pushed forward with energy, with the intention of completing it to Malade, Oneida county, Idaho, a distance of 50 miles, the ensuing winter. Another road is also said to be in contemplation from Corinne to the mammoth coal mines recently discovered in the western part of Wyoming. They are distant from this point about 100 miles, and the coal vein is represented to be 1,000 feet thick, with only a few thin strata of rock between, and to cover an area of not less then 30 miles square, the coal making a splendid coke.

Franklin, in Idaho, but near the boundary line of Utah, is connected with Ogden by a narrow gauge railroad 60 miles long and by stage line with Montana. A. O. K.

Mechanical Ore Concentration and Separation.—No. 10.

[Written for the PRESS by FRANCIS M. F. CAZIN, M. E. Santa Fe, New Mexico.]

This part of the subject should properly immediately follow article 5 of the series, since it treats of the application of the principles of specific gravity by mechanical contrivances, as the description of jigs will prove.

The more perfect these principles given are executed, the closer the action is kept to them, the more efficacious the separation will be. Thus separation may be obtained in some degree in working on material of unequal size; but in working on particles of equal size, only by the jigging mechanism the separation will be more perfect. While in the one case loss is probable and unavoidable, the working on equal sizes only offers the best guarantee against loss and will prove the most successful.

Any mineral dresser advising against the most minute assorting according to size, therefore, only proves by such advice his ignorance and incompetence and makes him a very dangerous individual, conspiring by ignorance or malice against the interest of the adventurer. All principles (physical) before stated with regard to liquids and mineral particles may be applied to air (blast wind) and mineral particles. Practice until now has evidently proven the separating action to be more effective and thorough in water than in air. But the art of mineral dressing will probably be extended both ways, and as well by the introduction also of heavier liquids than water as medium for the separating action, as by the more ample application of air as separating medium.

The variety of ores as well as of local circumstances is so large that only prejudice can declare one or the other method (wet or dry) as predominantly adaptable in all cases. Either method may prove the better one in cases where the nature of the ore and local circumstances come in in its favor. As the profession stands to-day, wet separation is the one of the two in which the largest experience is collected, in which the best and most improvements have been introduced and which is considered acceptable and advisable in all cases where water can be procured, even in such small supply as to necessitate its use over and over again, only replacing the loss of natural evaporation.

Vertical and Horizontal Streams.

Accessory to the separation through exposure of particles to a vertical stream of liquid or air, is the exposure to a horizontal stream, either simultaneously or independently. It only is important to know that, of particles of the same size, those of less specific gravity will be carried by the same stream to a greater distance than those of great specific gravity. Therefrom results, that in order to utilize a horizontal stream for separation according to quality, assorting according to size is as unavoidable as it is in utilizing the vertical stream.

The action of a horizontal stream is resorted to as an accessory contrivance in the continuous and automatic jigs for the purpose of continually moving the lighter particles away from the heavier ones, thus preparing space for the new supply and distancing all waste particles from the dressed material.

The horizontal stream is also utilized in special contrivances for treating very fine sizes, as will be hereafter explained.

These two modes of operation, as before specified, consisted in exposing ore particles free in and to the action of a vertical or horizontal stream of water or blast, thus receiving their motion or local arrangement amongst themselves solely by the contact with the water or air.

These two modes of operation are not the only ones successfully applied for mineral dressing purposes.

The Other or Third Mode

Is to spread the ore particles on solid planes (solid faces), either with or without motion, and to let flowing water or air out on the particles of ore. In this mode of operation, two different influence are exercised on the ore particles at the same time, viz: the influence of adhesion to the solid face on which the ore particles rest, and the influence of adhesion to the stream of water or air moving over or along the ore particles.

The difference of adhesion to a solid face and the difference of adhesion to flowing water amongst the particles constituting ore, are also a medium of separation and concentration.

This medium is applied in special apparatus called puddles, shaking or concussion tables, sweeping tables, etc. These apparatus will be described at the proper place.

Working of this Class of Apparatus.

With regard to these apparatus and to the principles therein applied, experience has established the following:

1. A horizontal (or inclined) stream of water (or air) carries ore particles of the same size on a solid face to a greater distance when they roll (globular shape) then when they slide (crystalline shape).

2. A horizontal or inclined stream of water (or air) carries ore particles of the same size on a solid face to a greater distance when they are of comparatively less specific gravity.

3. The difference in speed as above stated is not attained between ore particles unless they are of the same size.

No matter which of the three modes of operation may be applied, the assorting according to size cannot be dispensed with. The neglect of sizing before separating will always be the cause of failure and unsuccessful work.

With appropriate sieve arrangements the continuous jig may be employed as spontaneously sizing and separating, as hereafter explained.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING OCTOBER 24TH, 1876.

LATHS.—Ezra Coleman, Virginia City, Nev.

TAPPETS FOR STAMP RODS.—James Brodie, S. F.

BOLT CULTIVATORS.—William C. Carleton, Boise City, Idaho Ter.

CORK EXTRACTORS.—John S. Saunders, Princeton, Cal.

WATER CLOSETS.—William Smith, S. F.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

MACHINE FOR OPERATING EARTH AUGERS.—E. M. Hoagland, Watsonville, Santa Cruz county. This invention is an improved machine for handling and operating earth-boring augers for wells and other holes in the ground. The inventor provides a very convenient and simple machine for operating boring augers, as it permits him to finish a cutting of a certain depth and without stopping the operation to raise the earth to the surface, the whole being performed automatically. It would be difficult to describe the apparatus in detail intelligently without the aid of engravings.

CORK PULLER.—John S. Sanders, Princeton, Colusa county. This invention consists in permanently attaching to a cork or bottle stopper a bale or handle which can be used for drawing it from the mouth of the bottle or other vessel which it is used to close. The invention consists in passing a ribbon or other inelastic strip of webbing or textile material through the cork, near its lower or smaller end, so that a sufficient length of ribbon will extend out upon each side of the cork or stopper to project outside of the bottle when the cork is pressed in. These projecting ends can then be united together, so as to form a bale or handle, which can be used for drawing the cork. To prepare the cork for use, the inventor takes a flat, sharp needle, with a wide eye near its point, and inserts one end of the strip into the eye. He then forces the needle through the cork at a point near its lower end, so as to carry the ribbon through it far enough to allow its two ends to be tied together above the cork, and form a handle as described. This kind of an arrangement for pulling corks has been used before, but the ribbon passed under the bottom of the cork, and was liable to taint the liquid or would become rotten in time, so as not to be strong enough to pull the cork. With this improvement the cloth or strip is protected, so that it does not come in contact with the liquid, and these objections are avoided.

BULLION SHIPMENTS.—Since last report bullion shipments have been made from prominent mines as follows: Con. Virginia, October 25th, $91,111.57; Arizona, 25th, $950 63; Washington, (Cal.) 25th, 314¼ ozs.; Modoc, 25th, 420 bars—1,020 bars. Northern Belle, 24th, $12,006.91; Comanche, 24th, $7,689.08; California, 26th, $36 738 16—total no to date, $671,657.97; Con. Virginia, 26th. $40.179.60—total to date, $609,827.78; Ophir, 26th, $12,-262.91—total to date $168,235.18; Arizona, 25th, $950.63; Crescent, 27th, $2,590; Indian Queen, 24th, $3,057; Ophir, 30th, $24,166—total to date, $192,401; Northern Belle, 30th, $99,893.40—total to date, $771,551; Leopard, 30th, $7,200; Ophir, October 30th, $24.166.13—total to date, $192,401.49; Leopard, 30th, $7,-200; Indian Queen, 24th, $3,057.60; Tyho Con., 24th, $8,665.40; Con. Virginia, 30th, $50,585.-58—total to date, $897,565.40; California, 30th, $99,893.40—total to date, $771,531.37; Northern Belle, Oct. 29th, $16,005.25; Modoc, Oct. 29th, 300 bars—total to date, 1,520 bars; value $32,-000; Ophir, Oct. 31st, $10,818 09—total to date, $203,219.58; Justice, Oct. 31st, $35,090.

MONTANA.—Mr. A. C. KNOX, a valued correspondent, who has been connected with this office over 10 years, contemplates visiting briefly this Territory on business for the PRESS. Any assistance rendered him by the friends of this paper and the Territory will be worthily bestowed.

Gems and Precious Stones.

[Written for the PRESS by HENRY G. HANKS.]

Stones Arranged According to Specific Gravity.

	NAME.	COLOR.	SP. GR.
A	Jet	Black.	1.166
A	Cannel Coal	Black.	1.166
M	Fire Opal	Yellow.	2 000
M	PRECIOUS OPAL	Play of Colors.	2 000
M	Hydrophane	Play of Colors.	2.000
P	Lapis Lazuli	Opaque Blue.	2.320
P	Obsidian	Black.	2.363
P	Hauyne	Green.	2.400
P	Hauyne	Blue.	2.400
K	Smoky Quartz	Brown.	2.500
E	EMERALD	Green.	2.580
P	Adularia	Play of Colors.	2.581
J	Dichroite	Play of Colors.	2.597
J	Dichroite	Blue.	2.597
P	Amazon Stone	Green.	2.620
K	False Topaz	Yellow.	2 610
K	Prase	Green.	2.610
K	Heliotrope	Green and Red.	2.64
K	Chrysoprase	Green.	2.654
K	Cat's Eye	Play of Colors.	2 657
K	Amethyst	Violet.	2.657
K	Carnelian	Scarlet Red.	2.657
K	Rose Quartz	Rose Red.	2.657
E	AQUAMARINE	Pale Green.	2.678
F	AQUAMARINE	Limpid.	2.678
E	BERYL	Yellow.	2.678
E	BERYL	Green.	2 678
E	AQUAMARINE	Pale Blue.	2 679
K	Rock Crystal	Limpid.	2.690
S	Turquois	Opaque Blue.	2.696
P	Labradorite	Play of Colors.	2 702
K	Rock Crystal	Black.	2.800
I	TOURMALINE	Brown.	3.076
I	TOURMALINE	Black.	3.076
I	TOURMALINE	Red.	3.076
I	RUBELLITE	Red.	3.076
I	TOURMALINE	Violet.	3 076
I	TOURMALINE	Green.	3.076
I	INDICOLITE	Blue.	3.076
Q	Lazulite	Blue.	3.1 2
R	Axinite	Violet.	3.271
V	Hypersthene	Play of Colors.	3.3.0
O	Idocrase	Green.	3.349
L	Chrysolite	Green.	3.440
D	Pleonaste	Black.	3.523
D	Balas Ruby	Red.	3 523
D	SPINEL RUBY	Red.	3.523
D	SPINEL	Blue.	3 52
D	SPINEL	Green.	3 52
D	Almadine Ruby	Violet	3.52
A	DIAMOND	Pale Brown.	3.529
A	DIAMOND	Black.	3 529
A	DIAMOND	Pale Green.	3.259
A	DIAMOND	Pale Yellow.	3.259
A	DIAMOND	Pale Red.	3.259
A	DIAMOND	Pale Blue.	3.259
F	BRAZILIAN TOPAZ	Blue.	3.541
F	TOPAZ	Limpid.	3.541
F	BRAZILIAN TOPAZ	Yellow.	3.541
F	BRAZILIAN TOPAZ	Red.	3.541
A	DIAMOND	Limpid.	3.600
F	ESSONITE	Red.	3 631
H	GARNET	Violet.	3.631
H	GARNET	Play of Colors.	3.631
H	ESSONITE	Brown.	3.631
H	GARNET	Red.	3.631
H	GARNET	Brown.	3.631
R	Kyanite	Blue.	3.661
N	Malachite	Green.	3.700
C	CHRYSOBERYL	Play of Colors.	3 754
C	CHRYSOBERYL	Green.	3.754
C	CHRYSOBERYL	Yellow.	3.754
H	PYROPE	Red.	3 786
B	SAPPHIRE	Yellow.	3.951
B	ORIENTAL TOPAZ	Yellow.	3.951
B	SAPPHIRE (Oriental Amethyst)	Violet.	3.951
B	SAPPHIRE	Play of Colors.	3.951
B	SAPPHIRE (Oriental Emerald)	Green.	3.951
B	ORIENTAL RUBY	Red.	3.965
B	SAPPHIRE	Blue.	3 979
B	SAPPHIRE	Limpid.	4.200
G	ZIRCON	Yellow.	4.681
G	ZIRCON	Red.	4.681
O	ZIRCON	Green.	4.681
O	ZIRCON	Brown.	4.681
G	ZIRCON	Limpid.	4.700

The Mining and Scientific Press.

It seeme ecarcely necessary to oall the attention of onr reedere to the varied contents of tha PRESS each week, for we are sure our efforts to make a good paper are appreciated. It would he well, however, for onr own constant readers to suggeet to others engaged in inquetrial pursuits the necesaity of subscribing for the PRESS. We aim to collate from all eonrces information of snch a character as will be of interest or valne to onr special class of readers. The miner or mechanic who desires to keep np with the times in his business muet snbecribe for some industrial journal and read it carefnlly; and it is better of course for those on this coaet to take e paper which ie published for their direct benefit here, than one of like character printed elsewhere. From long experience in this peculier field, the publishers and editors are familiar with the wante of the industrial classes of the Pacific coast, and are able to represent them faithfully.

A glance at the contents of any number of the PRESS will ehow how varied and needful ere its contents to miner, mechanic, or any one engaged in industrial or ecientifio pursuits. In mining metters particularly this journal pays particnlar attention. We give not only a description of all new methods or processes, but present all items of interest available on the snbject. The carefully compiled Mining Summary, containing, each week, all the late news in mining matters from all parts of the coast, is alone worth the subscription price, as it gives at a glance the status of the mining interest for the period under review. We take every opportunity to collect every kind of information of value to our mining readers, and the hinte and suggestions continually being published are of immense value to that class. Superintendents, managers and mine owners as well as miners read the paper each week, and we have among them many correspondents whose practical knowledge is of great value to others. The PRESS is continually on the lookout for matters of value to present its readers, and those who know the merite of the paper should bring it to the attention of others who would be benefited by becoming enhecribers.

The Weather.

We are fairly in for another season. The early rains have been copious beyond the measure of other years. The testimony of the raingange at several different points puts a measure upon the weeping of the skies as follows: San Francisco, for the season thus far, 3.76 inches; Sacramento, 3 01 inches; Santa Rosa, 6.5 inches to Oct. 27th; Napa, 8 42 inchee to Oct. 28th. In the southern counties there was also a visitation of rain which will doubtless open the season, but the measurements are not yet at hand.

It is quite an important matter to know the probabilities of the coming season as foretold by these early and heavy October rains. We have heard the opinion expressed at least a score of times, that early rains would be followed by a deficient rain-fall, and yet the examination of the S. F. rain tables indicates that the opposite is true. In 1849-50 the October downpour was 3 inches, and the season'e total, 33 inches; 1858-9, October, 2¾ inches, season, 22 inches; 1874-5, October, 2¾ inches, season, 18 inches. Of course there is no fixed rule by which such a salutary sequence can be determined, but there seems no reason to anticipate a lack where in former years, under similar conditions, there has been plenty.

It may be fairly expected that the year which begins with last week's rains will be one of activity and be memorable in our mining annals as a time of enthusiastic and encceaful effort for advancement and progress.

General News Items.

COMPANY A, Forty-eighth New York regiment, won the Nevada badge at Creedmoor on Monday.

TRADE dollars are selling in Virginia City at 92¼, notwithstanding the advance in the price of silver.

HON. CHARLES DELONG, ex-minister to Japan and well known on this coast, died at Virginia City last week.

THE Pacific Mail steamship *City of Tokio* hee come off the dry-dock with a sound hull, and otherwise in fine condition.

THE car, machine and carpenter shops of the Delaware, Lackawenna and Western railroad company at Great Bend, Penn., were burned Saturday night.

CHARLES M. HENDLEY, secretary of the Sioux commission, telegraphs from Yankton that the Sioux commission has accomplished its mission, and will adjourn at that place to meet in Washington, December 9th.

THE Pope having decired to divide the Archbishoprio of Lyons into two dioceses without the consent of the French government, the latter has issued a decree forbidding such division.

A DISPATCH from Rome says Cardinal Antonelli is dying. The Pope on Sunday ordered a consultation of physicians, who declared the Cardinal's case hopelese. Relatives were summoned to his bedside and found him unconscious.

LATEST news from the armies on the Morava is that the Turks have penetrated the Servian lines and cut General Tchernayeff's army in twain. Confirmation of this newe will be accepted as the signal for the advance of the Turks down the Moreva valley upon Belgrade.

A FRIGHTFUL accident occurred at the Royal Chinese theater on Jackson street, in this city, on Monday night. A cry of fire csused e panic, and in the efforts to leave the building 19 Chinamen were killed and a nnmber more injured. Some of those killed were euffocated and others trampled to death.

ANOTHEB assessment of $10 per share, amounting to $500,000, hae been levied on the stock of the Bank of California. In 10½ months eight essessments have been levied, aggregating $4,000,000, and it is expected that on January 1st the actuel paid up capital of the bank will he again $5,000,000 in gold coin.

THE Health Officer reports that the smallpox epidemic in this city is dying out. The diseaee now eitsoks only those who are brought into direct contact with it, and the circle of contagion is becoming daily smaller and emaller. The total nnmber of cases reported up to the present has been 1,010, and the total nnmber of deathe 284.

ALL the mills on the Cerson, with the exception of the Vivian, are rnnning. The Vivian will start up again some time in November.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

SULPHUR is one of the oldest and best established remedies for skin diseases known to the profession. No suitable vehicle had been found by which to apply it to skin diseases on the face until GLENN'S SULPHUR SOAP furnished that *desideratum*. Sold everywhere.

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, NOV. 1, 3 P. M.

LEGAL TENDERS in C. F., 11 A. M., 91 to 91½. Silver 85½@86¼.

GOLD in N. Y., 110.

GOLD BARS, 880 to 890. SILVER BARS, 12@20 per cent. discount.

EXCHANGE on N.Y., 50@55-100 per cent. premium for gold; on London bankers, 49; commercial, 49¼; Paris, five francs per dollar; Mexican dollars, 7 per cent. discount.

LONDON — Console, 96½; Bonds, 102⅛.

QUICKSILVER in S. F., by the flask, per lb, 50c.

METALS.

[WHOLESALE.]

THURSDAY, M., Nov. 2, 1876.

American Pig Iron, ₩ ton	32 00	@	—
Scotch Pig Iron, ₩ ton	31 50	@	32 00
White Pig, ₩ ton	40 00	@	50 00
Oregon Pig, ₩ ton	31 50	@	32 50
Refined Bar	— —	@	— 4¾
Boilar, No. 1 to 4	— —	@	— 8¾
Plate, No. 5 to 9	— —	@	— 5¾
Sheet, No. 10 to 14	— —	@	— 5¾
Sheet, No. 16 to 20	— 5¾	@	— —
Sheet, No. 22 to 24	— 6	@	— —
Sheet, No. 26 to 28	— 6¾	@	— —
Horse Shoes, per keg	7 00	@	8 50
Nail Rod	— 10	@	— —
Norway Iron	— 8½	@	— 9½
Rolled Iron	— 4	@	— 8
Other Irons for Blacksmiths, Miners, etc.	— —	@	— 4¾
COPPER.—			
Copper Tin'd	— 37	@	— 40
Sheathing, ₩ lb	— 34	@	— 40
Sheathing, Yellow	— 21	@	— 12½
Sheathing, Old Yellow	— 10	@	— 11
Composition Nails	— 41	@	— —
Composition Bolts	— 24	@	— —
STEEL.—Kogliah Cast, ₩ lb	— 20	@	— 25
Anderson & Woods' ordinary sizes	— —	@	— 15
Drill	— —	@	— 16½
Flat Bar	— 16	@	— 20
Plow Steel	— 8½	@	— 9
TIN PLATES.—			
10x14 I C Charcoal	11 00	@	— —
10x14 I X Charcoal	13 00	@	— —
Roofing Plate 1 C Charcoal	10 00	@	10 50
Ranca Tin	— 21	@	— —
Australian	— 25	@	— —
ZINC.—By the Cask	— —	@	— 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₩ lb	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 12½
do do 8x4 ft, No 11 to 16	— —	@	— 13
NAILS Assorted sizes	3 60	@	3 75
QUICKSILVER per lb	— —	@	50 —

GENERAL MERCHANDISE.

WHOLESALE.]

WEDNESDAY M., Nov. 1, 1876.

BAGS.			
Eng. Stand Wbt	10	@	11
Nevillo & Co's			
Hand Sewed	10	@	11
24x36	—	@	—
24x40	—	@	—
Machine do 24x40	—	@	15½
" " 23x40	14½	@	—
" " 22x40	13	@	—
" " 22x36	9½	@	10½
Flour Sacks ½s	9	@	11
" " ¼s	6	@	7
" " ⅛s	4½	@	5
Hessian 60-in	12½	@	14½
do 45-in	10	@	11
do 40-in	8½	@	—
Wool Sacks, 3½ lbs	45	@	50
do 4 "	50	@	52½
Stand. tunnles	11½	@	12
single seam do	—	@	—
Bean Bags	7	@	8
CANNED GOODS.			
Asst'd Pie Fruits in 2½ lb cans	2 75	@	3 50
do Table do	3 75	@	4 25
Jams & Jellies	4 25	@	—
Pickles ½ gl	—	@	3 50
Sardines, qr box	1 65	@	1 90
do hf boxes	3 00	@	—
COAL—Jobbing.			
Australian, Moss	8 00	@	8 25
Coos Bay	—	@	9 00
Bellingham Bay	—	@	9 00
Seattle	—	@	9 00
Cumberl'd	14 00	@	16 00
Mt. Diablo	6 75	@	7 75
Lehigh	—	@	22 00
Liverpool	8 50	@	10 00
West Hartley	—	@	14 00
Scotch	9 00	@	10 00
Scranton	13 00	@	16 00
Vancouver's Isl	10 50	@	2 00
Charcoal, ₩ sk	75	@	—
Coke, ₩ bbl	—	@	60
COFFEE.			
Sandwich Island	—	@	21½
Costa Rica per lb	21½	@	—
Guatemala	20½	@	21
Java	—	@	24
Manilla	—	@	19
Ground in ce	25	@	—
Chicory	27	@	—
FISH.			
Sac. Dry Cod, new	5½	@	6½
cases	6	@	7½
do boneless	8½	@	10
Eastern Cod	8	@	9½
Salmon in bbls	6 50	@	7 25
Scale bbls	3 75	@	4 00
do ½b cans	2 40	@	—
do 1lb cans	4 00	@	—
do Cod, R. ½b	4 25	@	4 50
Pick. Cod, bbls	22 00	@	—
do ½ bbls	11 00	@	—
Mack'l, No. 1, whole	11 00	@	—
" Extra	—	@	12 00
" in kits	1 90	@	2 25
" Ex mess	3 50	@	4 00
" Ex mess, ½bs	2	@	2 10
Pic'd Herr'g, bx	4 00	@	3 50
Bos. Sm'k'd Her'g	40	@	50
LIME, ETC.			
Lime, S'ta Cruz, ₩ bbl	2 00	@	2 25
Cement, Rosendale, do	2 75	@	3 50
do Portland do	4 75	@	5 50
Plaster, Golden Gate Mills	3 00	@	3 25
Land Plaster, ₩ ton	10 00	@	12 50
MISCELLANEOUS.			
Pulu	—	@	7½
NAILS.			
Assorted size, keg	3 25	@	4 00
OILS.			
Pacific Glue Co	—	@	—
Neat F't No. 1	1 00	@	90
Pure	—	@	—
Castor Oil, No. 1	1 05	@	1 10
Baker's A A	—	@	1 10
Cocoanut	—	@	60
Olive Plagniol	4 85	@	5 00
do Poseol	4 45	@	4 50
Palm lb	9	@	—
Linseed, raw	—	@	65
do boiled	—	@	70
China nut in ce	65	@	70
Sperm	2 40	@	—
Coast Whale	60	@	65
Polar, refined	—	@	60
Lard	1 15	@	1 17½
Oleophine	—	@	37
Cevoe's Brill't	38	@	39
Eureka	32½	@	33
Barrel kerosene	33½	@	—
Downer Kerose'e	45	@	—
Elaine	—	@	42
PAINTS.			
Pure White Lead	9¾	@	10¼
Whiting	—	@	1¾
Putty	4	@	5
Chalk	—	@	1½
Paris White	—	@	2½
Ochre	—	@	3½
Venetian Red	—	@	3½
Averill Chemical Paint, per gal.			
White & tints	2 00	@	2 40
Green, Blue & Ch Yellow	3 00	@	3 50
Light Red	3 00	@	3 50
Metallic Roof	1 30	@	1 60
RICE.			
China No. 1	5½	@	6
Bewailan, ₩ lb	7	@	—
Carolina, ₩ lb	10	@	—
SALT.			
Cal. Bay, per ton	10 00	@	14 00
do Common	5 00	@	7 00
Carmen Island	12 00	@	15 00
Liverpool fine	13	@	16 50
SOAP.			
Castile ₩ lb	10	@	10½
Common brande	4½	@	6
Fancy do	7	@	8
CANDLES.			
Grant'e	16	@	16½
Mitchell'e	18	@	20
SPICES.			
Cloves ₩ lb	45	@	47½
Cassia	23½	@	26¼
Citron	28	@	30
Nutmegs	95	@	97½
Whole Pepper	14¼	@	14½
Pimento	16	@	17½
Gr'nd Allsp'rd'z	—	@	12
do Cassia do	—	@	50
do Cloves do	—	@	50
do Mustard do	—	@	20
do Ginger do	—	@	00
do Pepper do	—	@	00
do Mace do	—	@	00
Sowen's Pure Ground ₩ lb	—	@	50
SUGAR, ETC.			
Cal. Cube per lb	—	@	12¾
Circle A cruened	—	@	12
Powdered	—	@	12¾
Fine crushed	—	@	12¾
Granulated	—	@	11¾
Golden C	—	@	10¾
Wailana	10	@	10¾
Cal. Syrup in kegs	—	@	67½
Hawaiian Molasses	25	@	27½
TEA.			
Oolong, Canton, lb	19	@	25
do Amoy	28	@	50
do Formosa	40	@	80
Imperial, Canton	25	@	40
do Pingsuey	45	@	80
do Moyune	60	@	1 00
Gunpowder, Cant	75	@	1 00
do Pingsuey	50	@	90
do Moyune	65	@	1 25
Y'ng Hy., Canton	28	@	40
do Pingsuey	40	@	70
do Moyune	85	@	85
Japan, ½ chests, bulk	30	@	75
Japan, lacquered bxs, 4s and 5 lbs	45	@	67
Japan do, ½ bxs	45	@	90
do pl'n bx, 4½ lb	35	@	65
do ½ & 1 lb paper	30	@	55
TURPENTINE.			
Eastern	50	@	55

LEATHER.

[WHOLESALE.]

WEDNESDAY M., Nov. 1, 1876.

Sole Leather, heavy ₩ lb			25@—
do do light ₩ lb			20@ 2
Jodot, 8 Kil., per doz	43	00@	50 00
Jodot, 11 to 13 Kil., per doz	63	00@	70 00
Jodot 14 to 19 Kil., per doz	82	00@	94 00
Jodot, second choice, 11 to 16 Kil. ₩ doz	57	00@	74 00
Cornellian, 12 to 16 Ko	57	00@	67 00
Cornellian Females, 12 to 13	53	00@	67 00
Cornellian Females, 14 to 16 Kil	71	00@	76 50
Simon Ulimo Females, 12 to 13, Kil	58	00@	62 00
Simon Ulimo Females, 14 to 15, Kil	66	00@	70 00
Simon Ulimo Females, 16 to 17, Kil	72	00@	74 00
Simon, 18 Kil. ₩ doz	61	00@	63 00
Simon, 20 Kil. ₩ doz	65	00@	67 00
Simon, 24 Kil. ₩ doz	72	00@	74 00
Robert Calf, 7 and 9 Kil	35	00@	40 00
French Kips, ₩ lb	1	00@	1 15
California Kip, ₩ doz	40	00@	50
French Sheep, all colors, ₩ doz	8	00@	15 00
Eastern Calf for Backs, ₩ lb	1	00@	1 25
Sheep Roans for Topping, all colors, ₩ doz	9	00@	13 00
Sheep Roans for Linings, ₩ doz	5	50@	10 50
California Rneett Sheep Linings	1	75@	4 50
Best Jodot Calf Boot Legs, ₩ pair	5	00@	5 25
Good French Calf Boot Legs, ₩ pair	4	00@	4 75
French Calf Boot Legs, ₩ pair	4	00@	—
Harness Leather, ₩ lb	24	@	32½
Fair Bridle Leather, ₩ doz	48	00@	72 —
Skirting Leather, ₩ lb	33	@	37½
Welt Leather, ₩ doz	30	00@	50 00
Buff Leather, ₩ foot	17	@	¾
Wax Side Leather, ₩ foot	17	@	—

Scientific and Practical Books on Mining, Metallurgy, Etc.

Published or issued, wholesale and retail, by DEWEY & CO., MINING AND SCIENTIFIC PRESS Office, S. F.

BY GUIDO KUSTEL,

MINING ENGINEER AND METALLURGIST.

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A meeting of the stockholders of the Cascade Blue Gravel Mining Company will be held at the office of the company, 311 California street, rooms 3 and 4, second floor, San Francisco, Cal., on Monday, November 20th, 1876, at two o'clock P. M., for the purpose of disposing of the company's stock, and authorizing the sale of the entire property of the company, with any other business that may come before said company. R. F. KNOX, President,

J. M. BUFFINGTON, Secretary.

San Francisco, Oct. 13th, 1876.

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Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 30th day of September, 1876, an assessment (No. 9) of two hundred and fifty ($250) dollars per share was levied upon all the minee of said company, payable immediately, in gold coin of the United States, to the Secretary, at his office, rooms 5 & 6, No. 302 Montgomery street, San Francisco, Cal.

Any shares upon which said assessment shall remain unpaid on Wednesday, the 29th day of November, 1876, shall be deemed delinquent, and will be duly advertised for sale, at public auction, and unless payment shall be made before, will be sold on Monday, the fourth day of December, 1876, as provided by the articles of agreement of said company, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of Board of Trustees. WM. H. WATSON, Secretary.

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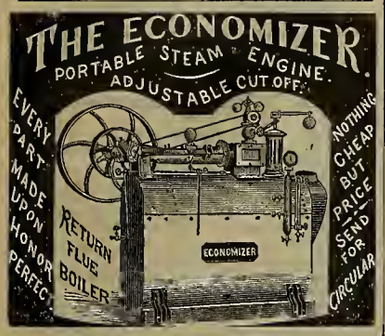

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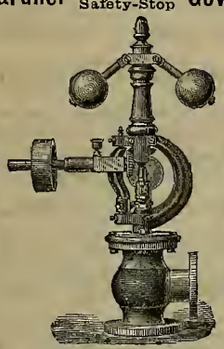

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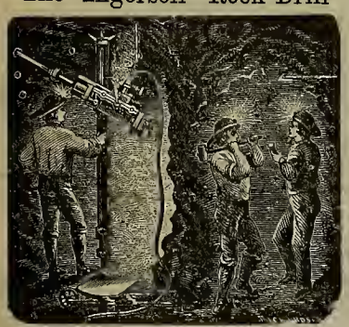

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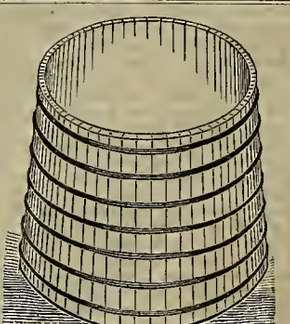

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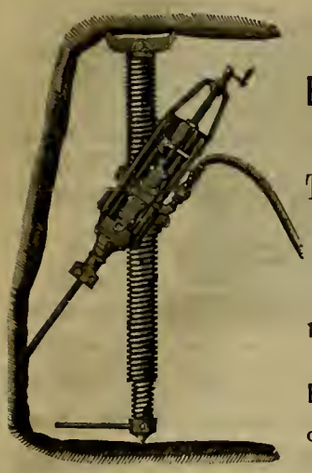

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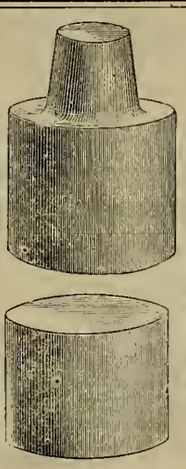

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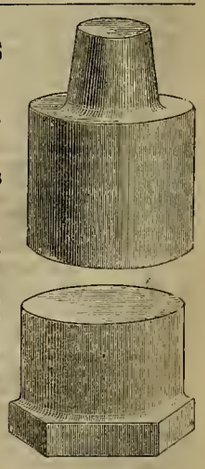

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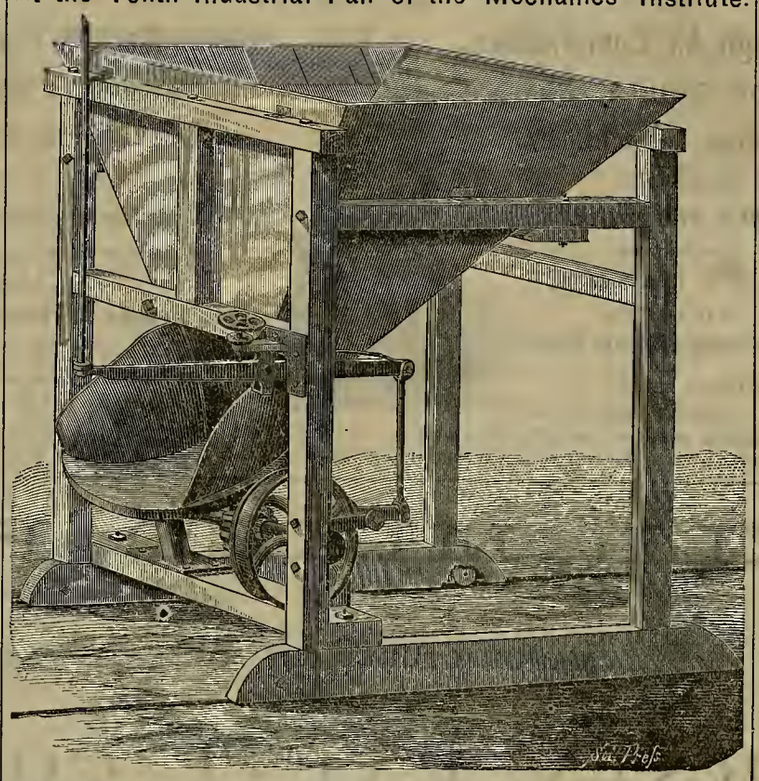

It may be considered as now fully demonstrated, by careful and long-continued experimentation, that the plan upon which a perfect ore feeder must be constructed is that of the *carrier*, and not that of the shaking table. Uniform and accurate feeding is not possible upon the latter plan. The ore must be evenly carried, upon a steadily advancing plane, or table, to the line of discharge, and there simply *dropped*. Spasmodic or jerky contrivances will not answer the purpose.

REFERENCES.

A letter received from the Julian Mill, Newcastle, says, of the Carrier Feeder: "It is the most perfect Feeder we have ever seen; don't see how any mill can do without them."——A letter from Mr. C. C. Belding, of Amador County, speaks in the highest terms of them.——Two of the machines were shipped to the Bunker Hill Mill, also Gover Mill, Amador County. ——Mr. Stevenson, of Boston Mill, Gold Hill, Nevada, says they are the best Feeder he has ever seen.——Soulsby Mill, Tuolumne County ——California Company, Nevada City. ——Omaha Gold Mining Company, Grass Valley.——St. Patrick Mill, Placer County.

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WOODLAND, CAL., Aug. 8th, 1876.

MESSRS. DEWEY & CO.—*Gents:* Your letter containing the patent for my Centennial churn has come duly to hand, and you will please accept my many thanks for the prompt manner in which you attended to the business intrusted to your care, and I will take great pleasure in recommending you to any one having anything to attend to in your line. I am having a number of the churns put up, which will be ready for sale in a few weeks. Yours truly, JAMES ROOT.

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SAN FRANCISCO, SATURDAY, NOVEMBER 11, 1876.

VOLUME XXXIII. Number 20.

The Victor Drill Chuck.

Wa illustrate herewitb a new self-centering drill chuck, in which the clutches are flosh with the face or frout of the device, hy which arrangement it ia claimed the workman has less difficulty in adjosting tha drills, and the said clutches are not liable to be broken under strain or through dropping tbe chuck. Tbe invention embodias a new device for operatiug the levers which control the clotches, and there are various other advantages wbich will be noted as we progress.

The ohuck head has a spindle wherehy it is secured to the latbe maudrel, and also a small screw which geara into the female screw formed inside the chuck holder. A spindle on tbe head carries a cylindrical follower, as shown in tha sectiousl view, Fig. 1, which is provided with three longitudinal slots having bottoms inclined as represented.

The rear ends of the levers which actuate tbe clntches enter the above mentioned slots, and at their fulcruma are enlarged and rounded, so that they there have spherical bearings which rest against adjustable set screws passing through the walls of tha holder. The clutches each consist of a short metal cylinder having a broad longitudinal feather and beveled at the lower edges. These fit in a series of radial cylindrical chambers near the face of tbe holder, the latter heing slotted iu front of the cylinder to receive tha feethers on the clntches, which come flush with the front of the chuck. The front ends of the levers fit into recesses of the clutches, the rear ends heing provided with pivots to return the clutches or throw them out when the rear ends of the levers are releaaed hy the follower. To effect this, the recesses in tbe follower are grooved on the sides on a line parallel witb the inclined bottom. Into these grooves the lever pivots enter, so that the levers are tbrown back on the return motion of the follower.

The device holds from 0 to ⅜ inch drills, or will carry ¾ by reducing the shank as shown in Fig. 3. The drill being inserted between the clutches, the chnck head is then turned eo as to advance the follower, when the inclined hottoms of the receeses force the rear ende of tha levers apart, pressing the clutches together in their radial chamber toward their common center, oancing them thue to grasp and hold the tool. Wben the latter is to he releaaed the operation is reversed. The pivots and the grooves in the follower then act upon the levers, bringing them back to tbeir original positions and moving the clutches away.

The exterior appearance of the chuck is shown in Fig. 2. Its construction, of steel throughont, is durable and strong, and ths arrangemeut of the levers, as already expleined, admits of its easy sdjustment. This chnck ie mannfactured by the Victor sewing macbine oompsny, Middletown, Conn.

Fig. I.

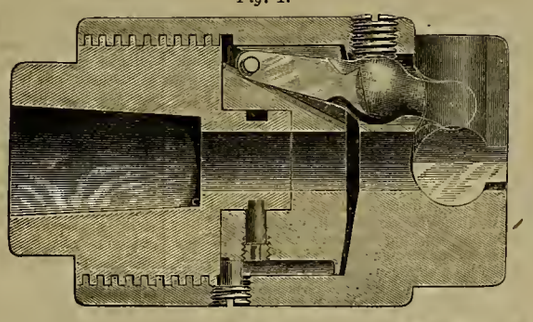
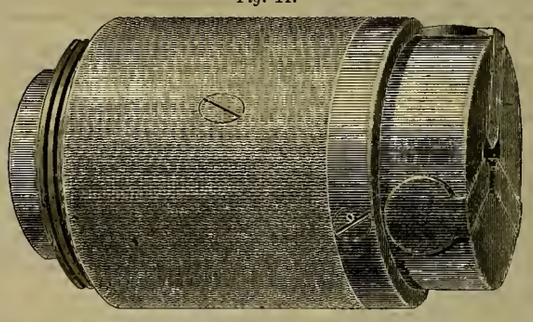


Fig. II.



THE VICTOR DRILL CHUCK.

Practical Workmanship.

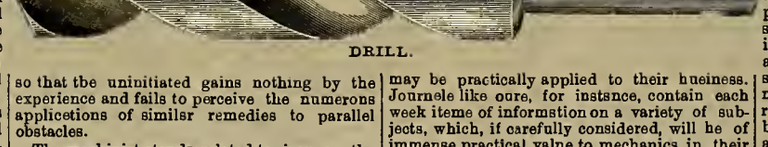
Practical workmanship is not a mere matter of accustoming the fingers to perform mechanical movements, bnt is governed by a series of distinct principles, simple and complex, the employment of which depends at all times upon the perceptiou and judgment of the artisan. Nearly tha whole distinction between an expert and an indifferent workman consists in tbeir reletive capahility to perceive the principles applicable to particular work, and in their readiness in overcoming the ionumerable little obstacles which present themselves, rendering a deviation, at times, from a common rule either highly advantageous or absolutely necessary.

Tbe inexperienced or unohservant mechauic freqoently fails to recognize the very principles be applies to his work, although conscious of a large class of conditione nnder which he could proceed by the same method; becsnse experience has forced it upon bim as indispensable in such cases. Being dependent npon the information which he may be eble to gather from the particular pieces of work which chauce to fall to his lot, and to such scraps of disjointed iustrnction as a fellow workman may feel disposed to impart, it often occars that, where he enconnters a difficulty, the more experienced hand who helps him out of it neglects to explein the principle governing the means by which the difficnlty was overcome, so that tbe uninitiated gains nothing by the experience and fails to perceive the numerons applicetions of similsr remedies to parallel obstacles.

The machiniet stands related to iron ae the carpenter, joiner, cabinet-maker, wheelwright, etc., do to wood, with the disadvantage that he has to design and determine the shapes and temper of hie tools, which vary so much (to snit the work) that the tools suitable for one piece may be totally inedeqnate to perform the same eervice npon another, althongb the proportions, the texture and the metals may be alike in hoth instancea. We cannot, therefore, tell a good machiniat by hia tools, unless we know for what particular piece of work those toola were used. Nor cen a machinist he judged by hia ahavinga, hecauee there are many kinds of work for which a tool keen enougb to cut a tbick and clean shaving cannot be nsed to advantage. Even the speeda, given in mechanical hooks, at which to cut metals, tend to mislead, hecanse the natnre and size of the work, the depth and nature of the cut, and numerous other infinences render the variation of the cutting speed at times one-third greater or lese than the given apeed. A knowledge, however, of the general rules, together with an intelligent nnderatanding of the principles governing the exceptions and deviations, will enable the artisan, wheu a difficnlty arises, to at once perceive its precise csuse and to apply an adequate remedy, conditions requiring to he understood to render tbe application of the principles governing them palpahly necessary aod eesy of accomplishment; thus rendering the learning of the trade more a matter of understanding and less a matter of unintelligent lahor.

These ideas, which we take from tbe preface of Josbua Rose's "Complete Practicsl Machinist" (for sale hy Bencroft & Co.,) shonld he carefully nnderstood hy all workers in iron. The education of the shop is, of course, entirely practical in its nature and absolutely universal in the scquisition of skill and experience. The mechanic ahould not, however, on this scconnt entirely neglect to acqnaint himself with what he may learn from hooks. As a general thing books on mechsnical subjects are written by persons of sufficient practical as well as theoretical knowledge, to understand thoroughly the subjects of which they treat. There are few workmen who cannot learn something of others oi the same trade; end the experience of many is, from the nature of the thing, more varied than that of a single person. Mechsnics, therefore, ebould he readers as well es workere if they would educate themselves up to a higb standard. Books, magszines and newspapere devoted to the intereste of mecbanicsl pursnits sre now plenty and cheap, and there is no excuse for mechanics not owning a few books, end subscribing for at leest one periodical. They are sure to receive hints of value which may be practically applied to their hueiness. Journels like oure, for instance, contain each week iteme of information on a variety of subjects, which, if carefully considered, will he of immense practical valne to mechanics in their trades. Every mechanic should not only read, hut contribute bis share of information; for by the imparting of knowledge nothing is lost to the giver, while much ie gained hy the receiver. Thie principle wes recognized even hy the ancients as one of the moral obligations of mankind, and old Cicero impressed it upon his son in his admirable letters, *De Officiis*. It is none the less binding now, althongh principally carried out by those who write hooks for the heuefit of mechanics, and not by the mechanics themselves, who are too apt to keep their knowledge to themselves.

Fig. III.



DRILL.

The Heating Power of Straw.

Now that straw has become a promiuent fuel in our steem threshing, it is interesting to note its heating power as compared with wood and coal. From some experiments made at tha Vienna exposition, a report of which has just been published, it seems that straw gives in effective heating power a nesrer approach to its theoretical heating power than either wood or coal. Thns, while the theoretical heatiog power of coal is 11.51, the actoal heating power obtained from it in a steam boiler is 5.2 to 8. Of wood the theoretical power is 4.3 to 5.6; effective power, 2.5 to 3 75. Of straw, the theoretical power is 3, and the actual, 1.86 to 1.92. From these figures it appears that straw raises more steam in proportion to its theoretical heating value than either wood or coal. Tha difference between the theoretical heating power of a fuel and the effective heating power is the amonnt which is lost by imperfect combustion, radiation and other causes, and this loss hae been fonud hy experiment to be ahout 53 per cent., or more than one-half. Trials at tbe Vienna exposition proved that one ponnd of straw is capable of evaporating from 1.81 ponnds to 1.97 pounds of water into steam of 70 pounds pressure and 305.6 degrees Fah.

Tbese results obtained at Vienna wonld probably be found true in greater degree in this State, because our etraw is hetter aud drier and conseqneutly uses less heat to evaporate its moisture, and hecause our coal is poorer. Thue the ratio hetween straw aod coal would be more in favor of the straw.

It would he an interesting matter to know whst is the practicsl heating power of straw as shown in work accomplished. Tbat is, for instance, how many pounds of strew was used in threshing a ton of grein. Straw is of such little value in this State that the qnestion is not highly important as an economical one, hut it would be e satiefaction to know tbis and it might eerve as a basis in useful calculstions. If any of our readers have deta from which the fact can he ehown, we ehould be pleased to hear from them.

Miners' Strike.—Tbe miners employed in Hsnk Mitchell'a coal miue at Pancake monntain struck for $4.50 per day, lset week, declining to work longer for $4 per day—the rate at which they were heing paid. Mr. Mitchell refused to accede to the terms of tbe men and they quit work. As $4 per day ia the going rate of wages for minera in this section, Mr. Mitchell does not anticipate any difficulty in procnring a new force of men.—*Eureka Sentinel.*

We were yesterday, aays the Virginia *Enterprise*, shown some apecimens of ore fonnd on tbe anrface of the ground in Castle district, four or five miles north of this city, which ahow well in free gold. Specimens of rock full of free gold were found in that district as early as 1861, bnt aa yet no one has been able to find the lead from which they came.

There is some talk in Pioche in reference to removing the American Flag mill over to Toquerville, Utah. Late developments in Leeda diatrict are of sucb a rich and permanent nature that it ia believed a good mill wonld pay well.

The new furnace at Highland, Nev., is completed. There ia a large quantity of ore on the dump, and the proprietors expect to make a good run.

Our Water Power.—The Truckee *Republican* says: "Combine all the streams in New England into one, and they do not present a water-power equal to the Truckee river. Imagine a stream of pure mountein weter with an increasiog flow of 18,000 cubic feet per minute, through a narrow valley for a distance of 50 miles; a stream which never freezes, never overflows its natural banks aud is so confined by natural barriers that it can never endanger bridges, dams, buildings or property of any kind. Have such a stream running for fifty milss alongeide of a continental railroad, and hetween two States, and then inform ns if it does not possess important manufactnring advantages.

Hon. H. K. Mitchell returned from a visit to Ward district last Sundey, saye the *Sentinel*, and left the following day for San Francisco. Mr. Mitchell predicts that there will he hard times and much suffering in Ward during the coming winter, owing to the curtailment of mining operations which the weather will necessitate, which will throw out of employment a large number of miners, peckers, wood-choppers and coal-hurners. He, however, expresses a high opinion of the value of tbe mines of Ward district and thinks it will he a lively camp next summer.

A new ore-house is heing framed for the Con. Virginia and California mines. The work is heing done east of the depot and the honse is to he built on the new side-track, under the tramway running east from the C. & C. ahaft and hetween that and the California battery mill.

CORRESPONDENCE.

Mines Around Virginia City, Montana.

[From Our Own Correspondent.]

EDITORE PRESE:—A comparatively pleasant ride by stage from Franklin, Idaho, (for the rain had laid the dust,) brought us to Virginia City—a dietance of about 300 milee. The mining in this vicinity hae hitherto been ohiefly placer, although recently quite an intereet has been awakened in regard to qnartz.

Placer Mines.

Alder Creek gulch, extending eeven or eight milee below the city and ae many milee above, was at one time exceedingly rich, supporting a population of near 10,000, and turning out immenee sums annually in gold. Some eay thet it has yielded during tbe past 10 years from $50,000,000 to $60,000,000. Tbe minere are etill doing remarkably well, eepecially in view of the fact that the ground has heen worked over once at leaet in most places, and in some inetances oftener.

The Montana Flume Company,

Seven milee below Virginia City, hold a United States patent for 160 aores, and work hy a three-foot flume. At preeent leased to Chinamen on the sharee, and yielding the company over $3,000 per annum, eaying nothing of the amount etolen.

Mesere. Sedman & McGregory have a olaim higher np of 160 acres also, one and a half milee in length and widening in places to a quarter of a mile. Tbis ground is said to have originally been ae rich as any in tbe district, perbaps more extensive than any other claim. It has been worked for 12 years, and will probably continue to pour forth its rich treasnree for 100 yeare to come. Tbe past few years hae produced eech eeaeon from $10,000 to $25,000. It is worked by a 30-inoh flume, carrying from 200 to 300 inches of water on a grade from one and one-eigbth to one' and one-balf inchee to the 12 feet. About 60,000 feet of bedrock were cleared up with the aid of eight men in seven months, tbe gravel being about 15 feet in depth.

Incluaed in the eame patent as above there is a claim of 11¼ acree, owned by Messrs. Finley & Moulton, tbat is paying about one ounce to tbe man per day, or about $150 in the aggregate. Mr. E. F. Bond'e claim of 35 acree ie doing well et preeent. The higbest average given, probahly some time ago, wae $800 per day for four men, one small pit heing pointed ont from which $5,000 bad been taken. It averegee from $8,000 to $10,000 per year.

Davis & Co.'s claim, adjoining the above, was reported as yielding from $10,000 to $20,000 per seaeon. Mr. T. A. Fenner has 2,200 feet of gulch and bar mines in the same vicinity, character of gravel similar to the claime above desoribed and at present paying well. It ie

Worked by Machinery

Claimed as hie own invention and construction, and may very properly receive a little notice in detail. The car is drawn up hy one of Hallidie'e steel hardened iron roues hy water power. When the car comee over the dump hox, the hooke which hold tbe hottom of the car in place are thrown ont hy coming in coutact with a ratchet, thus letting the trap down and causing the dirt to drop into tbe dnmp hox The car then rune on to a roller which oloses the trap on the hooks. Tbe depth to bedrock in thie claim is about 16 feet. There ie a pit opened about 100 feet square and a hox-drain laid from the lower to the upper end of the pit. A bead of water, the eame, hy the way, which runs the machinery, ie now turned on, which washee off about one-half of another hundred feet ahead; when the maobine is moved up and the remaining gravel cleaned up, in readiness for the repetition of a similar operation. Tbe proprietor considere this mode of working equal to, if not euperior to a bedrock flume, particnlarly in a ligbt grade gulch. Mr. McGinnis, a sbort dietance above, witb the aid of one man ie taking out about $130 per week.

The olaim of Meesre. Hanser, Lee & McCauley, just below the city, ie represented as paying good subetantial wagee, though no figures were given. This is but a very meager sketch of what is doing in the lower end of the gulch, and brings us to Virginia City, once the capitol of the Territory, and hoasting a popnlation of several thousaud. It now numbers probably from 700 to 800; is tbe center of a rich mining and agricultural district; hae at least a dozen large business housee, two hanks, a very substantial courtbouse, a fine public school building, several churches, and tbree or four hotele—the Crescent, run by Mr. T. Stees, our very accommodating host, being numbered among the best.

The first mine above the city, in

Alder Creek Gulch,

Is the drifting claim of A. M. Hart & Co., running winter and eummer with excellent resulte. Mesere. Hayes, Sterne & Co. are next in order, employing four men, and teking out on an average per diem from $70 to $80. Parker, Williame & Co., a mile or so above, usually employ from seven to twelve men, tbe mine said to pay from $8 to $12 per day to the man. Tne gross yield the preeent season will probably not fall much short of $15,000. The Highland fluming oompauy, etill higher up, expect to reach eomething upward of 1,000 ouncee for the year's work, the gold running about $17.65 fine. Tbie claim has a linear extent of 6,000 feet, and ie considered one of the most valuable on the creek, giving employment to from 16 to 20 men. I wae informed hy Mr. E. G. Herendeen, the euperintendent, that the company held a water right which greatly enhanced the value of the property, tbe water being brought from lakes in tbe mountains, and giving tbem, by meane of reservoire, a eupply of 200 additional inches for about 70 deye.

The Pine Grove, the next above, Mr. J. McRoberts, president, has 4,300 feet in length. A larger amount of ground has been worked than usual, and thought to bave paid better; the total for season in the neighborhood of $10,000.

The Southmayd and also the Summit fluming company will probahly each yield fully as much as the laet mentioned, which is certainly not a bad showing for these eo-called "hard times."

There are other claims, extending sbove Summit City, which is distant from Virginia about eight miles, hesides a very considerable amount of gravel mining in Brown's gulch, and on otber streame not many milee from Virginia, the details of wbich are not necessary.

Sufficient has certainly heen given to ehow that the placer mines are by no means playen out.

Some Quartz Mines.

Beginniug at Summit City, where our description of the placer mines closed, a few of tbe quartz olaims may now be taken up and briefly noticed.

The Keystone,

The property of Mr. E. B. Covely, of this place, has heen opened by tunnel 225 feet, striking lode at a depth of 150 feet. The greatest depth reached by sbaft, 170 feet. The ledge averages six feet from wall to wall, which are well defined, with from 18 to 20 inches of gold and eilver bearing quartz, milling $35 in gold, and so far not worked for the silver, although giving aesays as high as $70 per ton. The mine has been worked at intervals for the psst 12 yeare, and bas yielded the present owner alone about $35,000.

Tbe Kearsarge, in this neighborhood, at preeent idle for want of proper machinory to drain the mine, has a sbaft 180 feet deep, and ie reported as having psid thus far upwards of $80,000. The Oro Cacbe, eitnated also at Summit City, and at present worked by Mr. Chas. De Wolf, ie thought to be the richest mine in this vicinity, the ore running ae high as $225 in gold, and the gross yield having heen considerably greater tban any other. There are a number of other locations here on lodee from eight to ten feet wide, mostly low grade—$8 to $12 per ton—which will be worked when the water, now monopolized hy the placer mines, is uo longer needed.

The Easton Lode,

Owned by Emery Brothers, is situated in Brown'e Gnlch district, four milee in a eouthserly direction from Virginia City. It is a beautiful little vein, averagiug, perhaps, a foot in width, and consists of a good milling, silver bearing qnartz that works $100 per ton, the cost of milling with present facilities being about $50 per ton, still leaving, with all the drawhecks, a nice little margin for profite. Nothing is being done on any other claims in the neighborbood, although another was heard of tbat worked up last year to from $150 to $250 per ton, consisting of a fine gray copper-silver ore, sometimee denominated fahl ore, but for reasone not ascertained it is now lying idle.

The Bell lode, two miles southeaet of Virginia, 1,500 feet in location, ie from seven to eight feet in width, the general formation a yellowish granite. A tunnel 130 feet strikes the ledge 100 feet from surface. The ore consists of both silver and gold, with some galena, and looked upon ae good milling ore, running from $40 to $50, with assays as high as $700. The Sam Tilden, witbin one mile of the city, owned by Messrs. Hanser, Lee and McCauley, a recent location, has a two-foot vein of solid quartz, running up to $900 in gold and silver, the proportion of the former to tbe latter being about as two to one. The O. D. Barrett lead, five miles southwest of Virginia, four feet wide, sbaft 25 feet aud an open cut along the lode 150 feet. Ore thought to be similar to that of the Comstock and bas worked $200 per ton, the full value believed not to have been obtained, as many average sample essays went to $400, with eome as high as $800; owned hy Mr. J. H Pfeil and consists of 2,100 feet.

The Kremliu, five miles northeast of the city, on Granite creek, ledge two and one-half feet, discovered by Mr. N. J. Norwood, and tbe property of Mr. H. Elling, a hanker, and others of Virginia. Has a shaft 95 feet and the ore, free milling, runs from $15 to $100 in gold, working proceee. The Morgan mine, on the same oreek, is located on a ledge of feldspar, with very rich free gold on the foot wall, found mostly in connection with a brown-colored iron, which often runs in emall veins into the spar. It is owned, I understand, by Messrs. Morgan, Thompeon and Dahler, also a hanker of Virginia, and a very recent discovery of great promise. A small quantity has just heen worked in an arastra, yielding $125 per ton in gold, though not considered a satisfactory test, as mucb of the amalgam was left in the crevices at the hottom of the arastra. Some of it, powdered in a hand mortar, turned out as much as $5 per pound, or at the rate of $10,000 per ton.

The Gray Copper Lode,

The property of Messrs. Thompson, Garvey and Barker, about 14 milee from Virginia, near Stinking Water creek, ie one of tbe largest and moet promising silver lodee of thie eection, apparently from 30 to 40 feet in width, as yet but little prospected. It ehows veins of ore from two to three feet thick, rich more particularly in tbe gray copper and hromide of eilver, containing probably many other varieties of eilver ore, such as the cbloride, hlack snlphurets, oxides, etc. It has worked at the rate of a little upwards of $100 per ton, going only to 70 per cent. of the assay valustion. A lot eampled gave average assays of $437 per ton, some running to $623. While in this neigbborhood, a visit was made to the eomewhat celebrated

Puller Hot Springs,

Belonging to Mr. J. W. Puller. In connection with the property there are four springs, two of which are fitted up with very comfortable quarters for bathing. One is intended for a mud hath, the temperature being about 110 degrees, and 10 or more degrees hotter than the others. The water of the bathe contains iron, sulphur, soda, iodine and other ingredients, in the proper proportion, it is eaid, to make it valuable as a curative agency, some very remarkable cures being reported of neuralgia, rheumatism and some nameless diseaees. The spring used for drinking purposes is a white sulphur, similar in character to thoee of Kentucky and Virginia. Near the springs there is a hotel, under the management of J. H. Davis, wbere visitore or patients are accommodated with the best the country afforde.

Before closing this letter, the firet from Montana, I must say, impressions ae to the resources of tbe Territory, mining, grezing and agricultural, are very favorable—the ontlook for the future in quartz heing unusually promising.

A. O. K.

The New British Corvettes.

Half a dozen steel corvettee are forthwith to be added to the navy—swift, well armed vessels, to serve as cruisers. For some time past steel has been regarded by sbipwrigbts with a favorable eye, being tougher and altogether less liable to fracture tben iron, and now the admiralty bas taken the hold step of concluding a contract for building eix war sbips of this material witbout delay. They are to he built on the Clyde, and to be ready for eervice, with their engines on board, witbin two yeers; eo we may expect that for some time, at least, we shall hear no more about the ship building industry in that dietrict being in a depreesed condition. The corvettes will not serve in any fleet along with hig ironclads, but are designed especially for foreign service in Cbina and the Pacific, as aleo for cruising in tbe vicinity of our colonies and foreign poseeesione. Tbey will he remarkably fleet sailers, and, it ie anticipated, will be eble to make 20 miles an hour without difficulty. Their armament is to consist of 14 guns of different calibers, and besides the steel casing, their hulwarks are to be covered with two thicknesees of teak. Tbey will not, of course, he in a position to withstand heavy hattering chargee from hig naval guns, but still ordinery sbot and shell will be unable to penetrate their sides. As their great speed will alwaye enable them to show their sterns and prevent hostile craft from approaching, these eteel corvettee should prove most nseful additions to our navy; and it may eafely he taken for granted that where they are likely to cruise there will he little chanoe of falling in with heavy ironclads, which, hy reasou of the small amount of coal they carry, are unable to trnst themselves very far from land. The corvettes are to measure 2,300 tons, and in every respect are to he built alike. The enginee will naturally he of the most powerful character, to enable so high a speed to he attained, and a etrong armored deck running round the vessel will serve as a protection to the machinery. Such vessele as tbese will he able to perform the specially important eervice of pursuing and destroying the ewift torpedo boats, of which a large number, it is said, is to be introduced into tbe navies of Europe. Veesels as fleet as tbeee torpedo outriggers, ae they are called, will he absolutely necessary if we are to have any protection against such troublesome and deadly craft.—*London Daily News.*

"PYROGEN."—A scheme has been recently devised for supplying London with an inflammable mixture of gases to replace coal. The new gas, "pyrogen," as it is called, is a mixture of nitrogen and carbonic oxide, three-fourthe by weight consisting of tbe latter gas. The combustion temperature of "uyrogen" is etated to be 2,700 degs. Cent., and for heating purposes, the flame of the burning gas is to be allowed to raise some good radiating subetance to incandeecence in an ordinary grate.

A CHINESE RAILROAD.—The purchase by Chinese officials of the railroad at Sbanghai ie an additional evidence that the rulere of the Celestial empire have finally disc.vered that they must adapt themselves to European ideas and macbinery. Though less than ten miles long, it will make tbe Chinese familiar with the management and working of railroads, and will, if rumor he true, eoon he extended to the interior, and thue be the heginning of a great network of iron in Eastern Asia.

Floating Mining Stocks in New York.

The New York *Engineering and Mining Journal* says: The Americsn mining stock board may be made a moet useful and creditable inetitution, or it may become a positive injury to legitimate mining enterpriee, according to the menner in whioh the facilitiee it offere are allowed to be properly used or improperly abused. The high reputetion and good standing of tbe gentlemen connected with the new hoard are guarantees that nothing dishonorable will knowingly be allowed in tbe transactions carried on nnder their auspices; and, indeed, it is eo clearly the duty of every one wbo desires to see mining invectments attracting their deserved degree of attention in this financial center, to protect investors from nnprofitahle, not to say worthless stocks, that we feel tbat we hut echo the sentiments of all when we point out more clearly some abusee which we have already hinted at in our financial articles during the past two weeks.

It seems ecarcely necessary, with intelligent men, to insist upon tbe fact that an undeveloped "claim" or "location" on a mineral vein, even if it he a Comstock vein, by no means constitutee a mine, or the basie for a valuation of millions, or even hnndrede of tbousands of dollars. With thie preliminary remark we proceed to the immediate eubject of our article.

The Grant mining company'e stock hae been the most active on the list since the new hoard first commenced calling stocks. Tbe first week, commencing October 2d, gave salee of 7,000 shares of Grant out of e total of ahout 20,000 sharee of all kinds sold. In the seoond week there were 11,300 ehares of Grant sold, out of a total of 31,000 sharee of all kinds; and for the week juet olosing the number of ehares of thie stock sold wae 12,450, out of a total of 53,000 sheres. The pricee obtained were made to inoreaee from $3 per share at tbe first call to $7 per ehare during the paet week. Such an extraordinary activity in a stock that had never before heen heard of naturally attracted our attention, and the information we have received concerning the company seems to indicate the following as the facts in the caee:

The Grant company owne a "olaim" or "location" of 1,000 feet on a vein eituated in Lyon county, Nevada. The vein ie supposed to he a branch of the Comstock, and the exploration of it consists of a single sbaft of 120 to 150 feet in depth. No euch exploration of tbe vein hae heen made as would prove its continuity or the riobness of the ore; in fact, there is scarcely a mine, hoisting or pumping worke, or improvemente of any kind, and no stamp mill. Assays of samples of ore running from $49 to $2,745 a ton are given, but no etatement is made of the amount of euch ore in sight, nor is any definite information given which proves the property to be worth anything whatever. So far there is nothing mischievous about the matter, it is eimply an undeveloped property which bas been put in a company with a totally unwarrantable capital, and no one underetanding the faote would, of course, give much for etock hased upon so slender a foundation. Having found it impoesible to raiee working capital on the Pacifio coast, where such enterprises are better understood than here, the company hae come to New York to seek for money. Before the opening of tbe new stock board the repreeentativee of the company offered tbe stock at $2.50 a share. On the opening of the hoard it was quoted at $3, and has since sold, as above stated, at prices ranging from $3 to $7 per share, which would make tbe price of the nndeveloped claim from $300,000 to $700,000. An inquiry into the nature of the eales seems to show what brokers call "washed," that ie, the company sells and buys its own securitiee through agents. In other words, it eeems to be eimply a mock auction, in which an interest is sought to be created among investore hy a fictitious activity in tbe stock with the hope of catching some uuwary capitalist, or floating some of the stock, in order to have eome one on whom to make assesements. The whole proceeding, as it appears on the surface, ie entirely disreputable, and if such transactione are to be carried on under the auspices and with the approval of the new board, it requires no prophet to foretell ite speedy diesolution.

We understand that the partiee who are endeavoring to float the Grant mining company hy these questionable means, propose, if successful, to hring out another company in the same way; indeed, they have already commenced quoting this etock.

We are desirous of etrengthening the new mining stock hoard and of interesting capital in what, with proper exercise of prudence and good judgment, is unquestionably tbe most profitable field for investment this country affords. We utterly repudiate, and shall expose all transactione whicb tend to bring mining investments iuto disrepute, and to drag a legitimate, reliable, and very profitable industry into the category of gambling dene or mook auctions, and we heliove the American mining stock hoard will not he slow to aid the good cause by witbdrawing from their liet any stock in which the transactions are of euoh a questionable character.

PRESCRIPTIONS ON THE WING.—A physician of the Isle of Wight has found the carrier-pigeon to he of considerable eervice to him in hie country practice. At every village through which he passes, when hie last patient has been seen, he writee a list of presoriptions for that village, affixee it to the leg of a pigeon, and dispatchee it to his house.

MECHANICAL PROGRESS.

Experiments with Temper in Steel.

Prof. A. S. Kimball, of the Worcester Institute of Industrial Science, writes to the *Journal of Science and Arts* "On Some Changes in the Physical Properties of Steel Produced by Tempering." The following will be interesting to all iron workers: A few interesting, and, to a certain extent, novel results, have recently been developed in our laboratory, which I venture to present in their present incomplete form, since the pressure of other duties will postpone, for a few months, further investigation in this direction. Up to the present time the larger number of our experiments have been made upon the behavior of tempered bars under a transverse stress, although a few qualitative trials have been made upon changes in electric conductivity and coefficients of expansion.

1. "The modulus of elasticity decreases as the hardness of the steel increases; in other words, the harder the bar the greater the deflection produced by a given weight." Many manuals of practical mechanics give a higher modulus for tempered than for untempered steel. Reuleaux, in "Der Constructeur," (p. 4), states that it may be increased 50 per cent. by hardening. Coulomb and Tredgold state that hardening has no influence whatever, while Styffe finds that the modulus is diminished. For our first experiment, five pieces of good tool steel, each 13 inches long, were cut from a half inch square bar. These were carefully annealed, squared and polished. No. 1 was laid aside, and the others were hardened in cold water in the usual manner; No. 2 was "drawn" on a hot plate to a dark blue; No. 3 to a purple; No. 4 to a straw color; No. 5 was left hard. The modulus of elasticity was then determined by measuring the deflection produced by a weight applied to the middle of the bar. The probable error of the experiments did not exceed one-fifth of one per cent. The experiment was varied in many ways; several qualities of steel and bars of different dimensions were employed, with uniform results. In some grades of steel a difference of more than 10 per cent. has been found between the modulus of the hardened and that of the annealed bar.

2. "The increase of deflection in a given time is greater the harder the steel." It is well known that the deflection of a bar left under stress will increase for a long time. I am not aware, however, that comparative tests of the rate of increase in steel of different tempers have previously been made.

3. "The immediate set increases with the hardness of the steel." In the experiments each bar was of course loaded with the same weight, which was allowed to act for the same number of minutes.

4. "A bar recovers from a temporary set with greater rapidity the harder it is." The remarkable fluctuations in the line of the bar observed by Prof. Norton became more marked and had a wider range as the hardness of the bar increased.

RUSSIA IRON.—Baron de Wagstaff, a heavy manufacturer of Russia sheet iron, and now on a visit to this country, emphatically denies the widely accredited report that the secret of the manufacture of this iron is possessed solely by the Russian government, or that it is guarded with rigorous jealousy. He states that four-fifths of the polished sheet iron made in Russia are manufactured at private works; and whilst it is true that all efforts heretofore made in this country to produce an article equal to theirs have failed, nevertheless there is no chemical or other like secret connected with its manufacture; nor is there any peculiarity in Russian ore that gives them the power to maintain their superiority, for at the many private works where these sheets are produced various ores are used. The whole "secret" is in the mode of manipulating the iron at a certain stage of the manufacture, which has been invariably overlooked by those who have attempted it in this or any other countries. While withholding a description of this manipulation he states that no success will ever attend the efforts to manufacture from coal-pigs or puddle blooms, that any trace of sulphur or phosphorus in the iron is fatal to a good result; and he adds that he should experience no difficulty in producing the very finest Russian sheet iron at existing works in many parts of the United States. Cannot some of our analytical metallurgists solve this important secret?

UTILIZING THE RECOIL OF GUNS.—The idea of utilizing the recoil of a gun on discharge to make it retreat under cover, says *Iron*, was for the second time put to a practical test last week at the proof ground of the Royal arsenal. The curved railway laid down for the purpose some months since was again used; but the sharpness of the curve had been somewhat reduced, and the straight run at the commencement of the recoil extended. The trial was more successful than the first, the gun, when fired with moderate charges, retiring round the corner out of sight; but when put to the severe trials which are sometimes required of guns on service, it failed to keep its place on the rails. Some further modifications will be made in the arrangements and another trial will be made.

STEAM TRAMWAYS.—Tramway-cars drawn by steam are now run daily through the streets of Brussels, and in at least one other Belgian town.

Boiler Making by Machinery.

The riveting of boiler plates is being brought within the region of machinery. The *Technologist* gives a description of a steam riveter now in use by the Erie City iron works as follows:

The main body of the machine is a standard heavily braced and extending below the floor over five feet, to receive the heavy post or "man," which is fitted to its front side, and securely held in place by bolts and a very heavy wrought iron band (shrunk on) around the whole machine. The steam cylinder and valve are bolted to the opposite side of the standard, the top of which serves as a guide to the piston rod, which is eight inches diameter, and does duty as a ram. The top of the post and end of the ram have each three holes for the reception of dies. These dies are of steel, their faces countersunk to form the heads of the rivets, and are usually placed in the center holes, unless required to work in a corner (as in the furnace of a locomotive), when they are moved into one or the other side holes as required. They are also so arranged as to admit the riveting of a head to the shell, or angle iron to a plate. The valve is balanced and worked by hand, giving the operator perfect control of the movement of the ram and force of the blow. The work to be riveted is suspended by a swivel and chain, and raised or lowered between the dies by any suitable device.

The method of riveting is as follows: The plates being in position between the dies, a light blow is struck to "set up" the iron, and insure perfect contact. The rivet is now inserted, and a slow crushing blow is delivered, the whole pressure being allowed to remain on the rivet an instant till it has partially cooled, when a quick sharp blow is given, and the work is done. The cylinder is 36 inches in diameter, and with 50 pounds of steam this gives a blow or pressure of 50,000 pounds. This enormous force upon the hot, soft rivet, upsets it perfectly without injury to the iron, and leaves it better and stronger than a hand-driven rivet, which becomes more or less crystallized by hammering. Two of the points essential to good riveting are, as already stated, obtained by this machine. It is adapted for both light and heavy work, and is suitable not only for all kinds of boiler work, but also for bridge and ship work. It rivets plates 60 inches wide, and weighs about 22,000 pounds. With this machine shells of boilers from one-fourth to five-eighths of an inch in thickness, and heads from five-sixteenths to one inch thick, have been riveted.

Wire Tramways.

Now that wire tramways have been proved valuable on this coast by the success of Mr. A. S. Hallidie's patents, it will be interesting to read of their introduction elsewhere. Our London exchange, *Iron*, writing of this subject says: It will at once be seen how, with such capabilities, the tramways, instead of taking circuitous routes in order to obtain an incline of not more than one in six, the original limit, can now be laid in a direct line, passing up the sides of hills, which would otherwise prove impracticable, in cases where ravines occur, too wide to allow of the ropes being stretched across in the usual way, the tramway can now descend the sides. A good example of a wire tramway working on a steep incline may now be seen daily at work at the flannel works of Messrs. Butterworth & Co., near Rochdale, where it is employed to carry coal from the mine situated at an elevation of about 500 feet. The line is laid direct from the mouth of the mine to the boilers of the factory, and is about 500 yards in length, thus descending at the rate of about one in three. The coal is carried in loads of one and a half cwt. in wooden boxes, and, owing to the great incline, no power is required to keep the rope in motion. A quantity of five tons per hour is transported, and only the labor of two men is required. Similar lines are in operation at the works of Messrs. Norton Brothers (limited), near Huddersfield, where the tramway in its course passes over a great part of the works, and carries the coal direct from the pit mouth to the boilers, it being filled from the pit corves into the tramway buckets by means of a hopper and a slide, which enables one man to do all the work required. This tramway derives its power from the mill shafting. Another useful application has been made at the sugar works of James Duncan, Esq., for the purpose of carrying coal from the side of the Thames, where it is brought in barges, to the interior of the works, a distance of about 150 yards—throughout its course it passes over the various buildings and roadways, which are now left free for the regular traffic of the works. The cost of carriage of the coal at these works has been greatly reduced by the use of this tramway.

NEW TRANS-MEDITERRANEAN CABLE.—At a special meeting of the Eastern telegraph company, held recently, a resolution was passed authorising the directors to acquire and carry into effect at a cost not exceeding £100,000, the concession from the French government in reference to the new submarine cable from Marseilles to Algeria, and the land wire through France, with any modification which may be approved by the board.

SCIENTIFIC PROGRESS.

Meteorology.

The most important publication that has come to hand since the beginning of the year is the fine volume issued by the Smithsonian Institution under the title, "Tables, Distribution and Variations of the Atmospheric Temperature in the United States." These temperature tables are based upon all available thermometric observations made in the United States and Canada previous to the year 1871, the estimated number of which will not fall below 11,000,000. The labor of discussing this great mass of observations and of deducing some general results has been ably performed by Mr. Charles A. Schott, of the Coast Survey office, to whom science has also been indebted for the Smithsonian rain tables and for many other special works in meteorology. Three large charts accompany this work, showing the distribution of surface temperature for the summer, the winter and the year. Numerous smaller plates illustrate the daily and annual fluctuations of temperature. Mr. Schott finds no perceptible secular change in the temperature of the country, nor any decided connection between our temperatures and the variations in solar spots. For 10 stations the mean temperatures have been computed for every day of the year, and it appears from these that changes in the normal temperature of any day extend over large tracts of country, and progress in an easterly direction. All the stations agree in showing a rapid rise in temperature about the 20th of February. There are also indications that the hottest and coldest epochs change somewhat from year to year, making a complete circuit in 70 years through a range of about six weeks. On comparing the average direction of the wind with the average temperature, it appears evident that for years of northerly winds the temperature is lower, and for southerly winds is higher, so that secular changes in local temperature are attributable to corresponding changes in the direction of the wind. These latter changes, on the other hand, must be a part of a system of oscillations in the general currents of the atmosphere, which may possibly be ultimately due to slight variations in solar radiation.

Although the Smithsonian tables approach so nearly to being an exhaustive compilation, yet there are continually being brought to light hitherto unknown series of observations, some of which will be worthy of future publication. Of this character is the extensive work done by Engelmann in 1859, as metsorologist to Simpson's explorations in Utah. His report on the hypsometric results of these observations has just been published by the Army Engineer bureau, and forms one of the best contributions that the army has made to the subject. In this report Engelmann gives a very lucid explanation of the influence that vapor exerts in affecting the diurnal variations of temperature on the Western plateaus.—*Harper's Magazine.*

THE WILHELMSHAFEN IRON WORM.—A correspondent of the London *Times* has come across a gentleman at Wilhelmshafen, a sea captain, who has made an interesting discovery in natural history. This fortunate gentleman has not succeeded in bringing home a joint of the sea serpent or a photograph of the kraken; but he has discovered that there are worms which destroy—*i. e.*, eat and devour—iron. "I casually," says the correspondent, "by way of joke, in reply to a kind invitation he gave me to stay at his house, said I would come some day with a microscope to examine the worm which was destroying the German ironclads. His face clouded, and our conversation became very earnest. He returned to the subject again, and asked me if I seriously meant what I had said; and then he told me that there was considerable fear that there is a worm in Wilhelmshafen. He himself had discovered that there were worms which destroyed iron. It is well known that Wilhelmshafen, one of the most valuable ports existing, was long useless on account of a wood worm which destroyed every ship that entered its waters."

CHEMICAL COMPOSITION OF THE BRAIN.—According to Mr. Gobley, the following is the chemical composition of the brain:—1. The cerebral matter of the brain of man contains 80 per cent. of water. 2. It contains two albuminous substances, one soluble in water and resembling albumen, the other insoluble in water, and for which the author proposes the name "cephaline." 3. The fatty matter of the brain is formed chiefly of cholestarine, lecithine, and cerebrine; it contains also traces of olein and margarine. 4. The brain contains the usual salts and extractive matters of the animal economy, of which a part are soluble in water and alcohol, and a part are soluble in water but insoluble in alcohol. 5. During putrefaction the cerebral pulp furnishes various products, among which are found oleic, margaric, butyric, glycerio, and phosphoric acids.

PRIZE.—A prize of 2,000 livre ($400) is offered by the authorities of Reggio, in southern Italy, for the best apparatus for extracting the essential oil of bergamot, the conditions being strength and cheapness in the apparatus itself, combined with capacity for producing the largest quantity of essence in the shortest time, without detriment to the color, purity, and fragrance of the product.

Acoustic Attractions.

M. Dvorak has examined the attractions and repulsions of small pendulums hung near sonorous bodies, as reported by the *Journal of Physics*. A square of paper or a piece of cork is hung by a silken thread, and held near a wooden rod vibrating slowly. Varying the positions of the pendulum it is sometimes attracted and sometimes repelled. These motions seemed to be due to the air-currents approaching or receding from the rod, and the motions of the cork served to determine approximately the directions. These results were verified by the motions of a flame and the indications of a very sensitive water manometer. The air thrust aside by the vibrating rod escapes laterally, repelling light bodies. This is replaced by air forming counter-currents toward the rod, producing the effect of attraction. When the amplitude of the vibrations is small, the rod acts like the prongs of a tuning-fork, and attraction takes place in every direction.

In front of the opening of a tube of Kundt is placed a second open tube, giving the same sound as the first, and suspended by two threads. Making the first tube resound loudly, the second tube is strongly repelled. The same effect is obtained if the second tube gives one of the harmonies of the first. Placing two tubes facing each other opposite the tube of Kundt and perpendicular to its axis, they tend to approach each other. With a very sensitive manometer it appears that in a column of air in a state of permanent vibration, the air at the nodes has an excess of pressure. This accounts for the heaping up of water in the loops of a tube of Kundt. It is explained by admitting that the amplitude of the vibrations can not be neglected compared with their length. It follows that there ought to be a continuous motion of the air from a node to a loop. This might be proved by filling the resonant box of a tuning-fork with the fumes of chloride of ammonium and seeing if they are thrown out when the fork is set in vibration.

If a bell is filled with water and a drop of oil allowed to fall on it, the circular film becomes quadrangular when the bell is sounded. The water-currents start from the nodes and accumulate at the loops. A disk of glass is attached to the end of a rod vibrating longitudinally. If a glass drop is hung opposite the disk, it will be repelled at the center and attracted around the periphery. There are then, as with air, currents outward at the center, and counter-currents inward along the edges.

Air in Mines.

At the last meeting of the North Staffordshire mining institute, a paper by Mr. Wardle, of Burslem, was read on this subject, which is summarized by *Iron* as follows: Mr. Wardle said the temperature of the earth increased as they descended at about 1 deg. Fah. for every 50 feet to 60 feet. At the deep coalpit at Dukinfield the temperature was constantly 75 deg. Fah. at a depth of 2,151 feet, and at a depth of 17 feet it was only 1 deg. Fah., which gave an increase of 1 deg. Fah. for every 89 feet only. The average degree of temperature of the earth was 1 deg. Fah. for every 55 feet in descent to a depth of 1,800 feet, and afterwards 1 deg. Fah. for every 44 feet. At 10,000 feet the temperature would be 212 deg. Fah., provided all other circumstances remained the same; at 20 miles, 1760 deg. Fah.; and at 50 miles it would be 4600 deg Fah., heat sufficient to melt any known metal. Thus, the deeper the shafts of their coal mines, the greater the amount of natural ventilation they would obtain. A current of air, traveling at a speed of 10 feet per second, gave a pressure of .492 lb. to the square foot; at 16 feet, =.989; at 51.34, =6.027; and at 200, =39.2, as experienced on the surface of the earth. These might be described as: first, a breeze; second, a light gale; third, a gale; and fourth a hurricane. Increased velocity of wind meant greater friction or higher water-gauge. Air was perfectly elastic; by pressure it could be squeezed into less bulk; and if that pressure were withdrawn, it filled the same space as formerly. Heat had the same effect upon it as pressure. A cubic foot of air weighed 523 grains; a cubic foot of water weighed 1,000 oz.; a cubic foot of watery vapor weighed only 272 grains. So that the more vapor there was in the air the lighter it would be. Friction was estimated by the force required to overcome it. Friction of air increased or decreased in the same proportion that the extent of the rubbing surface exposed to the air increased or decreased. A circular airway offered less resistance in proportion to its area than any other form, because its circumference was less in proportion to its area than the perimeter of any other figure. Airways should be as large and with as smooth a surface as possible. Splitting the air current was preferable to taking the whole current of air round the workings in one body. Generally speaking, splitting the air increased the quantity of air obtained by a given expenditure of power, but the benefits to be derived from splitting were limited by the area of the shaft.

HUXLEY'S VISIT.—Prof. Huxley, says the *Technologist*, was most pleasantly treated during his recent visit to this country. The railroad presidents gave him palace-car journeys without price, and for each of his three lectures at Chickering hall he received $1,600. He was also offered but declined $500 for his address at the opening of the Johns Hopkins university. He carried back to England as the result of his few weeks' visit the agreeable sum of $5,000.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company	1 W'k to Oct. 19.		1 W'k to Sept. 26.		1 W'k to Nov. 2.		1 W'k to Nov. 9.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	25c	....	....	....	....	....
Advance	....	....	....	....	....	....	....	....
Alpha	45½	42	45½	43½	46	44	45	41
Alta	2	1¾	3	2½	2¼	2	2¼	....
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	....	....	....	....	....	....	....	....
Andes	2¼	1¾	2½	2	2	2	2	1⅞
Alps	5½	....	....	500	....	....	....	....
Amazon	....	....	....	....	....	....	....	....
Belt'm'e Con	2½	2⅜	2½	2	1⅞	1¾	3	1¾
Belcher	19¾	18½	19¾	18¼	16	17	16	....
Belmont	2	....	2	....	....	....	2	....
Best & Bel	45½	42	49¼	44¾	49	44¾	48	42½
Buckeye	....	....	....	....	....	....	....	....
Bullion	37½	34	38½	35¾	38	34	33	31½
Caledonia	11	9½	10¾	10	11¾	9¼	9½	9
California	59½	57½	59¼	57	57½	56	57½	54¼
Challenge	3	....	....	....	3	....	3	....
Choller-P'tsf	83	78½	81½	78	79	76	76	72½
Confidence	16¼	15¾	16	15¾	....	....	15	14
Con Imperial	4.05	3.85	3.9	3.85	3.55	3.62	3.6	3.50
Con Virginia	51¼	47¾	55	51½	54½	50	52	49¼
Crown Point	13	11½	13	11½	11½	9⅞	10½	9¾
Coeo Cou	....	....	250	....	400	250	50c	35c
Daney	....	....	....	....	....	....	....	....
Dayton	1½	....	5	4½	....	....	4½	....
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka (G V)	....	....	....	....	....	....	....	....
Eureka Con	14¼	13½	14	13¾	13	12¾	13¾	11¾
Exchequer	14¾	14	15¼	14¾	15⅝	14¾	14¼	14
Europa	....	....	....	....	....	....	....	....
Gila	50c	....	75c	65c	70c	65c	65c	....
Globe Con	....	....	....	....	....	....	....	....
Golden Char	1¾	....	....	....	1	75c	1¾	1¼
Gould & Curry	15	13¾	16	14¼	15¾	13¾	15	13
Hale & Nor	8¾	7½	9	8¼	8½	7⅞	7½	7¼
Ida Ellmore	....	....	....	....	....	....	....	....
Jefferson	50c	....	250	....	25c	....	....	....
Julia	7¾	6¾	7¾	7¼	6¾	....	....	6¾
Justice	26½	17½	25¼	24	24½	23	24½	21¾
Jackson	4½	4	5	4¾	4½	....	4½	4
K K Con	3	2⅜	2¼	12	3	2¼	3	2¾
Kentuck	11¾	11	13	12	13¾	10½	14¼	11½
Knickerb'k'r	500	....	....	....	....	....	....	....
Kossuth	2½	2	2½	2¼	2½	1¾	1¾	1⅝
Lady Bryan	75c	2°o	85c	60c	75c	50c	70c	65c
Lady Wash	3	....	3	2⅝	....	....	2½	2¼
Leo	....	....	....	....	....	....	....	....
Leopard	8¾	8	8¾	7½	7	6¼	7	6
Leviathan	....	....	75c	....	....	....	70c	65c
Mahogany	....	....	....	....	....	....	....	....
Mansfield	20c	....	....	15c	....	....	3o	25c
Meadow V'y	2½c	20c	25c	15c	80	....	50c	....
Mexican	28	25¼	29¾	25½	29¼	26¾	28	25¼
Mides	....	....	....	....	....	....	....	....
Mint	20o	....	25o	....	....	....	13	12½c
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	1¼	1	1¼	90c	....	95c	....	....
Niagara	15o	10o	19c	15c	14c	12c	....	....
North Belle	25	20½	24	22	23½	24¾	30½	26¾
New Coso	2¾	2¾	2⅝	2½	2½	2⅜	3¼	2⅝
Occidental	....	....	....	....	....	....	....	....
Ophir	55	43	51	47½	51½	49¼	51½	47½
Or Gold Hill	....	....	....	....	....	....	....	....
Overmen	85	80	83	79	84¼	80	83	78¼
Pacific	....	....	87½o	....	30o	25c	28o	....
Phil Sheridan	2½	1¾	2½	2¼	2½	2½	2½	....
Ploche	....	....	....	....	....	....	....	....
Poorman	27½o	25o	28o	20c	15o	10c	10c	....
Prospect	1	90c	90c	65c	1¼	60c	1¾	1
Prussian	....	....	....	....	....	....	....	....
Ray & Fly	5½	....	....	5¾	5½	....	5½	....
Rock Island	....	....	....	1¾	1¼	1	1¾	1
Rye Patch	....	....	....	....	....	....	....	....
Savage	16	13	15	12½	14	....	13¾	11¾
Seg Belcher	75	70	....	....	90c	....	....	....
Sierra Nev'da	13½	11⅞	13	11⅞	12¾	12	12	11½
Silver Hill	9¾	7½	9¼	9	9	....	10	8¾
8th Chariot	....	....	....	....	80	11	82½	50c
Snooor	15o	....	25c	1 o	52c	....	40c	....
Union Con	13¾	12½	14	13⅜	13	12	12¾	12
Utah	19½	16½	18¾	16½	18	16	17½	16½
Wells-Fargo	20o	15o	17o	15c	....	....	....	....
Woodville	1¾	1¼	1¼	1⅜	2¼	1¼	1¾	1
Yel'w Jacket	25¼	23½	25¼	23¾	23¾	20¼	22½	18¾

Sales at S. F. Stock Exchange.

FRIDAY, A. M., Nov. 3.

30 Andes.....2 7⅛
110 Alpha.....44½@ 45
100 Amazon.....75c
110 Alta.....2¼
255 Best & Bel.....46¾@45½
165 Belcher.....16¾@17
100 Baltimore Cou.....1⅞
850 Caledonia.....10
50 Confidence.....15
230 Crown Point.....10@10¼
1990 Con Imperial.3 57½@3 60
1415 Celi ornia.....56@56½
40 Choller.....7@7⅛
1415 Con Virginia..51⅝@51¾
50 Cosmopolitan.....42
35 Dayton.....1¼
50 Exchequer.....14⅝
125 Florida.....2
340 Gould & Curry.....14½
165 Hale & Nor.....7¼@7⅜
925 Justice.....22¾@22⅝
165 Julia.....6⅞
700 Kentuck.....12@11¾
10 Ko-suth.....1⅝
200 Lady Bryan.....65c
400 Lady Wash.....2¾@2½
100 Leviathan.....70c
330 Mexican.....28
60 Nth Con Va.....1½@1⅜
420 Ophir.....50¾@50¼
115 Overmen.....8
100 Pacific.....85c
200 Rock Island.....1¼
349 Savage.....12¾@11¾
720 Sierra Nevada..11⅝@11¼
8 8 Hill.....9
300 Tahoe.....2
65 Utah.....16½
135 Union.....12⅝@12⅝
290 Yellow Jacket.....2.@20¾

AFTERNOON SESSION.

180 Alpha.....43¾@43¼
200 Belmont.....2
450 Best & Belcher.43¾@42½
450 California.....54⅜@53¾
10 0 Coeo Co.....45@50.
1960 Con Virginia...49¾@49⅝
675 Con Imperial...3.5o@3.55
75 Eureka Cou.....12¼
250 Empire.....25c
590 Golden Chariot..1⅝@1⅜
330 Gould & Curry.13⅝@13⅜
200 Hale & Nor.....7¼@ ⅞
200 Hussey.....2
845 Justice.....23⅛@22
620 Leopard.....7@6⅞
495 Mexican.....25½@25⅝
40 Meadow Velley.....500
15 Manhattan.....15⅜
500 Modoc.....6
340 Northern Belle...27@26¾
350 New Coso.....2⅝@2⅞
405 Ophir.....48¾@48½
100 Panther.....20c
40 Ray & Fly.....5½
500 South Charlot.....50c
358 Savage.....11¾@12
520 Union.....12¾
94 Yellow Jacket..19⅞@20

SATURDAY, A. M., Nov. 4.

570 Alpha.....41@43
740 Best & Belcher.....43@44
235 Belcher.....16¾@16
505 Baltimore Con.....1⅜@2
20 Bullion.....3⅛
940 Caledonia.....9@9⅜
1375 California.....54⅜@54¾
185 Crown Point.....9¾@10¼
1670 Con Virginia...49½@49¾
1880 Con Imperial.....3.5@3⅝
175 Chollar.....72½@73
30 Confidence.....14
50 Dardanelles.....2
615 Exchequer.....14@14½
100 Eureka Con.....12@12¼
1295 Justice.....23¼@23
10 Kentuck.....12¼
50 Kossuth.....1⅝
50 Lady Bryan.....70c
200 Leviathan.....70c
60 Lady Wash.....2¾
755 Mexican.....25¾@26
50 Mint.....12¾c
75 North Con Vir.....1⅛
285 Ophir.....48¾@49
210 Overmen.....60½@81
150 Prospect.....1¾@1⅝
140 Rock Island.....1
410 Savage.....12¾@12¾
75 Silver Hill.....10
330 Union.....12¾@12⅝
10 Utah.....17½
120 Woodville.....1¼
410 Yellow Jacket..18¾@19

AFTERNOON SESSION.

50 Alpha.....43¾
265 Belcher.....16¾@17
215 Best & Bel.....46@45¾
100 Crown Point.....10¾
215 Con Virginia.....52@51¾

SALES OF LAST WEEK AND THIS COMPARED

THURSDAY A. M., Nov. 2.

300 Alpha.....44@44½
425 Baltimore Con.....1¾
910 Best & Bel.....44¾@44⅞
250 Belcher.....16@16¾
5 Bull o.....34
350 Caledonia.....9¾@9¾
5 Chollar.....3
65 Chollar.....76
1235 California.....56@56¾
500 Crown Point.....9¾@10
2830 Con Virginia...50@50½
2450 Con Imperial.3.57½@3.60
180 Exchequer.....14⅝
270 Gould & Curry.13¾@13¾
580 Hale & Nor.....7½@7¾
90 Julie.....6¾
850 Justice.....23@23½
20 Kentuck.....12
4 0 Lady Bryan.....60@65
750 Mexican.....26¾@26¾
405 Ophir.....50 a 50½
95 Overman.....80@80½
100 Rock Island.....1
420 Savage.....12¾@12½
463 Sierra Nevada...11@1 ¾
35 Utah.....16@16½
500 Union Con.....12@12¾
2110 Y Jacket.....20¾@20¾

AFTERNOON SESSION.

185 Alnhe.....44¾
100 Alps.....50c
20 Andes.....9
100 Belcher.....18¾@16¾
325 Best & Belcher.45½@45½
520 California.....56¾@56⅝
215 Con Virginia.....54¾
300 Coso Con.....45c
200 Empire Mill.....25c
230 Exchequer.....14¾@14⅝
100 Gila.....65c
200 Gol'n Chariot.....1⅞
210 Hale & Nororess.....7⅞
50 Jefferson.....10c
70 Kossuth.....1¾
100 Lady Wash.....2½
8 5 Leoperd.....6¾ ast
200 Leviathan.....75@70c
200 Mint.....12 c o
140 Manhattan.....15½@15⅝
410 Modoc.....6¾
4145 Northern Belle...27@26½
400 New Coso.....2⅝
220 North Con Vir.....1⅛
325 Ophir.....49½@50
50 Panther.....22c
1430 Prospect.....1⅝@1
3 0 S Chariot.....37½o
150 Savage.....12¾
400 Trojan.....80c@1
100 Woodville.....2⅞
315 Yellow Jacket...20¾@21

Pacific Board—Latest Sales.

WEDN'SDAY, A. M., Nov. 8

60 Alpha.....44@42¾
80 Andes.....7@1⅝
100 Atlantic.....2½
150 Bu a & Bel.....4@45½
70 Belcher.....16¾@16¾
125 Oom Imperial...3 55@3.60
85 California.....56¼@56¾
72 Ohollar.....75¾
5 0 City of Rost.....23
500 Crown Point.....9¾@10
26 Con Virginia.....51¾@51¾
290 Dardanelles.....2
20 Gould & Curry.....14
20 Isale & Nor.....7¾
45 Julia.....7
180 Justice.....22½@23¾
100 Kentuck.....12½
700 Lady Bryan.....65@75c
150 Leviathan.....75c
100 Monumental.....25c
250 Mexicaa.....26@26¼
250 Opair.....49
235 Savage.....12¾@12⅝
50 Sierra Nevada.....11¾
1 0 Tre ton.....10
50 Twin Peeks.....
1000 Trojan.....80@1⅞c
120 Union.....13
1 0 Wo ville.....1½
100 Wasnoe.....1
290 Yellow Jacket..19¼@19⅝

AFTERNOON SESSION.

10 Seet & Bel.....46
10 Belcher.....16¾
300 Coso Con.....35 a 40
465 Con Imperial.....3⅝@3.5
100 Con Virginia...51⅞@52½
10 California.....56½
500 Empire, Idaho.....2⅝c
150 Geo Thomae.....62½o
400 Gila.....60 a 60c
100 Gold Cope.....2½
500 Genesee Valley.....2¼
100 Hussey.....30¾
110 Hale & Nor.....7⅞
70 Julia.....6¾
75 Justice.....23½@23⅞
100 Lady Bryan.....65o
100 Leopard.....@6¾
80 Mansfield.....25@3o
25 Manhattan.....1
10 M doc.....6
170 Mexican.....26¾@26¾
250 Monumental.....25c
20 N Co o.....3¾@3
100 Northern Belle...27@ 0
310 Ophir.....50@50½
10 Occi ental.....3
510 S Chariot.....50@62½c
30 Sierra Nev.....
185 S vage.....11¾@13¼
1500 Trojan.....80@82½c
70 Unioa.....13
100 Wells-Fargo.....12c
20 Yellow Jacket.....19⅝

California Board—Latest Sales.

WEDNESDAY, A. M., Nov. 8.

55 Alpha.....42@43
100 Alta.....2¾
2 0 Alpine.....2½@2
250 Andes.....1⅞@2
500 Alps.....50c@55c
40 Belcher.....16¼
250 Baltic.....2¾o
50 Best & Bel.....45@44¾
20 Bullion.....32
50 Belmont.....2
60 Cal-fornia.....55¾@5
15 Con Virginia...50¼@50½
230 Con Imperial..3.59¾@3⅜
5 0 Crown Point.....10⅜@9½
50 Erie Con.....15
30 Exchequer.....14¼
50 Eest Crown Pt.....2¼
1570 Globe.....80c
75 Gould & Curry.13⅝@13⅜
30 Golden Chariot.....1⅜
50 Hale & Nor.....7@7½
45 Julia.....6⅞@7⅛
1 0 Justice.....22¾@23½
60 Kossuth.....2
40 Knickerbocker.....50c
3 0 Lady Bryan.....68@ 0
1 0 Leviathan.....75c
500 Lone Tree.....21c
100 Mexican.....25¾@26
3 0 Mar-Bes.....1½
3850 Monumental.....30@25c
3300 Mansfield.....19¾@20c
1 0 North Con Vir.....1½
500 N Monumental.....20c
5 0 New York.....90c
50 New Coso.....3¼
30 Ophir.....49@48¾
500 Prospect.....1⅝
100 Rock Island.....1¼
600 Rising Star.....2½@
50 Savage.....12
110 Sierra Nevada.11½@11¾
25 Silver Hill.....8¾

A GOOD many miners from this coast who are going to the Dakota gold fields naxt year will go to the Big Horn mountains instead of taking in tha Black hills.

75 Trenton.....10¾
3850 Trojan.....9 @9o
550 Union Flag.....13¼@75c
210 Union.....12¾@12¼
360 Woodville.....1@1⅛
70 Y llow Jacket.....19¼@19¾

AFTERNOON SESSION.

20 Alpha.....43
100 Andes.....2
10 Belcher.....17
30 Best & Bel.....45¾
10 Bullion.....3
2 California.....56½
30 Con Virginia.....5
100 Con Imperial.....3¾
100 Con Reforma.....1
50 Coso Con.....37½c
90 Ex hequer.....14¼
50 Gould & Curry.....13⅝
30 Gila.....62½@60c
143 Golden Chariot.....1⅜
29 Julie.....7@7⅛
40 Justice.....23
500 Jenny Glynn.....6
200 Kossuth.....1¾
30 Leopa d.....6¾
20 Lady Bryan.....70 @67½o
60 Mexicau.....26¾
2400 Mansfield.....20@27c
100 North Dayton.....2½
50 Oph r.....10@49¾
200 Oasis.....2⅝@2¾
850 Prospect.....1⅝@1¾
100 Quadrille.....2¾
550 Republic.....1½
100 Raymond & Ely.....5¾
350 Rising Star.....5½@1o
30 Sierra Nevada.....11⅝
20 S Hill.....9
5850 Trojan.....1 @80
20 Union.....13
2) Yellow Jacket.....19¼

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Deling'nt. Sale.	Secretary. Place of Business.
Andes S M Co	Washoe	7 25 Sep 15	Oct 21 Nov 8	M Landers 307 Montgomery st
Baltimore Con M Co	Washoe	12 1 00 Oct 6	Nov 8 Nov 27	O A Sankey 331 Montgomery st
Belmont M Co	Nev	9 50 Sep 18	Oct 24 Nov 21	W H McClintock 419 California st
Bullion M Co	Washoe	1 2 50 Sep 22	Oct 23 Nov 13	J S Kennedy 419 California st
Cherry Creek M Co	Nev	7 30 Oct 3	Nov 10 Dec 6	D F Verdenal 409 California st
Crown Point M Co	Washoe	28 1 00 Oct 26	Nov 29 Dec 24	J Newlands 14 8 California st
Dayton G & S M Co	Washoe	6 1 00 Nov 6	Dec 12 Jan 2	W E Deen 419 California st
Exchequer M Co	Washoe	11 *1 00 Sep 23	Oct 25 Nov 15	J S Kenoedy 419 California st
General Thomas M & M Co	Nev	3 50 Oct 27	Dec 1 Dec 20	W Willis 309 Montgomery st
Globe Con M Co	Washoe	9 25 Oct 27	Nov 30 Dec 20	W F Bogert 402 Montgomery st
Golden Chariot M Co	Idaho	18 50 Oct 26	Nov 13 Dec 26	W P Shew 408 California st
Hale & Norcross S M Co	Washoe	52 1 00 Oct 10	Nov 14 Dec 5	J F Lightner Nevada Block
Hussey Con M Co	Nev	2 20 Oct 21	Nov 22 Dec 11	R H Brown 426 California st
Jefferson M Co	Nev	3 50 Oct 11	Nov 18 Dec 11	C A Sankey 331 Montgomery st
Meadow Velley M Co	Ely Dist	13 75 Sep 29	Nov 6 Dec 4	T W Colburn 418 California st
Mexican G & S M Co	Washoe	2 50 Sep 5	Oct 11 Oct 31	C L McCoy 419 California st
Mint M Co	Washoe	15 15 Oct 12	Nov 15 Dec 7	D A Jennings 401 California st
Mitchell G & S M Co	Nev	10 Sept 7	Nov 6 Nov 25	A C Hammond 401 California st
Monitor Belmont M Co	Nev	— 25 Oct 17	Nov 20 Dec 18	B E Minor 309 Montgomery st
Negare M Co	Washoe	S 25 Oct 3	Nov 4 Nov 24	W R Townsend 309 Montgomery st
North Carson M Co	Nev	5 10 Oct 3	Nov 6 Nov 27	W A Von Bokkelen 320 Sansome st
North Con Virginia	Washoe	5 25 Sep 21	Oct 25 Nov 14	J Maguire 419 California st
Overmen M Co	Washoe	36 3 0o Oct 21	Nov 25 Dec 15	Geo D Edwards 414 California st
Panther M Co	Nev	3 25 Oct 4	Nov 8 Dec 5	F Swift 418 California st
Ploche S M Co	Ely Dist	Nev 14 50 Oct 5	Nov 8 Dec 1	F V Smith 419 California st
Poorman G & S M Co	Idaho	7 25 Oct 23	Nov 27 Dec 16	W Willis 308 Montgomery st
Prospect M Co	Washoe	2 50 Sep 21	Oct 31 Nov 17	J P Moore 426 California st
Senator S M Co	Washoe	14 50 Sep 19	Oct 24 Nov 13	J H Segre 330 Pine st
Sierra Nev da M Co	Washoe	46 1 00 Sep 18	Nov 23 Dec 15	W W Stetson 309 Montgomery st
Silver Hill M Co	Washoe	9 1 00 Sep 18	Oct 24 Nov 14	W E Deen 416 California st
St Patrick M Co	Cal	12 50 Sep 18	Oct 23 Nov 15	D F Verdenal 409 California st
Succor M & M Co	Washoe	16 50 Sep 26	Oct 31 Nov 22	W H Watson 302 Montgomery st
Trojan M Co	Washoe	3 10 Oct 20	Nov 21 Dec 11	D Wilder 328 Montgomery st
Wells-Fargo M Co	Washoe	8 15 Nov 1	Dec 1 Dec 29	O H Bogart 402 Montgomery st
Yellow Jacket M Co	Washoe	24 1 00 Oct 23	Dec 4 Jan 3	G W Hopkins Gold Hill

* $12.50 old stock; $1.00 new.

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Atlantic Con M Co	Nev	1	25	Oct 20	Nov 25 Dec 19 P Robinson 330 Pine st
Aurecla C & S M Co	Nev	2	10	Sep 23	Oct 30 Nov 21 T S Fitch 240 Montgomery st
Cabinet M Co	Washoe	1	2	Sep 21	Oct 26 Nov 27 J F Sterling 338 Pine st
Caribo Hydraulic M Co	Cal	3	15	Sep 29	Oct 30 Nov 20 Chas T Bridge 224 California st
Eagle Quicksilver M Co	Cal	9	250 00	Sep 30	Nov 29 Dec 4 Wm H Watson 302 Montgomery st
East Branch M Co	Plumas Co	Cal	5	10 Sept 26	Nov 6 Nov 25 T C Ward 514 Washington st
Emigrant S M Co		Cal	1	1 00 Sep 22	Nov 8 Nov 29 W H Ohiokering 426 California st
Gold Canyon Con M Co		Nev		10 Sep 15	Nov 13 Dec 20 A A Pardow 636 Clay st
Golden Crown M Co		Cal	3	5 Sept 12	Oct 20 Nov 10 D Bnck 309 Montgomery st
Honston N Co		Nev	1	5 Oct 2	Nov 6 Nov 21 W Stairley 410½ California st
Infinita Belle M Co	Inyo Co	Cal	1	25 Oct 4	Nov 7 Nov 27 J Neely 208 Sansome st
Morgan M Co		Cal	3	1 00 Sep 19	Oct 23 Nov 20 J H Wallace 108 California st
Notional Prospecting & M Co		Cal	1	10 Sept 9	Oct 10 Nov 11 T L Wiswall Merchants' Ex
New England Tun & Smelting Co		Cal	3	25 Nov 2	Dec 6 Dec 23 C C Tripp 401 California st
Nonpareil G M Co		Cal	7	1 00 Oct 13	Nov 16 Dec 4 A DuPat 505 Jackson st
Paris S M Co		Colorado	1	2 00 Sep 23	Nov 14 Dec 5 A J Bell 331 Montgomery st
Renton Coal Co		Washington Ter	3	50 Sept 7	Oct 16 Nov 23 T H Henderson 24 Sacramento st
Rising Star M Co		Cal	2	10 Nov 8	Dec 9 Dec 30 J W Coppage 330 Pine st
San Francisco Sulphur M Co		Nev	1	10 Sep 29	Oct 30 Nov 21 J Roberts Jr 328 Montgomery st
San Jose M Co		Nev	12	30 Sep 6	Nov 12 Nov 21 A Corrigan 102 Front st
South Ophir M Co		Washoe	1	10 Oct 9	Nov 23 Dec 12 A C Gilbert 224 Montgomery st
Valenoana M Co		Nev	1	10 Sept 11	Oct 13 Nov 11 J P Moore 426 California st
Volcano Gold Gravel M Co		Cal	1	10 Oct 20	Nov 21 Dec 11 E A Peck 330 Pine st
Young America M Co		Nev	5	20 Sep 29	Oct 31 Nov 18 R H Brown 426 California st
Yarborough S M Co		Cal	7	50 Oct 24	Nov 29 Dec 23 E Barry 415 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Amazon Con M Co	Nev	John A Reichert	330 Pine st	Annual	Nov 28
Cabinet M Co	Nev	J F Sterling	330 Pine st	Annual	Nov 28
Cascade Blue Gravel M Co		J M Buffington	311 California st	Special	Nov 29
Challenge Con M Co	Nev	W E Dean	419 California st	Annual	Nov 16
Confidence S M Co	Nev	R Wegener	414 California st	Annual	Nov 10
Hamburg M Co	Nev	D A Jennings	401 California st	Annual	Nov 14
Kentuck M Co	Washoe	W R Townsend	Nevada Block	Annual	Nov 22
Mortimer M Co	Nev	D A Jennings	401 California st	Annual	Nov 14
Napa Con M Co	Cal	W W Perrish	328 Montgomery st	Annual	Nov 20

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	O D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kinsley	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	Oct 11
California M Co	Washoe	C P Gordon	Nevada Block	2 00	Oct 16
Consolidated Amador	Cal	F B Lathsm	426 California st	25	Oct 9
Con Gold Hill Quartz M Co	Washoe	R Wegener	414 California st	25	April 17
Con Virginia M Co	Washoe	W F Haven	Nevada Block	2 00	Nov 11
Comsuche M & M Co	Nev	W W Traylor	Nevada Block	20	Oct 25
Empire M Co	Nevada Co	D A Jennings	401 California st	2 00	April 11
Empire M Co	Sierra Co	Chas Collishonn		50	Sept 26
Empire M & M Co	Washoe	W E Dean	414 California st	25	April 17
Imperial S M Co	Washoe	W E Dean	414 California st	25	April 17
Leopard M Co	Nev	R H Brown	426 California st	50	Oct 16
Manhattan S M Co	Nev	J Crockett	419 California st	1 10	Nov 10
Northern Belle M & M Co	Nev	W Willie	309 Montgomery st	1 00	Oct 15
St Patrick M Co	Cal	D F Verdenal	409 California st	30	Nov 10
West Comstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Feb 24

Mining Share Market.

Very little haa been done in tha stock market this weak. On Monday afternoon tha San Francisco board adjourned and did not meet again nntil Wednesday morning. Even than tbe closely contested race for tha Presidential cup absorbed all attention. Had the result of the election been definitely understood, stooks might possibly hava ooma in for a fair shara of interest. But the axoitement rnled so high, as first one and then the other of the candidates was announcad to be ahead, that all speoulation, except on the issue of the oanvass, was pratty effectnally praoluded. It is now generally conceded that nothing can resoua tbe market from continned stagnation bnt the uncovering of fresh bonanzas. Thesa wonld inoite speculation and furnish a baokbona to affairs that wonld warrant bigher prices and brisker times. When those baving control of certsin leading minas have ceased manipulating tbe market and delivered the stock shorted, they will probably be prapared to show their hand. Until then tbe speculating commnnity can only look for a continnation of the past. Tha Virginia *Enterprise* says tbere bave been no marked changes during the week past, for tha devalopment of a mine is a thing of slow growth. Tbe great obstacle to be overcome in prosecuting tha work is water. Tbis gives more tronble than anything else. It is especially tbe one great obstacle to be overcome in deep mining, sucb as is nacessary to success on and along the Comstock. There has been a great deal said during the past week about tha water in the Con. Virginia mina, and the result of striking the pooket has been greatly magnified. Such pockets are oommon all along tha lead and are considerad one of the first indioations of having encountered a fissnra vain. In snob veins our ore is found.

We call the attention of our readers to the fact that we now publish the summary of news from the Comstock a week later by date than formerly, tha Gold Hill *News* having made arrangaments witb us by which we are able to do so.

Discovery of a Cave.

Tbe following is from the Eureka (Nev.) *Sentinel*: Some prospeotors hava recently discovared and are now engaged in prospeoting an extensive oava in Prospect mountain. Tha month of the oava is on tha sonthaast sida of the mountain, about 200 rods south of tha mouth of tha Prospact Mountain tunnal, and oonsists of a small apertura in tha top of tha gronnd. Through this apertnre a man was lowarad, fastened to a rope, and found himself in a larga dome-shaped chamber. In the floor of this chamhar ba disoovered another opening, leading downward further into tha ground, but this apertnra was not at that time antered. Subsequently a tunnel was rnn into the mountain from the snrface at this side, which openad an entranca into the chamber which tha man bad entered, and bere a windlass was put up and further axplorations commenced. The man was lowered down for a distance of about 100 feet, when he rested on the floor of a large cavern, distant from tha natural antranca of the cave at tha snrface about one bundred feat. On tha floor of this oavern was piled a hank of snow about eigbt feet in depth, and bara were found the skulls and hooes of ooyote and dear. Some of thase bonas, which ara covered with mud, dried on them, were bronght to town by Mr. Berg, and can be seen at tha stora of S. Goldstona & Co. Thare is a third apertura laading into the ground from this oavern, whioh will be explored by the parties who disoovared and are workiog the cave. There is a possibility that a mine may he enoountered in the explorations, as Prospect mountain is vained and dottad with minaral daposits, and if ora is found the parties who find it will have a ready-made shaft to work tbeir mine with.

THE Virginia City *Chronicle* of the 2d says: The employees of tbe Con. Virginia and California mining companies will be paid to-morrow $106,378 in gold There will be paid to the employees of the Utah mine to-morrow $4,783; Best & Belcher will pay $3,231; Gould & Curry, $21,900.

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR.

THE TALISMAN MINE.—Amador *Ledger*, Nov. 4: A few days since we paid a visit to this mine, situated on the ridge between Sutter Creek and Amador City. The operations have been confined almost exclusively to the drainage of the shaft. The very best kind of pumping machinery has been fitted up, and the work of taking out water has been going on for many weeks. At the time of our visit men were engaged in grading a piece of ground close to the main road, for the erection of a mill, for which a quantity of lumber was already on hand. Mr. Treglown, superintendent of the works, and under his able supervision there is little doubt that a valuable mine will be developed in the course of a few months.

MECHANICS' MINE.—Amador *Dispatch*, Nov. 4: Work upon the Mechanics' mine, at Sutter Creek, has steadily pushed forward until they now have their hoisting works and machinery nearly finished, and will be ready in a few days to turn on a full head of steam and take the water out, which will only occupy a few days. From what we can learn, this company have a valuable mine, all the stock of which is owned in this county, and the parties interested are just the kind of men to push matters ahead in a successful manner. They have a good ledge in the bottom of the main shaft, and have opened out on the ledge about 50 yards south of the main shaft, with very encouraging prospects. We wish them success.

BUTTE.

THE STORM.—Butte *Record*, Nov. 3: The storm that came on last week was one of the most severe that ever visited this part of the State at so early a period in the season. In fact, many of the old residents claim it to have been the severest they ever knew in the month of October. The river rose quite rapidly, and all day Friday large pieces of the Centennial company's flume were seen floating down its muddy waters. We learn that the banks of the Spring Valley company's canal were broken in several places in Hamilton township, and the waters spread out over the ranches, giving it the appearance of a vast sea. Whether or not any damages were done to the ranches we have not learned. The mountain roads in many places were rendered impassible, and will have to remain so until the spring opens, unless a long spell of dry weather intervenes. On the Oroville road bridges were washed away, and teams are delayed in the mountains until such time as extensive repairs can be made to enable them to cross the West Branch.

CALAVERAS.

BIG CLEAN-UP.—Calaveras *Chronicle*, Nov. 4: Emerson, proprietor of the Happy Valley hydraulic, has just finished cleaning up after a short run. We haven't seen the "hoss," yet, but we understand the yield was very close to $6,000. That is the best clean-up made in this vicinity, for the length of the run, since gold was more plentiful than it is at present. Emerson deserves a good claim, and don't you recollect that we have repeatedly told you that he has got it?

RICH ROCK.—Fifteen tons of quartz from the old Holmes mine, situated on the Mokelumne river, a short distance from Mosquito gulch, yielded $525, or an average of $35 per ton. The ledge is a very wide one, and is undoubtedly as promising a vein as there is in the county. There is no question but that the ledge if developed would prove a first-class mine.

GWIN MINE.—Operations are being urged forward with usual energy at the Gwin mine. The stopes from the 1100-ft level keep the batteries in constant motion, with satisfactory results. The 1200-ft south level is being driven, uncovering a very wide ledge of fair grade ore. It is gratifying to be able to state that the ore body shows no diminution in volume as a greater depth is reached.

HERALD MINE.—The work of sinking the shaft in the Lamphear mine progresses without interruption, and the mill is kept steadily employed. The outlook is wholly encouraging. Stoping and running the south level have been temporarily suspended, owing to the scarcity of timbers.

UPPER CUSTOMY SPLINTERS.—The Deuteronomy mine, at West Point, has just finished a crushing of 30 tons of rock in Henry's mill. We don't know just how much it paid, but it was somewhere in the neighborhood of $35 per ton. Good yield, that. Osriton's mill will commence crushing rock from the Champion mine next week. There is from 75 to 100 tons of ore now on the dumps. The mill at the Mina Rica is to be started just as soon as water sufficient for motive power can be obtained. Another rain will set the stamps in motion. The mill at the Josephine was lately cleaned up, after quite an extended run. We learn that about the usual yield was obtained. W. V. Clark, Esq., of Railroad Flat, is cleaning out his ditches and getting prepared for an energetic winter campaign. He intends opening a monster hydraulic at Independence this fall. Operations are progressing favorably at the Glencoe Con., in Mosquito district.

EL DORADO.

THE ST. LAWRENCE.—*Mountain Democrat*, Nov. 4: Reports from the bonanza in the St. Lawrence continue to be highly favorable. The ledge is widening and the quality of the ore is, if possible, improving. The best evidence of the promising appearance of the ledge is afforded by the fact that within the past week the workmen in the mine have become purchasers of 1,000 shares of the stock. Superintendent Roeswarren, by his systematic preparations for a thorough development of the mine, is demonstrating his superior knowledge of his business, and winning golden opinions from all concerned. He is a close economist, but leaves nothing undone. Some of these days we shall attempt to give a statement in detail of the amount of work he accomplishes in a given period, with what force and at what expense, and in this connection we shall issue a friendly challenge to other mining superintendents in all portions of the State.

INYO.

BRIGHT OUTLOOK FOR LOOKOUT.—Coso *Mining News*, Nov. 4: We are glad to be able to inform our readers that, from an interview with Mr. James Morton, one of the directors of the Minnietta Belle Consolidated silver mining company, at Lookout district, the prospects for that district are of the most promising character. He has been spending several days at Lookout, inspecting mines, and is very much elated with the fine showing in the mines of the Minnietta Belle and Mountain View, a report of which, from their able Superintendent, we publish to-day. A large percentage of their ores are of the milling character, as has been proved by Mr. R. C. Jacobs, who, during the present week, put through his mill at Panamint five and a half tons of the average ore, worsing the same above 80 per cent. of the assay, its value in silver much exceeding the expectations of all. Mr. Joseph McDermott reports that he visited the Little Moe mine, situated but a short distance from the Modoc mines, and says the prospects are very flattering for a good mine. He brought in a large number of samples taken from some 20 different parts of the mine, which are very fine indeed. Assays will be made in a day or two, and we shall be disappointed if they will not average as high as the Modac and Minnietta Bell.

MINNIETTA BELL.—We received the following report from the Superintendent of the Minnietta Belle Consolidated silver mining company: After having taken five and a half tons of ore to Sunrise mill and working same by simple mill process, I am pleased to say that results are most flattering. Much doubt has hitherto been entertained as to its possible success. That doubt is now removed, having realized up to our guarantee of 80 per cent. The present five-stamp mill will be removed to our mine immediately and five more stamps added, orders for the additional machinery having been forwarded to San Francisco, and everything will be in running order ere 1877 dawns upon us. Considering that 2,000 tons are already extracted and lying on the dumps, and that vast amounts are still imbedded, yet thoroughly opened up for extraction, also the cheapness for which it can be mined and milled, we can safely say that our stockholders will be handsomely rewarded for their investments. The mines are in first-class order and looking well at every point. We have commenced our wagon road to connect with the Modoc road, which will pass by our ore dumps, thereby connecting with Panamint Valley road.

PORTOIS FURNACE.—Mr. P. Portois arrived here from San Francisco a few days ago, and has already made arrangements with J. H. Rawlings and Thomas Moran to at once commence the work of erecting the furnace. The machinery is all here, and Mr. Portois thinks he can have it ready to run out bullion by the end of the present month. He says he has about 1,200 tons of ore on the dumps of the Hidalgo mine. The furnace will be of 30 tons capacity.

KERN.

BUNNEL MINE.—Kern County *Courier*, Nov. 4: Hon. A. C. Lawrence arrived from the Bunnel mine on Monday. He reports the utmost good feeling among the owners of the disputed mine, growing out of the late compromise. The mill erected by Mr. Harley for the company, at a cost of $72,000 will begin its work immediately, and 100 men will be put to work on the mine. The mill has already a large supply of ore, which will yield $3,000 per day. It must prove of immense benefit to the county.

NEVADA.

A LONG CUT.—San Juan *Times*, Nov. 4: For several months past Evan D. Evans, Wm. W. Williams and Jas. Reader have been engaged in excavating a cut from the river near Jones' bar to a point above, known as Johnson's ranch, for the purpose of washing off a large piece of flat ground lying immediately in front of Bunker hill. The cut is 2,230 feet in length, seven feet wide at the bottom and from twelve to 15 feet in depth from the surface. The cutting through solid bed-rock is four feet in depth nearly the entire distance. An immense quantity of giant powder was used in the excavation. The ground to be washed away is only 12 to 15 feet in depth from surface to bed-rock, and covers about 30 or 40 acres of land. It has been thoroughly prospected and is rich with the glittering ore.

MOORE'S FLAT.—Cor. Nevada *Transcript*, Nov. 4: We have had some very heavy rain storms within the past fortnight, but as yet have had no snow to speak of, but there is lots of it in sight, on the mountains above. Water is plenty and our miners are caving down the high banks at a lively rate. The Eagle company is making preparations to start their mine up, and intend to run all winter. This is a good mine, but has been lying idle for some time. Several mining experts have paid this place a visit within the last week, and if we are not badly mistaken, some of the bonanza kings are investing in our gravel mines. The Blue Gravel company is running a drain tunnel, and will put a pump in the shaft the coming week. The tunnel will tap the shaft at a depth of 200 feet. Blue Gravel stock is coming up and in demand. Our town people are laying in a big supply of provisions for the winter. They were caught out last winter and had to carry their provisions on snow shoes from North Bloomfield, but they won't be caught napping this time,

PUSHING AHEAD.—*Foothill Tidings*, Nov. 4: At a special meeting of the Washington gold mining company, held on Tuesday evening last, it was resolved that heavier works be put on at once and the explorations be pushed down ward without delay. This mine is situated on a line with the Idaho, and so far as proved shows encouraging symptoms of a first-class ledge when opened up to proper depth. We are glad to note this determination on the part of the company to push the work.

PLACER.

NEWLY COMPLETED.—Dutch Flat *Forum*, Nov. 4: The reservoir of the South Yuba canal company, near Alta, is nearly completed. It is built in a very substantial manner, and there will not be any trick in filling it the first season. This reservoir will be a great convenience in distributing water to the various claims in this section, and will save the company much water which otherwise would be lost.

MINERS' MEETING.—We mentioned a week or two ago that some of the mining companies in the upper part of the county had reduced the wages of their employees. We see from the *Forum* that the miners of Dutch Flat have held a meeting to protest against such reduction. The *Forum* says: On motion, a committee was appointed to draw up a protest against the reduction of wages, to be signed by all the miners, and presented to the superintendent of the different claims. S. A. Hane, J. Pascoe and Wm. Morehead were appointed as the committee. On motion, a committee was appointed to draft by-laws and rules, and make necessary arrangements for forming a miners' union. The following committee was appointed: J. Constantine, J. Oliver and J. Bennetts. At this point a communication was handed in by S. B. Harriman. It was signed by all the superintendents of the claims at this place and adjacent mining towns, asking the miners to refrain from establishing a union, as all who joined or who had anything to do with it would be discharged, and not employed by any of them hereafter. After a brief discussion followed, Mr. Holmes made a motion to adjourn *sine die*, but it was lost. On motion the meeting adjourned, to meet at the call of the committees appointed.

PLUMAS.

THE FRANKLIN MINING COMPANY.—Plumas *National*, Nov. 4: Sufficient developments have already been made to demonstrate the fact that a very rich deposit of fine gravel lies under the mountain on the north side of the Middle fork of Feather river, opposite Nelson point, and that it extends to the Willow Ranch basin, if not further. The blue gravel claims of Metcalf, Porter & Co. have been thoroughly prospected by tunnel, and the pay found was sufficient to justify that company in going to a great expense, digging ditch, putting up hoisting works, sinking shafts, etc. The company hope to be able to get their shaft to bedrock within the next two months. Adjoining the above mines and upon the same lead are located the Mary Johnson, Mendocino and Tip Top claims. The owners of these claims being unable to open them, a company was formed and incorporated under the name of the Franklin mining company, with a capital stock of $60,000, and an agreement entered into by that company and the owners, by which the Franklin agreed to sink a shaft and develop the claims, and to receive in return a deed to a certain share of the ground. Mr. Frank Johnson was one of the original locators, and mainly through his efforts the company was incorporated and the arrangements made. Last fall the Franklin company commenced work, and succeeded in sinking the shaft, size 6x12 feet, to a depth of 75 feet. When that depth was reached the last blast that exploded suddenly opened in a vein, and such quantities of water came in that, with the engine and pump then in use, it was found impossible to keep the shaft free. Since that time but little work has been done. The company expended about $8,000. A few weeks since Mr. Locy, of the well known firm of Parke & Lacy, of San Francisco, was induced to examine the ground, and he was so well pleased that, after consulting with his partners and one or two other capitalists, they made a proposition to the company to furnish engine, boiler, etc., for sinking the shaft for a certain amount of stock. The offer was accepted, and the machinery and supplies are now on the road. Mr. I. N. Knapp is the general superintendent, and he expects to be able to commence sinking again within a few weeks after the engine, etc., is upon the ground, which will be in a few days. If in sinking, pay gravel should be struck that will pay equal to that in the claim adjoining, and we do not see how it can be otherwise, it will open one of the grandest gravel claims in northern California, and its value can hardly be estimated. We trust that the most sanguine expectations of the owners will be realized. The success of the Franklin will add much to the wealth and prosperity of the county. It will cause a new mining camp to be built at Willow Ranch, and it will also act as an inducement to encourage more prospecting and the opening of more mining claims in that vicinity.

GOLDEN ENTERPRISE.—From Mr. R. Jacks we learn that matters at his mine on Spanish creek are moving along "swimmingly," and that his Chinamen are about finishing up their contract for the big cut in which the flume will be placed. Dick is getting some fine prospects, and will have everything in readiness for the coming water season and in good time to make money. We shall pay a visit to the mine in a short time, and will then be able to give an extended description of the improvements.

HEAVY STORM.—As we go to press (Friday) the rain, which has been coming steadily for 24 hours, still continues, and there is every prospect of a small sized flood. It will prove destructive to many farmers in the county whose crops are in the field or the stack, and considerable loss will be the result. On the other hand the miners will get a full run of water which will be of immense benefit to them. "What's one man's food is another man's pizen." An immense quantity of freight is on the road for this country, and the teamsters are catching it heavily.

SIERRA.

SUSPENDED.—*Mountain Messenger*, Nov. 4: Work has been temporarily suspended for want of wood at the Keystone mine.

THE BELL MOUNTAIN company are reported to be working three shifts on their main tunnel to make room for an increased force of men when the locomotive arrives. It is now due in Marysville.

SISKIYOU.

AT WORK AGAIN.—Yreka *Union*, Nov. 4: Much fear was expressed by the friends of Bean & Co. and Kettlewood & Co., who have claims in the bed of Klamath river, that the storms of the past two weeks would raise the water in the river so that they would have to quit work for this season. This, when both companies had just begin to pay largely, would be a great hardship, and we are glad to say that they have not had to quit. When the river commenced raising, they let the water in and flooded their claims, so as to prevent as much pressure as possible on their wingdams. This has had the desired effect, and the claims being saved, they were enabled by putting out their dams to go to work at the pay dirt again. As soon as the water began to fall again the pumps were set to work and now both these claims are all right again. The claim of Bean & Co. had paid very rich for several weeks before they were compelled to quit work by the storm, they taking out, we are informed, as high as 30 ounces a week. They got six ounces in the last pan of dirt they took out before they let the water in. They no doubt are taking it out in the same ratio again. Kettlewood & Co.'s claim had not paid very well until just before they let the water in, when they struck it very rich again. They are no doubt by this time again taking dust out in large quantities.

ALL RUNNING.—From Messrs. Nally, Melton and others, of Sawyer's Bar, who were in town yesterday, we learn that the Klamath, Morning Star and Evening Star mills have started up again and now all the mills in that section are running. We learn also that at the Klamath excellent rock is being taken out and the prospects are that this mine will pay very well this winter. Our informants did not know what the prospects of the Morning Star were, but presumed they were also good. The Evening Star always pays, and when they commence milling they always commence taking out money. The same gentlemen also informed us that there was about a foot of snow on this side of the Salmon mountain, between the cabin and the summit, when they came over.

Nevada.

WASHOE DISTRICT.

CALIFORNIA.—Gold Hill *News*, Nov. 9: Daily yield, 400 tons of ore, keeping the mills steadily running. The bullion yield of the mine for the month of October will not fall much, if any short of $1 250,000, although last evening the bars of bullion had not all yet been stamped so as to show the precise result. A surplus was carried over from last month, so that all expenses are paid and the company can without trouble pay the usual dividend of $1,080,000, and still have surplus to add to the November account. The ore breasts are yielding rich ore at all points. The south drift on the 1600-ft level is in a distance of 170 feet, the face still in fair ore, although not of so rich a character as that recently penetrated by the same drift. The west drift from the 1650-ft station of the C. & C. shaft is now in a distance of 200 feet, the face in good running ground and the drift steadily advancing at the rate of 10 feet per day. This drift will have about 600 feet to run to reach the main ledge. A pump tank and station is being put in the C. & C. shaft below the 1650-ft level, pending the completion of which the sinking of the shaft is suspended. The new side track and ore dump for shipping ore to the Carson river mills is finished.

CON. VIRGINIA.—The extraction of ore was slightly interrupted during the first part of the week by the water which we reported struck last week on the 1400-ft level. That has been drained, however, and the usual amount of ore is being again extracted. There has been no change in any of the ore breasts or prospecting drifts during the week. The flow of water did not alarm the mine and proved to be only a small pocket lying on the east side of a heavy clay slip, which, giving away suddenly, let the water in with a rush. The bullion yield for the month of October will not vary much from $1,350,000, which will pay all running expenses, and leave a small surplus after paying the usual dividend of $2 per share, which was declared on the 3d inst. Owing to the flooding of the main drift on the 1700-ft level of the Gould & Curry and Best & Belcher, driving the north drift on the 1700-ft level has been suspended for a day or two past. Everything will be in good repair and it will be again advancing as usual in a day or so more.

JULIA.—The south drift on the 1800-ft level is still showing a decided improvement. The quartz is more concentrated and of a livelier, better character. The south drift on the 1600-ft level is running to connect with the Ward shaft, and must in its course strip quite a large portion of the ledge ready for cross-cutting whenever the management desire to do so.

IMPERIAL CON.—The south drift from the bottom of the south winze on the 2135-ft level is being pushed rapidly ahead, the face in soft ledge material. The face of the north drift from the bottom of the same winze is also in quartz and favorable ledge formation.

HALE & NORCROSS.—The east drifts on the 1500-ft levels are showing more and more favorable for a valuable ore development in that direction. The east cross-cut from the north drift on the 1400-ft level is also looking more favorable.

HERALD.—Sinking the main incline is making excellent progress. It is now down 182 feet, almost the entire bottom of the shaft being in quartz and ore of a fine character. Much of the ore is rich, many of the best pieces being filled with fine threads of wire silver, and the assays ranging from $100 to $3,600 per ton. The appearances are that the ledge is gradually widening, and that as depth is attained the character of the ore is growing better.

LADY WASHINGTON.—The main drift at the 850-ft level to cross cut the ledge at that point is now in 90 feet. The face is in softer material than last week, and is evidently getting pretty close to the ledge. There is a continued seepage of water coming in, but nothing to interfere with the work.

NEW YORK.—The enlargement of the shaft is steadily progressing. A full force of men are employed and the work being pushed with great vigor. Cutting out for the pump stations has also commenced.

SUPERIOR.—The tunnel being run from the ravine to drain the water in the shaft is advancing at a very satisfactory rate, and the water will be tapped soon. When this is done the hoisting works will be again started into operation and the ledge ont in a few days.

YELLOW JACKET.—The east cross-cut, 100 feet south of cross-cut No. 1, at the 2040-ft level, is in 205 feet; face in porphyry and quartz of good quality. The new or east shaft is down 47 feet, and well timbered to that depth.

MEXICAN.—The west drift on the 1465-ft level, following the line of the diamond drill hole, is steadily advancing. Yesterday morning this drift struck quartz with some ore, and it looks to-day as if a paying body of ore might be encountered at any time.

SAVAGE.—The pumps have been kept steadily running at their full capacities during the week, and are steadily though slowly gaining on the flow of water. The water during the first portion of the week showed a strong increase in the main shaft, but is to-day again rapidly on the decrease.

WEST JUSTICE.—The erection of the necessary hoisting works building, to protect the miners during the inclemency of the coming winter, is going rapidly ahead.

SIERRA NEVADA.—The flow of water at the bottom of the shaft is still quite strong, but affords no impediment to the working of the 1700-ft level. The prospecting drifts both north and south on the third station level are showing a decided and very encouraging improvement.

OPHIR.—Owing to a stoppage of the Mexican mill for repairs and to give time for the opening of some new portions of the ore body, caved by the flooding of the mine a year ago, the daily yield of ore has been greatly lessened during the past week. The ore stopes on the 1600 and 1650 ft levels continue to yield well and furnish a good quantity of ore.

CROLLAR-POTOSI.—Daily yield, 100 tons of ore, from the old stopes in upper portions of the mine. The average assay value of the ore is about $30 per ton.

MINT.—Sinking the shaft is making splendid progress, the bottom being in excellent working ground. The shaft is now down 1,296 feet.

BEST & BELCHER.—Owing to the flooding of the main drift on the 1700-ft level, no cross-cutting is being done in the mine at present. The water is now entirely drained, but there is still some repairing of the drifts to be done before prospecting is again commenced.

GOULD & CURRY.—The erection of the new pumping machinery is going steadily forward. The repairs to the lower portion of the main shaft and incline are also steadily progressing.

TEOJAN.—The north and south drifts on the 300-ft level are each steadily advancing, with increasing ore prospects. The north is looking especially well. The upraise on the ore body 70 feet north of the shaft is also showing a great improvement

PHIL. SHERIDAN.—Sinking the shaft is making excellent progress. The bottom is still in a very favorable character of ledge material.

SUCCOR.—The erection of the new pumping machinery is making steady headway. The hoisting engine is completed and in good running order.

WARD.—The small pump for draining the water at the bottom of the shaft is in place, and is working admirably.

DAYTON.—The cross-cuts on the 500-ft level are still looking favorable for good ore developments ahead.

AUREOLA & ARGENTINA.—New shaft down 95 feet. Bottom in much harder rock than last week. Good streaks and bunches of very good looking quartz are met with.

HALE & NORCROSS.—The pumps are working finely, and are kept running up to their fullest capacities. The water has been lowered in the main incline during the past week at the rate of five feet per day.

PROSPECT.—Good streaks of quartz, some of which assay well, indicate a near approach to the ledge by the main drift west at the 400-ft level.

BUCKEYE.—The north drift on the 550-ft level has been again started up. The face of this drift is in quartz and ore of a fair quality.

SOUTH COMSTOCK.—The main drift east from the 300-ft station is now in 35 feet. The rock is very hard, but shows of good progress.

LEVIATHAN.—North drift at the 600-ft level, following the west wall of the ore vein, progressing well, with indications in the shape of feeders of ore, which assay very well.

COSMOPOLITAN.—North and south drifts from the winze below the main adit level is in excellent ore.

WEST BELCHER.—The various ore openings at the 300-ft level and above are showing finely.

SUTRO TUNNEL.—Total length, 14,948 feet. Face of header in very fair working material, principally porphyry, with streaks of quartz and clay.

NORTH CARSON.—The 450-ft level is being opened in good shape, and the heavy feeders of good ore met with are very encouraging.

SOUTH OPHIR.—The ore streak in the main ledge shows wider and better as further drifted into.

JUSTICE.—The mine continues to show richly on all the ore-producing levels. Daily yield, 225 tons of ore. The ore body on the 400-ft level continues to improve both going and in the winze now being sunk to connect with the upraise from the 700 ft level. This upraise is also in ore of a very fine character. The main south drift is steadily advancing, the face still in good ore. The east cross-cut from the northeast drift on the 1000-ft level is rapidly advancing, the face in quartz and porphyry of a very favorable description.

SILVER HILL.—The ore shute on the 800-ft level is completed and work has been resumed in the face of the east drift on that level. Sinking the main incline was delayed somewhat during the week by the loosening of one of the fly wheels on the main shaft of the pumping engine. This trouble, however, has been overcome and the sinking resumed.

OVERMAN.—Sinking the main shaft is making fair progress, the bottom in good working ground. The erection of the new pumping machinery is making steady headway.

BELCHER.—Sinking the main incline is going ahead rapidly. Sinking the air and drain shaft is also making good progress. The water gives no trouble. Daily yield, 250 tons of ore. The ore is taken from the old upper workings, and is just enough to keep the mills steadily running.

AMAZON & HASSOCK.—Sinking the main shaft is going ahead rapidly, the full size of the shaft being in ledge material of the most favorable kind.

NORTH CON. VIRGINIA.—Sinking the main shaft is making rapid progress, the bottom being in soft ledge material of a very favorable description. The shaft is evidently approaching the main vein.

TAHOE.—Sinking the main shaft has been suspended in order to erect better hoisting works and steam machinery.

ROSSUTR.—The prospecting drifts on the 500-ft level are looking more and more favorable for the finding of a large body of paying ore.

EAST JUSTICE.—Sinking the main shaft is going rapidly forward. This is a new mine and a splendid location, and the managers are going to work with a will to prove its worth.

BALTIMORE AND AMERICAN FLAT.—The ore development in the east cross-cut from the north drift on the 1050-ft level is showing finely.

CALEDONIA.—Sinking the main shaft is making fair

Continued on Page 324.

The Gold Mines of Plumas County.

From the letter of a correspondent of the *Bulletin*, we extract the following concerning the mines of Plumas county: The mining now going on in Plumas county is vastly different from that of 20 years ago. But not a tithe, or possibly hundredth part of the auriferous treasure natnre has stowed away in the mountain recesses of this section has yet been taken from the bowels of the earth. But it is still only gold that is mined. Placer mining virtually exists no longer. There now takes its place gravel mining and quartz working. The gold within a short distance of the surface was taken ont in a few years, and placer mining, as the all-absorbing occupation, has, speaking generally, become extinct. But the California mining of the future—gravel mining in its various ramifications—will perhaps be prosecuted with more energy in the Centennial of 1976 than in the Centennial year we are now passing through. While the early mining era was transient, the future will be permanent. Another difference is that while the appliances for placer mining were simple and inexpensive, no person can profitably engage in gravel mining who has not at the commencement of his operations control of almost unlimited capital. But while a large sum of money is necessary, the returns under judicious management are ample—greater in proportion than the gains that as a rule accrued from the ruder mining operations of early days. Tunnels have been run into the mountain side for a thousand or two feet. Water, although abundant, has to be brought perhaps for twenty and in some cases thirty miles to insure a sufficient head. Steam engines have to be erected to pump off the surplus water. And when it is stated that every inch of pipe, or other article used, has to be teamed for at least 70 miles over rough mountain roads, and afterwards, perhaps, packed five or six miles down a steep mountain trail, it will be easily understood that the investment of a large amount of capital is necessary before the mining operations of to-day can be successfully prosecuted. But when the opportunities for investments of this character are better known and appreciated, capital will find its way here.

The Ancient River Channels.

Gravel mining consists of extracting from ancient river beds or benches the gold contained therein. As a rule the gold is found in small particles, equally distributed throughout the bed or channel of the ancient water course. These channels were the beds of rivers which existed aons of ages ago in the geologic era, when the topography of California was totally unlike that at the present time. These ancient river channels have been evidently covered over by a volcanic or other great upheaval, probably the former, from the lava and scoriæ, which are frequently found wrapping them up. There is one peculiarity about these ancient subterranean channels—they almost invariably run in a contrary direction to the existing rivers. They are as equally tortuous in their sinuosities and windings as the rivers of to-day. They are discovered by what is called the "rim" rock, which crops out on the surface, but it takes an intelligent miner to designate where the ground shall be opened or a tunnel run in order to strike the channel. It is here that our present knowledge is superficial. Undoubtedly the day will come when this branch of mineralogical geology will have sufficiently advanced that the expert will be able to strike the ancient channel from the rim rock with the same accuracy as the surveyor now strikes out metes and bounds. But the channel, once discovered, is often so well marked that a novice in mining has no difficulty in distinguishing it. There are boulders, gravel and sand as in the rivers of to-day. And I have seen in the channels of several gravel mines in this county large boulders weighing many tons washed as smoothly as only the attrition of thousands of years could produce. The apothegm "waters wear the stones" is equally true of by-gone ages as of the current time. The fact that these gravel mines are ancient river beds makes them permanent and beyond forming anything like an accurate estimate of their actual value.

A Channel Once Found

May be followed for three or four miles, or an indefinite distance, until some ravine or canyon intervenes. Even when lost by any volcanic or other disturbances of like character, if the course of the river has been watched closely, an expert will be able to make a good calculation where in all probability the channel may be struck again. So it is possible that in the future we may know the length and general direction of the ancient rivers of the State, and from the information thus acquired may arrive at a measurably accurate perception of the pre-historic geography of the country. What makes these ancient river beds so valuable, is the fact that they have been discovered varying from 70 to 300 feet wide. At Dutch Flat, in Placer county, one of these ancient channels has been traced as accurately for a length of five miles as the present bed of the Sacramento river. One other circumstance is also worthy of note—river channels have been found almost everywhere, where placer gold was discovered in early days. It is so in Nevada, Placer and Butte counties, and also in Plumas. Since we have hardly commenced gravel mining, but few of these ancient beds have been traced. That they are as numerous as the creeks, streams and rivers of to-day is only reasonable. But whether the channel is that of the small creek or some gigantic rolling river, they all contain more or less gold. As before stated, the gold is found in small particles, embedded in sand, and requires skill and labor to obtain it. But it is evenly distributed throughout the channels, and, as far as I can ascertain, no auriferous river channel has been discovered where the precious metal has petered out, so long as the channel continued well defined. Hence a gravel mine is one of the most valuable of all mining properties. It is permanent, and the returns for the outlay of money and labor are more certain than other enterprises of this character. The richest gravel is found within six feet of the bedrock, which is generally of a slate or granite formation.

Gravel Mines of Plumas County.

Perhaps the most important gravel mines in this section of Plumas county are those located around Dutch Hill, about 20 miles from Greenville. There are several of this class of mines in that neighborhood, representing all the departments of gravel mining. At Dutch Hill itself, more or less placer mining has been done since 1854 or 1855. The North Fork mining company of San Francisco recently bought out several small claims which were located here, and now own the whole ground, conducting the business on an extensive scale. This company runs a hydraulic apparatus, drift diggings and ground sluices. Since the North Fork company has been in possession of the property, two or three years, all the modern appliances for mining have been brought by ditch and pipe a distance of 34 miles. The piping, 22 inches in diameter, runs for nine miles, and is, I am informed, the longest line of pipe in the State. Of course, bringing water such a distance involved a large outlay, nearly $100,000. But the company had faith in the richness of the ground, which when properly worked paid from the start. To obtain this supply of water considerable tunneling was necessary. There are two tunnels of great length, one 835 feet long and the other 1,000. The company has scarcely commenced washing away the sides of the hills and mountains where gold is known to exist, but where the little giant has been brought to bear satisfactory results have been obtained. Here it may not be out of place to state that until a person has had ocular demonstration of the force of water used when hydranlicing, it can hardly be comprehended. It is impossible to thrust a crowbar into the stream as it issues from the giant. The bar flies back and is quickly knocked out of the hand of the person holding it. An attempt to drop a boulder weighing perhaps 100 pounds through the stream only results in said boulder being thrown about 100 feet away. Any softer substance, as the body of a man or horse, coming in contact with the stream as it issues from the nozzle of the pipe, would be instantly cut in two. And the way it just rips things is wonderful to behold. Sides of mountains tumble down when the water is brought to bear, as if by magic. In fact, it would almost appear as if the hydraulic little giant was the faith spoken of in the Scriptures, which could remove mountains.

The North Fork Company

Has also at Dutch Hill drift diggings, drifting into the side of a mountain for finding and following the channel of an ancient river bed. The company has already done about a mile of tunneling, striking a well defined channel, which they are following at perhaps five or six feet a day, and the results of the washings of the gravel are surprising. The company is somewhat reticent as to the gold actually obtained, but from the clean-up made while your correspondent was visiting the mine, the channel must be very rich.

This company has likewise a claim which they ground-sluice—that is, loosen the earth, boulders and gravel from the bedrock, start a pipe of water to wash down the debris, and then pick the gold out from the crevices in the rock, washing the loose gravel in the ordinary way. One day last week, while watching such an operation, I saw one of the company's employees pick up a nugget weighing the weight of $110. If this can be done daily, why Dutch Hill is a veritable El Dorado.

The Sunnyside Company,

Also a San Francisco corporation, is at work about three and a half miles south of Dutch Hill, nearly at the base of a mountain sloping down to the north fork of the Feather river. This mountain is similiar in shape to a hog's back, and on each side there is a steep ravine. The top of the mountain is cased with lava. This property was only purchased from the original locators in the fall of last year, and the company has only recently been incorporated. It was believed, when purchased, that the lava of this mountain capped an ancient river channel. A tunnel has been run in a distance of 600 feet, and a well defined channel, about 200 feet wide in the bottom, discovered. The course of this channel has been traced by the rim rock for about two miles, but how much further it extends is at present unknown. The owners regard the indications as highly satisfactory. The channel is very clearly defined in the tunnels already made, and the cars, (containing each about half a ton of gravel,) washed in the presence of your correspondent, yielding an average of $4.40 per car. The gravel here is peculiar, carrying a great deal of jasper and fine ferruginous black sand. The gold is regular channel, not lead gold, and the gravel is equally rich six feet from the bottom as on the bedrock. The company is so satisfied with the prospecting its employees have done, that arrangements are in progress for running a drift across the channel, so that 50 men can be employed in the profitable occupation of taking out gravel. When this work is completed, if the gravel pays as now, and in their ancient river beds the gold is extremely regular, each of the 50 men employed will be turning out $20 per day. It requires but little calculation to estimate the daily out-put from a mine of this character.

The Cariboo Company

Have gravel diggings about eight miles from Dutch Hill. The company has what is considered one of the most magnificent water-powers in the State—2,000 miners' inches, under a five-inch pressure. The water is brought partly by flume and partly by ditch from Butte creek, a distance of five or six miles. The water thus applicable for the company's claim is more than sufficient to supply San Francisco. The construction of this flume must have cost a large sum of money, as portions of it are constructed on trestle-work on a mountain 1,500 feet high. The scenery on the road to the Cariboo mine is singularly beautiful. The view from one place is almost precisely the counterpart of Cape Horn on the line of the Central Pacific. The spectator looks down an abyss of about 1,500 feet, and sees the Feather river glistening like a thread of silver meandering in the distance.

Another claim, where there is opportunity for

Hydraulicing Drift Diggings

And ground sluicing, is at Providence Hill, about 12 miles west of Greenville. The company owning it takes its name from the location. This claim is comparatively undeveloped. The company is preparing for active operations the coming spring. It has a water privilege on Rush creek and has built a dam in Long valley 750 wide and 40 deep. The water in the reservoir thus formed is carried to the claim by two ditches, one three and a half miles long and the other one mile less in length. The company intend hydranlicing on a large scale early in the ensuing season. Gravel mining is also extensively followed in the country surrounding Taylorsville, Laporte and at Light's canyon. There are indications of extinct river channels at other places, but as nothing can be carried on in working claims of this character except at great expense, but little has been done toward their development. Capital will, however, ere long find out that gravel mining is one of the most remunerative of mining enterprises, and then we shall know something further concerning the extinct river channels of Plumas county and their auriferous deposits. It may be well here to remark that not one of the mines in Plumas county is sold on California street. The stock is generally held in a few hands, and the mines run as a legitimate investment, and not for stock speculation.

The mining enterprises in Plumas county are by no means confined to operations in gravel.

Gold Quartz Mining

Is carried on extensively. All through the mountain ranges quartz is found containing more or less of the precious metal. And Plumas county possesses this advantage: having such an abundant water supply low grade quartz can be milled with profit, which elsewhere would not pay for the milling. Several mills pay on ore yielding but $6 to the ton. Even in those where gravel mining is the principal feature, quartz is occasionally seen in large quantities. One of the principal quartz mines in the county is called the Eureka. It runs 40 stamps, and is situated near Quincy, the county seat. This mine is the property of the Bank of California, and was purchased some three years ago, as I am informed, by that institution, for $1,000,000. The Green Mountain mine, running 32 stamps, and the Gold Stripe, running 28, are both near Greenville. These are under the superintendence of W. Bidwell, a nephew of Gen. Bidwell, of Chico. Other quartz mines are the Great Western Mining, 40 stamps; the Union, 24; the Crescent, 32; and the Buchanan, 8. Then there are the New York mills and the Cherokee, the capacity of which I am unable to ascertain. The last remnants of placer mining in the county are going on at Wolf creek.

Homes of the Miners.

It must be conceded that the miner in the mountain is not surrounded by all the luxuries and elegancies of civilized life. He has hard work to perform, and his occupation is particularly exposed to danger—accident resulting in loss of life or limb. But still, as a class, miners are more contented and happy than men in a similar sphere of life in large cities. But few are married, and of those in the conjugal state, not many have their wives and families with them in the mountains. Mine owners and superintendents frequently prefer married men, because they work more regularly and are more reliable. Women are a scarce commodity in those mountainous districts—few and far between. But the few that are here ought to be happy, for no heathen deity ever received more attention than the ladies in the mountains of California. The married men, having their families with them, engaged in the larger mines, occupy separate cabins, while those unmarried room about four together, in cabins by themselves. The cabin of the married miner is easily distinguishable from that of his single co-workman. The trim white curtain denotes that the helpmeet to man is found therein, and the few flowers in the window show that even in the mountains woman realizes and understands what is meant by home attractions. The cabin of the unmarried miner is devoid of attraction. Nothing, as a rule, is found therein, save rudely-constructed bunks, where the miner covers himself up in his blankets, and enjoys that blissful repose generated by hard work and pure mountain air. The cabins are built of pine wood, often the merest shanties, offering no pretentious adornment, and consisting of little else than pine logs nailed together as a protection from the elements. The cabin of the superintendent is generally a little more ornate, and is, perhaps, painted on the outside and papered in the interior. But utility more than ornament is the prevailing idea in the construction of these habitations. Some companies are more on improvements than others. The Dutch Hill, for instance, provides accommodations which, but for their exterior, are equal to many dwellings of the industrial classes in San Francisco. Room and comfort prevail all over their claims, even to the out-houses and barns.

Wages, Food, Etc.

Miners' wages in the mountains average $3 per day, working six days a week, of which $1 is deducted for board. In many of the mines wages are calculated monthly, $50 being the prevailing figure, with the run of the boarding-house. And a miners' boarding-house is a great institution. The style of living is equal almost to any hotel in the State. Three meals a day and plenty on the table is the characteristic of a miners' boarding-house. No matter how mean the cabin, how remote the location or how difficult to transport, supplies, there is always a good table. Happening to drop in one five miles down a steep mountain trail at dinner time, I found the hardy sons of toil regaling themselves with oyster stew as a first course. Then came joints, good substantial beef and mutton, finishing with apple pie and grapes as dessert. Hot biscuit are served at every meal, and the rapidity with which they disappear would astonish the city-bred individual. I heard of one man who makes it a regular practice to put away 13 biscuits every meal. But the men work hard, the mountain air sharpens the appetite, the companies are sometimes rich and there is every reason why a miner's inner man should be well sustained. There is a room for doubt, however, whether the mine owners are not out and injured in charging only $6 for seven days' board. There is one character about a miners' boarding house who is a perfect institution. He is the Chinese cook, who, as purveyor for that important part of the human cosmogony, the stomach, is an important personage at these establishments. The miners understand what good cooking is, and will not tolerate any slouch around. And the way John Chinaman sends his dishes to the table would be no discredit to the *chef de cuisine* of the Palace hotel. In all the mining boarding-houses where it was my lot to take a meal, there was the same skill manifested in the culinary department. And tha way in which these Celestial cooks manufacture hot biscuits and bread and manipulate the ingredients into an apple pie is something surprising.

At all the large mines there is a store where the workmen can obtain such furnishing goods as they require at moderate rates—about cost price, with the cost of transportation to the mountains added. Gambling is still the great vice of the miners in the mountains. At many of the larger enterprises card-playing is prohibited, because it leads to quarreling and often ends in a shooting scrape. At most of the large mines the sale of whisky is prohibited. The consequence is that in the mountains the miners are as temperate a set of men as is to be found in the world. Taken as a class they still bear out the same reputation for intelligence as they obtained in '49. *Harper's Weekly*, the monthly magazines and all the San Francisco and Sacramento dailies and weeklies find attentive readers in the miner's cabin. Many are exemplary in their demeanor, and not a few have bank accounts or shares in mines running away into the thousands of dollars. The great object with many seems to be to stay a few years in the mountains to make a sufficient raise to leave this semi-desolate life and spend the remainder of their days in comfortable circumstances in the city.

THE MAMMOTH GUN.—The trial of the 100-ton Armstrong gun, made for the Italian government, was eminently successful. A ball fired with 341 pounds of powder attained the velocity of 1,500 feet per second, smashed solid wrought iron plates 22 inches thick, and completely pierced the strong backing of 30-inch backing of the target, the resistance of which is supposed to equal the sides of the great Italian iron-clad Diulis, and had velocity enough remaining to have smashed the other side of the ship, and would have carried complete ruin into her interior. An equal charge completely demolished the soft steel plates of Schneider's manufacture, but did not penetrate the backing, though it is stated the shock would have so shaken the structure of a vessel like the Diulis as to cause a leak.

LEAD POISONING.—We notice in an exchange that a celebrated French chemist recommends that workmen subject to lead poisoning should take daily very small doses of iodide of potassium. He affirms that this substance will dissolve the lead absorbed by the human system and effect its rapid removal from the body.

Siskiyou and Humboldt County Mines.

A correspondent of the Lake County *Bee* writes from Sawyer Bar as follows: On the 10th day of last August, the finishing touches were placed upon the disorganization of old Klamath county by the completion of the report of the commissioners appointed for that purpose. The name was blotted from the roll as a county; but the memories which cling round the dear old county will remain and be cherished as a precious treasure of the golden past.

The division of this territory between the counties of Siskiyou and Humboldt was as equitable as its geographical diversity would permit; giving the eastern portion, with its wealth of undeveloped quartz field—including the celebrated Black Bear mine, already open and paying large dividends—to Siskiyou, and the whole western slope, fringed by the waters of the Pacific, and cut by the mighty Klamath river, to Humboldt. This portion contains the finest belt of timber in the world, stretching from Mad river on the south to the Klamath river on the north, 60 miles in length, and 20 miles in width; principally redwoods. If a break-water could be created at Trinidad it would form the outlet for this immense field of timber, and would be one of the most profitable ventures in which capital could engage. Besides this, there fell also to Humboldt a rich and

Gold Bearing Gravel Deposit,

Which in extent is one of the marked features of the country. This deposit is found at Happy Camp and extends from there to Gold Bluffs on the coast, where its feet are washed by the Pacific and its riches spread out on the sands, there to be gathered by the beach miners. It lies at an elevation above the river of 100 feet, and is continuous, save where the river has cut its sinuous course through this ancient deposit. J. M. Brown was the first one to develop it at Orleans Bar, and is now negotiating with parties in San Francisco. Should this sale be effected it will lead to great results on the river. Numbers of claims can be opened above and below this point which will be equally rich. Mr. Sutherland has the same deposit at Big Bar, eight miles below Orleans Bar, and is making every improvement he can for the utmost displacement of gravel. This belt, as I have before said, can be traced for miles by its general appearance, and the croppings of the decomposed slate upon which it rests. If a scientific investigation could be had of this interesting region, the most wonderful developments, I am sure, would follow. Capital will be timid until it is thoroughly explored.

Our Mines

Are principally quartz. The Black Bear mine is the most profitable, and is worked in the most scientific manner. The company has built a boiler outside the mine, and conduct the steam in pipes 1,200 feet to the engine, and steam pumps in the bottoms of the lower levels. The shaft is down 260 feet, and paying better the farther they descend. The Yellow Jacket, belonging to the same company, and worked through the same tunnel, is opening finely upon a large body of ore. This mine has always paid well; but the chief characteristic is the quartz is found in bunches. As the company descends upon the ledge, the mine is less broken and the bunches are larger. It is deduced from this that in 100 feet more descent the ledge will be continuous and the wall unbroken.

The Klamath Quartz Mine

Is being opened by Mr. John Daggett. This company has heretofore done too much dead work to be profitable; but they were ambitious of a full development at an early period, and were lavish of their means. This is one of the best appointed mines in the State, and can be worked very economically.

The Evening Star

Is paying well. This is a four stamp mill and has proved an excellent investment since it started. That it does not pay better is for the reason that it has no more stamps. The ledge is 12 feet thick.

The Morning Star

Is beginning to show signs of the life to come. It is under the able management of H. W. George, a skillful miner, and one whose prudence and economy has earned for him an enviable reputation.

Working Ash.—The *Lumberman* says: Steam is the ordinary means used to soften ash, but when is practicable, boiling in water is the best. The chief thing is to have the right kind of ash, as some kinds bend and others do not. One tract of land may furnish the best of ash, while another, lying close by and having just as good a soil, may produce only an inferior quality. The timber must be heavy and tough, and cut from good trunks. No matter if it has been cut and dried three years, A splinter of this quality of ash can scarcely be torn off, and runs the whole length of the wood before it ceases. Half an hour's boiling is sufficient to soften a piece of wood six centimeters thick. When the wood is taken out of the kettle, put it in the brace, screw and wedge it in the desired form without relaxing, and let it cool a few hours. After the wood is thoroughly dried in the brace, unscrew it and take out the wedges; it will always then retain its form.

Useful Information.

India Rubber.

While nations have been agitating themselves with affairs in the East, and fears of change and other like dangerous and distracting matters, a wiser man, says the London *Standard*, has been devoting himself to the study of the great india rubber question in the forests of Darien. The world could get on very well without Eastern questions, but could not manage at all without india rubber, and there has been reason to believe that the native way of supplying the commodity is wasteful, and would in the end be destructive. Indeed, our explorer has found it the custom to cut down big trees, varying from 150 to 200 feet in hight, for the sake of an amount of rubber varying from 100 to 150 pounds. He has also found what are the climatic conditions best suited for the growth of the tree; and to these and similar explorations, the Kew authorities have just given a practical turn, for a shipment of 38 cases of Brazilian india rubber plants, containing over 1,900 plants, has recently been dispatched from Kew to Ceylon, and, it is worth mention, within the remarkably short space of two months from the time of the seeds being sown, this tree yields the finest kind of caoutchouc, or "india rubber" with which we are acquainted, imported from Para, in Brazil. The Royal gardens have for some time past been occupied in its cultivation for introduction to those countries where it may be expected to become a rubber-producing tree. In June of this year 70,000 seeds were received, of which only about three and three quarter per cent. were alive. In consequence of their retaining vitality but for a very short period, they were all sown the day after arrival, and, though not contained in pans, covered a space of over 300 square feet, closely packed together. A number began to grow almost immediately, and many within a few days reached a hight of 18 inches. So quickly do they grow that the cases had to be made from special measurements, allowing for growth during transit. Each case contains, as a rule, 50 plants. Besides these to Ceylon, other cases have been sent to Singapore and Burmah, and still others are in hand for various destinations. Altogether it is likely that about 2,600 plants will be distributed from this batch of seeds. This is good work, and we may reasonably hope for it the same success that has been attained in the case of our cinchona plantations.

Notes on Furniture Cleaning.

Furniture Cream.—1. Yellow wax, 4 ozs.; yellow soap, 2 ozs.; water, 50 ozs.; boil, with constant stirring, and add boiled oil and oil of turpentine, each 5 ozs. 2. Soft water, 1 gallon; soap, 4 ozs.; white wax, in shavings, 1 lb. Boil together and add 2 ozs. of pearlash. To be diluted with water, laid on with a paint brush, and polished off with a hard brush or cloth. 3. Wax, 3 ozs.; pearlash, 2 ozs.; water, 6 ozs. Heat together and add 4 ozs. of boiled oil and 5 ozs. of spirits of turpentine.

White Furniture Cream.—Raw linseed oil, 6 ozs.; white wine vinegar, 3 ozs.; methylated spirit, 3 ozs.; butter of antimony, ½ oz.; mix the linseed oil with the vinegar by degrees, and shake well so as to prevent separation; add the spirit and antimony and mix thoroughly.

Cleaning and Polishing Mahogany.—Take 1 pint of the furniture oil, mix it with ½ pint of spirits of turpentine and ½ pint of vinegar; wet a woolen rag with the liquid and rub the wood the way of the grain, then polish with a piece of flannel and soft cloth.

To Renovate Wicker Tables.—Paint them over with Brunswick black; it is used for work and fancy baskets, is not expensive, and can be procured at the grocer's.

Removing Varnish from Wood.—A strong application of ordinary spirits of camphor will remove almost any kind of polish or varnish. Give the spirit time to evaporate before repolishing, or it will injure the new polish. Another.—The plan I adopt to remove varnish from wood is to make a strong solution of soda, soap and water, and keep the place constantly wet while I go on scraping. This softens the varnish, and I afterwards rub down with paper previous to revarnishing.

Danger of Fire from Steam Pipes.—The fact is generally admitted by those who have given the subject careful attention that steam pipes in connection with wood are dangerous; not because the heat of saturated steam is capable of directly exciting combustion, but because the conditions under which wood, so placed, is liable to ignite, may be produced by the continued high temperature to which it is exposed. The marine inspection law of the United States recognizes this danger when it prohibits the use of steam pipes in conjunction with wood upon vessels. Just what these conditions are, and the peculiar combination of circumstances under which they are most readily developed, are not now known, so that until they have been determined by a careful and exhaustive investigation of the whole subject—which task, we trust, some able scientist will soon undertake—it is by far the wisest plan to avoid all possibility of inducing a conflagration by taking the precaution to ascertain that heat-conveying pipes at no point come in contact with inflammable material. — *Northwestern Lumberman.*

Heating Power of Different Fuels.

Although frequent attempts have been made to render the use of fuel as advantageous as possible, the results are far from satisfactory, as only part of the heating power is utilized. The difference between theoretical and effective heating power for various sorts of fuel is shown in the *Technologist* by the following table, which gives the number of pounds of water evaporated by one pound of fuel:

Fuel.	Heating Power. Theoretical.	Stm. Boilers.	Open Boilers.
Petroleum	16.30	10 —14	.....
Anthracite	12.46	.....	.....
Coal	11.51	5.2 —8	5.2
Charcoal	10.77	6 —6.75	3.7
Coke	9—10.8	5 —8	.....
Brown coal	7.7	2.2 —5.5	1.5 —2.3
Peat	5.5—7.4	2.5 —5	1.7 —2.3
Wood	4.3—5.6	2.5 —3.75	1.85—2.1
Straw	3.0	1.86—1.92	.....

As regards the heating of steam boilers, Mr. Thompson found, by a series of experiments, that, on an average, only 47 per cent. of the theoretical heating power of the fuel is utilized, the remainder being lost through imperfect combustion, radiation and other causes. Since portable engines have been arranged for straw burning, this fuel has become of great importance for agricultural purposes. Trials at the Vienna exhibition proved that one pound of straw is capable of evaporating from 1.81 pounds to 1 97 pounds of water into steam of 70 pounds pressure and 305.6 deg. Fah.

Fireman's Dress. — An improved dress, designed to enable firemen to enter a burning building in safety, has been recently made the subject of some interesting experiments. It consists of two air-tight garments, worn one over the other, after the manner of a diver's dress. The inner dress is of rubber and fits tightly; the outer dress, worn over this, is of leather and is quite loose. The outer suit is also secured to a metallic helmet resting on the shoulders and entirely covering the head. A line of hose is attached to the back of the outer dress, where it divides into two smaller pipes. One goes to the top of the helmet on the outside, where it discharges a number of fine streams of water that flow down over the outside of the dress. The other branch pipe passes under the fireman's arm, and ends in a nozzle that he may use in directing the stream on the flames. Within this hose is another, smaller, that delivers air under pressure to the open space between the two garments. The air expands the outer garment and keeps it away from the person, and at the same time supplies fresh air for respiration. To allow for the escape of spent air, two small holes are drilled in the helmet opposite the eyes, and through these the exhausted air escapes, driving the smoke and flames away from the face and giving a clear view without injury to the eyes. Such a dress enables a fireman to stay within a burning building for 20 minutes in perfect safety.—*Scribner's Monthly.*

Direct Manufacture of Soap With Salt.—If grease, fat, or resin, which are commonly employed to make soap, are heated with an excess of common salt, ammonia, and water, a soda soap separates, leaving chloride of ammonia in the liquor, together with the excess of ammonia and salt. This reaction is the consequence of the great solubility of ammonia soap in ammoniacal water, and the insolubility of soda soap in water containing more than one-half per cent. of salt. The ammonia at first unites with fatty acids; then the sodium in the salt exchanges places with the ammonia in the soap, forming, as we said, a soda soap and chloride of ammonia. It is essential that there be an excess of ammonia and salt present in order that the reaction take place. One hundred parts of grease require 15 to 20 parts ammonia, 20 to 30 parts salt, and 200 to 300 of water.

Good Health.

Prize in Industrial Hygiene.—Our English exchanges tell that an offer of a medal in connection with this subject has been made by Mr. Benjamin Shaw, and has been gratefully accepted by the Society of Arts. The medal will be of the value of £20, and will be awarded every fifth year. Mr. Shaw has transferred into the name of the society a sufficient amount of Consols for the purpose. The terms of the offer are as follows: "For any discovery, invention, or newly-devised method for obviating or materially diminishing any risk to life, limb, or health, incidental to any industrial occupation, and not previously capable of being so obviated or diminished by any known and practically available means." The first award will be made in May, 1877. Parties desiring to compete for the above prize should communicate with the secretary of the Society of Arts. A full description of the invention or process must be given—illustrated, if necessary, by models, drawings, specimens, etc. When the invention or process is in actual work, it is desirable that this should be stated, so that the committee may, if they think proper, have the opportunity of examining it. The council reserve to themselves the right of withholding the prize, in the event of nothing of sufficient merit being sent in for competition. The latest date for receiving communications will be March 31st, 1877. In case a sufficient number of objects are sent in for competition, the council will make arrangements to exhibit them or a selection from them to the public.

Enameled Cooking Vessels.

Mr. Robert R. Tatlock, of Glasgow, has lately presented some facts of interest in the *Chemical News* upon the above named topic. He affirms that in some instances the milk-white porcelainous enamel, with which cast iron cooking vessels are so commonly prepared, is of such a character as to be objectionable in the highest degree on account of the easy action upon it of acid fruits, common salt, and other ordinary dietetic substances, by means of which lead and even arsenic are dissolved out in large quantity during cooking operations. He gives analyses of three enamels, the samples being taken from three cast iron pots made by different makers, in each of which lead or arsenic (and in two of them, both of these substances) were found, the percentags of lead being in one case as high as 25.8; and that of arsenic, 1.02.

The author believes that it is not so much on account of the presence of large proportions of lead and arsenic that the enamels are so objectionable, but because they are so highly basic in their character that they are readily acted upon by feebly acid solutions, the lead and arsenic being thereby easily dissolved out. In support of this opinion he adduces the fact that of the three enamels which he examined, a one per cent. solution of citric acid almost instantly roughened and destroyed the glossy surface of that which was the most basic in character, and lead dissolved out to such an extent as to give immediately a dense black precipitate with sulphureted hydrogen, while the one samples in which the ratio of the bases to silica was smaller, were less decidedly affected.

He thought that no enamel should be admitted to use unless it was totally unaffected by boiling with a one per cent. solution of citric acid, which was a very moderate test, and gave it as his opinion that either the use of such poisonous ingredients as lead and arsenic in large quantity should be entirely discontinued, or that the composition otherwise should be of such a character as to ensure that none of the poisonous substances could be dissolved out in the circumstances under which the vessels are used.

Measuring Medicines.

The *American Grocer* recently published an article stating the death of a child from an overdose of opium, which was contained in a prescription administered in "tea-spoonful" doses. Investigation showed that the family had used a large size teaspoon, and had thereby given three-sixteenths, instead of one-sixteenth of a certain preparation of opium. The writer in commenting on the case says: "The many accidents that formerly occurred in the putting up of medical prescriptions, led to the passage of a State law requiring every prescription clerk to pass a severe examination and requiring him to possess a diploma based on such examination. In this law, one of the most important safeguards seems to have been left out. As most of the liquid medicines are administered in doses of 'tea-spoonfuls,' the law should require the druggist to state plainly on the label what constitutes a 'tea-spoonful' in medical parlance."

We thank our cotemporary for the idea suggested, says the *Druggists' Circular*, and, while we do not think that legislation is exactly necessary to cover such cases, we believe that physicians should advise their patients more explicitly regarding the administration of their remedies. Especially in the case of children, medicines should be prescribed by drops, as the most reliable and efficient means of determining the exact dose.

The following designates the equivalent of miscellaneous measures: Tea-spoonful about one fluid drachm; dessert-spoonful about two fluid drachms; table-spoonful about four fluid drachms; wine glassful about two fluid ounces; tea-cupful about four fluid ounces; breakfast cupful about eight fluid ounces; tumblerful about eight fluid ounces; thimbleful about three-fourth fluid drachm; pinch (of leaves or flowers,) about one drachm, Troy; handful about ten drachms, Troy.

How Tall Are We?—A late number of the *Scientific American*, in discussing the question, "How tall are we?" publishes tables showing the mean hight of the men of 24 different nationalities. The result arrived at is that the Indians of the United States are the tallest, the mean hight being 67.934 inches. The whites of the United States come second, the mean of 315,620 examinations being 67.672 inches. Then follow the Norwegians, Scotch, inhabitants of British America, Swedes, Irish, Danes, etc. The English come eleventh in the list, being 66.577, followed by the Germans, who show a mean of 66.536. The French stand eighteenth in the list, at 66.277. The Spanish and Portuguese stand at the foot of the list, measuring 65.635 and 65.432 inches respectively. Comparing the natives of the different States of the Union, those of Kentucky stand at the head of the list, 68.677 inches. Kansas, Minnesota, Missouri, California, Nevada, Indiana and West Virginia follow, all exceeding 68 inches. The people of Illinois stand twelfth in the list, at 67.835 inches. Pennsylvanians stand eighteenth, 67.470 inches, while the Yankees of the wooden nutmeg State bring up the rear, being only 66.587 inches.

MINING AND SCIENTIFIC PRESS

W. B. EWER.....SENIOR EDITOR.

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Our latest forms go to press on Thursday evening.

San Francisco:

Saturday Morning, Nov. 11, 1876.

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The Rainfall.

The importance of the rainfall warrants careful record of its area and amount. From all available sources we have compiled the following table, showing the precipitation at the places named for the season up to Nov. 1st:

PLACE.	COUNTY.	INCHES.
Martinez	Contra Costa	2.41
Vallejo	Solano	2.76
Colusa	Colusa	4.72
San Jose	Santa Clara	1.17
Napa	Napa	3.45
Santa Rosa	Sonoma	6.20
Stockton	San Joaquin	2.14
San Rafael	Marin	7 35
Nevada City	Nevada	10.46
Woodland	Yolo	3.54
Oakland	Alameda	4.99
San Francisco	San Francisco	3.76
Sacramento	Sacramento	3.01

DEATH OF A DISTINGUISHED SCIENTIST.—A dispatch from Stuttgart, Germany, records the death of Theodore Von Heuglin, who has gained considerable reputation as an explorer and zoologist. Deceased was a comparatively young man, having been born in March, 1824 Von Heuglin commenced those explorations which brought him prominently before the world in 1852, in the region of the White Nile. In 1863 he continued his travels in Africa, and in 1870-71 he was a member of Petermann's expedition on the shores of Spitzbergen and Nova Zembla. The deceased was likewise the author of several works on natural history.

THE Mexican Congress has declared President Lerdo re-elected. A number of insurgent bands have scattered.

Miners and Farmers.

The advance of time has, while changing everything else, changed in some degree the relations formerly existing between the farmers and miners of California. They used to be mutually dependent upon each other, so that consideration of interest was sufficient to prevent any rivalry beyond that incident to the advancement of their respective interests. Without miners, the farmers of California would have had but an indifferent market for their produce, and in the absence of the agricultural element, the necessaries of life could be attained only at advanced prices, impairing the welfare, not only the miners, but of all classes. Hence a community of interest created a community of feeling, and all strove alike to promote the prosperity of the State. To a great extent this is still the case, although in certain parts of the State an antagonism has been created between the two classes, occasioned by the differences of opinion on the question of "tailings" from the gravel mines.

An issue between two classes of the population is always to be regretted; and this instance is particularly so, since, as the question at present stands, it is likely to be an expensive and long continued contest, which will cause much bitterness of feeling, even among members of the respective classes not directly interested in the result. If the farmers make common cause against the miners, as seems likely, then the latter will without doubt help each other out.

Without, in this instance, attempting to review the merits of the question at all, we should remind both parties that there is no necessity of taking too extreme a view of the subject. Both parties have rights which the other must respect; and although in single instances some apparent injustice may be done in solving the problem, those before whom it will come for decision will doubtless exercise every care in settling the matter according to law and justice. Because there is a difference of opinion, each adhering to the view of the case inspired by his personal interest, there should not, on that account, be violent language used or feelings engendered difficult to reconcile in the end.

The farmers must not by any means think that the miners will quietly submit to their dictation on this question, close down their mines, give up their purchased rights and abandon their business. Nor must the miners run away with the idea that they have no others to contend with than those farmers directly and individually interested in the "tailings" question. Without doubt these farmers will secure some assistance from others, although there will be some difficulty in procuring aid from those agriculturists at a distance from the land affected by the overflow of "tailings" or "back water." Another thing to be remembered is that, as a general thing, ready money is more plentiful among the miners than farmers, and they will probably receive more substantial financial help from their class than the others can. If extensive litigation is entailed in the settlement of the disputed rights, the money will go a long way in favor of the party having it.

The equitable settlement of the question involves as many points as to admit of very exhaustive argument; but it must be decided before long, one way or another. Those who are defeated or who think their own plan a better solution of the problem, must submit gracefully to the edict of the powers that be; remembering that in matters of this kind a decision for the general good is the most beneficial in the end. That there will be differences of opinion then, as there are now, there is no doubt, but we urge upon both parties moderation in argument and action, and prefer submission to the decisions of the authorities.

Loss of Gold, Silver and Quicksilver.

Although new processes without number have been introduced for the extraction of gold and silver, it is speaking quite within the limits of general experience to say that not more than three-fourths of all the gold and silver is saved by the processes in vogue. When it is remembered that this coast produces upwards of eighty millions of dollars annually, some idea of the value of the quantity lost may be formed.

In gold quartz mining the great want appears to be some agent which will force the imperceptibly fine particles of gold into contact with the mercury, without separating the mercury into such minute particles as to cause it to float away with the tailings. It is perfectly well known that grinding mercury or stamping it too much causes an immense loss of metal and the metal it is employed to collect. What the loss really is it is difficult to compute. An item in last week's PRESS will, however, give an idea, where it is stated that the California mill, on the Comstock, consumes monthly 30,000 pounds of quicksilver which never finds its way back. The Consolidated Virginia mill will use up about as much more, so that the two, even at the present low price of quicksilver, make away with about $1,000 worth a day. This refers to only two mills out of the hundreds in operation on the coast.

It seems impossible to save all this, notwithstanding its great specific gravity when in bulk; finely divided, however, it loses this property practically. Any mill-man can demonstrate the loss by placing a pan at the end of the tailings troughs. No matter how long these troughs may be, how much the mercurial surface, or how many riffles, hides, blankets or sacks they contain, in an hour or so, if he washes out the sedimentary matter in the pan carefully he will find on the edges of the particles of sand a fine white fringe, which if rubbed with the finger will be transformed into globules of quicksilver, holding more or less gold. Here is the greatest cause of loss in quartz mining, and one for which no efficient remedy has yet been found.

In placer mining a still greater loss is experienced through not bringing the gold in contact with the mercury. Much of the gold in alluvial deposits exists in very minute particles, which, although gold is so much heavier than water, will float on the surface of the water. Every miner is aware that fine specks of gold float, so that the majority of these fine particles are lost. If some cheap and effective method could be devised to work the "slum" that accumulates in the vicinity of rich placer diggings, fortunes could be realized. The "slickens," however, are allowed to waste for want of a method of saving the gold. The currents in the sluices and flumes are so strong and swift that a great deal of the gold goes a long way. Even "undercurrents," introduced of late years, although they have been very useful in arresting some of the waste, do not entirely accomplish the object.

These simple facts are well known to miners, and they know that they comprise the plain reasons why so large a percentage of what is in ore or alluvial ground is lost. Processes of various kinds have been devised to prevent loss in different ways, though comparatively few of them have ever been aimed in the right direction. Mechanical means have probably reached their perfection and it remains to be seen if chemistry can bring relief. Quicksilver is the best thing we have to catch gold, but, as any miner knows, it does not perform its duties satisfactorily. If any man can find a way to make it act better than it now does, a fortune awaits him.

Mechanical Ore Concentration and Separation.—No. 11.

[Written for the PRESS by FRANCIS M. F. CAZIN, M. E., Santa Fe, New Mexico.]

Breaking and Classifying by Size

Are simple manipulations controllable in every modification of the action. Common sense and ingenuity will easily control them to perfection. Not so with separation proper. The action is not so exposed to continual inspection; it is not so easily understood and its deficiencies are not so immediately traceable to their causes. Therefore, want of satisfactory success with imperfect contrivances is more frequent. All this may explain the existing distrust spread among American mine owners against mineral dressing, which distrust may do very good service if only carried far enough to prevent application where this method is inapplicable or where other methods are equally or even more profitable. But distrust should not be allowed to go far enough to prevent application, even where no other method is able to utilize the low grade ores accumulating on dump piles or easily extractable from large deposits.

For quartz carrying free gold, no mining engineer experienced in both methods would relinquish the advantages of direct amalgamation; and on ascertaining loss of gold or the presence of other valuable parts in the tailings, the competent metallurgist would not hesitate to utilize mechanical concentration for the treatment of tailings. Without cost for breaking, except a trifle in addition to existing running expenses, not only the greater part of loss may be recovered but the waste of quicksilver can be reduced to almost nothing, as it will be readily recovered, even in the finest floury particles, with the concentrated material in a good jig, provided with steel sieves. On ores carrying copper in grades of whatever denomination, the competent metallurgist will undoubtedly recommend a leaching process in preference to all others, but in case the ores require roasting he will closely examine whether circumstances for mechanical concentration are in his locality not favorable enough to make it profitable to mechanically dress the crude ore.

Argentiferous ores carrying no lead, or only a very small percentage of galena, and such galena not being the matrix of the silver in the ore, will, by the competent metallurgist, be subjected to chlorinizing, roasting and amalgamation as long as it is proved that the silver has a predominant inclination to gather in the finest sizes or slimes, because the percentage of loss in dressing slimes is about equal to the loss in roasting and amalgamating. But if the ores carry a good percentage of galena and the silver-bearing particles are sound (not corroded), possessing their natural cleavage as well as their natural gravity, no hesitation will be shown by the competent metallurgist to determine on mechanical dressing preliminary to reduction. If the ore carries galena in whatever small percentage, and the galena is the matrix for the silver present, there can be absolutely no other or equally profitable way of treatment but mechanical dressing and subsequent smelting of the concentrated material. Thus unacquaintance with the art of mineral dressing should not any longer stand in the way of its application in the great West any more than in the way of leaching, where it is in its proper place either with or without dressing.

The Problematical Intra-Mercurial Planet.

The recent telegraphic dispatch from Le Verrier to astronomical observers, and especially to those on the Pacific coast, asking them to observe the sun's disk for the transit of Vulcan on the 9th and 10th of October, naturally recalls attention to the subject. On this coast the literature on the subject is limited; but in *Nature*, of September 14th, we find a short article concerning it elicited by the supposed passage of Vulcan across the sun's disk on the 4th of April. The few data referred to are therein acknowledged inconsistent with the supposed periods of 28 days, and of 42 days, assigned to the planet. Brief papers on the subject were submitted at the last meeting of the California Academy of Sciences, by the President, Prof. George Davidson of the U. S. Coast Survey, in one of which he states that from considerations based upon a study of the sun spot period of eleven years, a shorter period then either of the above will satisfy all the observations therein mentioned.

He enumerates the observations as follows: Stark, October 9th, 1819; interval of 7,298 days. DeCuppis, October 2nd, 1839; interval of 7,115 days. Lescarbault, March 26th, 1859; interval of 1,090 days. Lummis, March 20th, 1862; interval of 5,129 days. Weber, April 4th, 1876; interval of 189 days. Leverrier's prediction, October 10th, 1876. These intervals do not correspond with the assumed 42.02-day period, or with the 28 day period, but they do correspond with the period of 21 032 days. Thus, says Prof. Davidson, first, 347 periods of Vulcan, 21.032 days, equal 7,298 days; second, 338 periods of Vulcan, 21.05 days, equal 7,115 days; third, 52 periods of Vulcan, 20.97 days, equal 1,090 days; second and third, 390 periods of Vulcan, 21.035 days, equal 8,205 days; fourth, 244 periods of Vulcan, 21.02 days, equal 5,129 days; fifth, 9 periods of Vulcan, 21.03 days, equal 189 days.

Omitting the fifth as a prediction only, and reckoning only from October 9th, 1819 to April 4th, 1876, we have 20,632 days, giving 981 periods of 21.032 days each. The only sensible deviation from this period is in the observation by Lescarbault, that created a fervor at the time but which was quietly dropped by many who criticized the internal evidence of his observations.

A period of 21.03 days for the supposed planet, corresponds to a mean distance of 0.15 (Earth as 1.00) or 13,725,000 miles. The next conjunction should occur on the 31st of October, 21st of November, etc.

Professor Davidson says, I may here intimate that it appears to me quite probable that the eleven-year sun spot period depends upon the perturbative forces of the earth, Venus, Mercury and the undiscovered planet; and that if this view is correct it may aid us in determining the conditions of the finid surface of the sun.

The following is Professor Davidson's paper describing his search for the supposed intra-Mercurial planet, the station being Mount Helena, Napa county: On the 9th of October I received telegrams asking me to observe the sun upon the 9th and 10th of October for the transit of the supposed planet Vulcan across the disk. I had commenced observations on the 6th of October for the possible planet and for sun spots. We had fair weather on the 9th and 10th and the sun was carefully examined with a teleascope of three inch aperture and a power of 85; and adjusted for the determination of position of any object projected on the sun's surface. More frequent examinations were given to the afternoon hours, when the sun was below the horizon of the Eastern observatories.

The method of observing was as follows: At each half hour during the day until three o'clock P. M., and then at each twenty minutes, the border of the sun was carefully examined for a width of 3′ to 5′; the north and south limbs were then scrutinized; and the border again observed. These operations were intended to seize any body that might be seen just entering or leaving the sun's disk and that was projected upon the sun's northern or southern limbs. Then the whole body was carefully watched as the disk traversed the field of view, using a parallactic eye piece to observe every part equally well. After this the border was again examined, and sometimes a second inspection of the disk made, especially in the afternoon.

No spot or planet was visible on the afternoon of the 6th of October. The 7th and 8th were cloudy days. On the afternoon of the 9th there were neither spots nor Vulcan. On the 10th observations were continued from morning to sunset. At 4 45 P. M. two spots were discerned; and in half an hour other smaller ones were visible in the same disturbed area. Each spot was about twelve seconds of arc in its largest axis. No planet was visible during the day.

On the 11th of October observations were continued. The sun spots were not so readily made out, but the disturbed area was increased; and during the afternoon the number of small spots was increased and all evidences of great and violent action visible. No planet was visible during the day. This station is 4,343 feet above the sea, and the border of the sun exhibited very little of the usually confused border from atmospherical disturbances.

Items of Interest from the Mines.

We give below items of interest from prominent mines, most of which are collated from letters of the respective superintendents on file at the offices in this city. Considerable of this news is later than that prooored from the interior journals:

From the Virtue mine, Oregon, news comes that they are clearing away the second level south ahsad, and have resched a point further south than any in the mine, with a favorahle ore body.

In the Lady Bryan, on'sccount of enconnterling a large flow of water in the joint L. & T. shaft, the work of sinking has for the present been stopped and the workmen are now engaged in excavating the foundstions for machinery.

In the Jostice, the winze on 400-level is developing a rich body of ore as depth is stained. Also 500-foot level npraise aod 600-foot level npraise, which ascends the west vein to a hight of 50 feet, thence turning at right angles, passed through a horse a distance of 24 feet, where a valushle discovery was made; further exploration is necessary before the extent is really known. A very important improvement is foond 100 fest to the north of upraise last mentioned, in the cross-cut advancing east on 600-foot level, sill floor, which is making in new unexplored groond.

There are on hand at the mills about 3,500 tons of Belcher ore.

Last week 3,374 tons were sent from the California mine to the mills, and 2,263 tons from the Consolidated Virginia. The ore breasts in hoth mines continne to look well. Little work has heen done on the 1,700-foot level in the Consolidated Virginia mine, owing to the presence of water and imperfect ventilation, hoth of which were expected to he remedied hy this time.

A letter from the superintendent of Raymond & Ely says: The prospect work which was being prosecnted st the west end of the slope on the 8th level has not resulted satisfactorily; the shale made in across the top of the raise and out the fissure off entirely, and not deeming it advisable to proeecute the work farther in that direction, work was suspended. The west drift on the 11th level has been extended 24 feet during the week; the formation penetrated has been of the same character as heretofore reported. The fissure still continues regular and well defined, hot barren.

Letter of the 4th from the Enreka (G. V.) ssye: Our cleao-np for the last six days run off 10 stamps, 12 hoors per day, is 280 oz. of amalgam. The ledge in Eureka proper is n little smaller than it has heen. In the last month we rnn No. 3 north cross-cut 50 feet; the ground continues hard and ugly to work; in one week more we will have the Ingersoll drill started.

In the Baltimore Consolidated a winze has been commenced on the ore hody in cross-cut No. 1, on the 1,050-level, and as depth is gained the ore body widens and is looking fine. The ore in the upraise from cross-cut No. 2 on this level is improving and looking very good. As it is also io cross-cut No. 3.

A letter from the New England smelting and mining compsny says: Onr furnace is in complete rnnning order. There is a large amount of good milling ore now ready upon the dump, and we expect to be turning out hullion hy the middle of December, weather permitting. We expect to be able to smelt 20 tons per day. There are several hundred tons of ore ready for the smelter and a large body in sight. It is estimated that with the present facilities we can supply over 100 tons of fine ore per day to the smelter.

The superintendent of the Hite mine (Calaveras county) says: We have made a very important strike in the east cross cut. The vein is about five feet thiok and very rich. We have driven on it 40 feet east from the cross-cut, and vein improves every foot hoth in richness and size. I look upon this as the most important strike we have made in eight years, as it will no doubt enhance the value of the mine at least $200,000.

Advices from the Crescent say: Mill running steadily. Hendy's feeders do not reqnire to be tonched so far, though the others are working much better than when rnnning the clay. Stopes all through mioe continue to yield their nsoal quality of ore. Crescent drift ledge three feet wide, but not prospecting as well as a few days sgo. Can't tell anything about mill yet.

We have heen shown, hy J. R. Mains, some gold-bearing quartz from Dry Creek, Amador Co., taken from Potosi, Maryland and Dnn Worley olaims. The ore is rich in gold and sulphorets, some of it, we are informed, running as high as $1,500 to the ton. We are promised a general deecription of these mines and their snrrouodings.

Part of the new spur wheol for the Raymond & Ely, at Pioche, has arrived. The wheel it was designed to replace was broken on the 2d of August last. The wheel will soon be in position, when we will hear from the pump again.

A large number of mines in the southern part of Colorado will hs worked all winter. Several of the large mine owners are preparing to run tunnels, and the prospect for active operations during the winter is good.

The tailings mills on Six Mile .sanyon, Nev., are all in full operation.

Remarks on Quicksilver.

[Written for the Press by Samuel Purnell.—No. 5.]

Loss of Mercury.

It is very difficult to ascertain the exact loss in working quicksilver ores. Few managers really know what they lose, because, io this coontry, no assaye are regnlarly made from true samples. The custom has been to assay specimens from time to time, and whether they were to he considered samples or not depended upon the profits or losses made hy the works. When the mine and smelting works made mooey it was thought the furnace and condensers were working nearly up to the full assay; while if money were lost the ores were pronounced too poor to work. Often it was assumed, as a matter of oourse, the apparatus was perfect. This course was not a losing one while mercnry sold for a dollar a pound, for then managers could afford to lose half their metal without knowing it and still make money. But now times have changed, quicksilver is cbesp, and nearly all the mines are closed. It has become a common practice with the inventors of new furnaces to assert that they could save very high percentages; one enthusiastic inventor actually publishing that his apparatus saved 99½ per cent. This is otterly preposterous, but no doubt the gentleman was perfectly sincere in his statement. The moral to be drawn is that few really know what is lost, and when told they will not believe it. Few men of genuine experience estimate the losses at present in California as averaging less than 50 per cent., and in many cases they are believed to be very much higher. As the forms of furnaces and condensers, and the conditions of working, are about the same here as io Eorope, it may be well to estimate the average losses in California to be the same as those at Idria, where the management has always been in able hands, and where alone the real losses appear to be known and have been given to the world. The Idria reports show the average losses in 1870 to have heen 46.70 per cent.; io 1871, 37.10 per cent.; in1872, 48.72 per cent.; and much more, relatively, was lost with poor ores than with rich. In 1873 the superintendent of the Napa Q. M. company, working with the then most approved apparatns, wrote: "In oor works, out of 1,600 tons worked only ao average of eight and one-half pounds of mercnry per ton of ore was obtained, where the ore treated by repeated assays ran from 20 to 80 pounds per ton." Their ores were mostly fine, and there was a great loss of time and labor in moulding them into adobes. There has been found to he a loss of from 10 to 12 per cent. in the ordinary method of assay; so if any practical process will work within 10 per cent. of the total loss it is good enough. In a standard work, ("Phillips' Elements of Mett.," srt Mercury,) it is stated that hy existing processes the loss is so great as to amount to, io some cases, 40 per cent. So late as 1873 the yield of mercury at New Almadeo is said not to exceed 62 oer cent. of that which the ore contains. In 1875 at New Almaden were worked 31,106,200 pounds of ore; average yield, 3 35 per cent; pounds of quicksilver produced, 1,044,072. What the real losses were it is impossible to tell from reading the report, but they seem to have heeo aboot 50 per cent. At Almaden the

THE SUMMIT OF THE ALLEGHENIES.

processes only yielded from one-fourth to one-third of the mercury in the ore.

Miscellaneous Facts.

Notwithstanding the great losses of the ordinary roasting reduction process, it is now the universal one, except for very rich ores, which it pays best to smelt io retorts. But under the ordinsry conditions, the cost of maintenance of appsratus, extra labor and fuel more than compensates for the increased yield with retorts. The cost of working hy the retort process has been variously estimated at from $8 50 to $16 per ton of ore; while the modern shaft furnaces are claimed to work at from $1.25 to $1 50 per ton.

As an instance of

How Cheap Quicksilver Ores May he Worked,

It is well to mention that at Ripa, Tosoany, the Hsehner fornace is used. The ores are very poor, yieldiog only 5 or 6 pounds of mercury per too. The cost of treatment is said not to exceed 58 cents per ton.

At Idria with the Haehner furnace 112 pounds of mercnry cost for its production as follows: £4 for the ore, £1 12e for smelting; aod 8s for package; total £6, or $29.04, equal to 26 cents per pound.

The Sutro tunnel is officially reported to have advanced 14,835 feet, 235 miners' inches of water coming in; 321 feet were made in October and 329 feet in September.

Pennsylvania Mountain Scenery.

It is hut within the last few years that Pennsylvania has acqnired a nsme for her beautiful scenery. Her people have been workers rather than dreamers; she has prodoced many an excellent mechsnic and worthy iron-master, hut few indeed have been her poets; no Irving has yet sprong from her soil to tell the glories of her hills, and no Bryant to sing ths beauties of her waters; her people have been content to let the outside world find out for itself what she had to show more beautiful than black dismonds or red iron ore—and since to travel haa become so common, the ontside world *has* found out, and many are the Centennial visitors this year who will carry home with them, firmly fixed within the memory, delightful landscapes from the land of William Penn, whether of the rounded hills and calmly-flowing waters of the beautiful Ohio, the wooded ravines and hights of the Alleghenies, or the almost English scenery of the garden counties about Philadelphia.

The characteristic of Pennsylvania scenery is its softness of outline. The steepest of the hills slope off to gently rounding summits, and their rough sides are hid beneath a luxnriant growth of forest trees and underbrush. The engraving upon this page depicts one of the wildest scenes along the line of the Pennsylvania railroad. It is at the highest elevstion reached by the railroad, some 2,100 feet above sea level, just east of the three-qoarter-mile-long Allegheny Summit tunnel, and where a little station has been erected, called "Allegrippus," in honor of *Old Allegrippus*, one of the earliest of engines to cross the mountains—a giant among the iron giants of the road, the fame of whose strength and speed is still proudly cherished. The scene is certainly a beautiful one. At the bottom of the ravine sparkles and gleams a little tributary of the Juniata, while on either side the hills stretch up a thousand feet, into the clouds, their rugged sides clothed with a dense and varied growth of oak, chestnut, beech, birch and a thousand other varieties of tree and hush and shrnb; while over all there smiles down a bright, warm sky, made doubly beautiful hy such lovely clouds as Californians seldom see. High up upon the left side of the ravine the railroad has, hy what was considered bold engineering until we of the Pacific slope hegan to huild railroads, fonnd a course for its iron steede, and from the swiftly-moving cars the view down and across the narrow valley is inspiring, and at this season of the yesr, or a little earlier, when the thousand and one trees and ehrubs have put on the many-tinted hues of autnmn, it csn be described by no less word than magnificent.

Mining Accidents.

A miner named George Cunnlngham was killed on the 7th instant in the Lady Washington mine, on the Comstock: Cunningham climbed down the ladders and started to oross the center compartment, when the cage struck him and crushed him against the timbers on which the men stood while working. The cage was going very slowly, as the engineer had been directed where to stop, but before it could be rung up its full weight was allowed to press sgsinst the unfortunate miner.

On the 7th instsnt a fatal accident occurred in the Gonld & Curry mine. The Gold Hill *News* says: The pump rod was heing removed by a large gang of men. Joseph Pierce, one of the miners, was standing on a hoard in the shaft gniding the cable as it was lowered or hoisted in answer to the signals of the men in the incline. The bell rang for the engineer to raise, and it appears that the cable csnght upon s nut on the end of the frail platform npon which Pierce was standing. The board was lifted from under the hapless man's feet, and he fell to the hottom of the shaft, a distance of 100 feet. When his fellow-miners dsscended and found him he was quite dead, the neck and one leg being hroken. When brought to the surface the body, which was not greatly disfigured, was taken charge of by Coroner Hodges, who will hold an inquest. Pierce was a man about 40 years of age and a native of Cornwall, England, where he has a wife and family living.

Bullion Shipments.—Since last report hullion shipments have been made from prominent mines as follows: Virtue, Oct. 30th, $3,500; Leopsrd, Nov. 6th, $6,300; Con. Virginia, Nov. 6th, $53,700—total to date, $1,150,579; California, Nov. 6th, $51,144—total for October, $1,178.163; Northern Belle, Nov.|5th, $20,004.-80; Arizona, 5th, $2,584 75; Modoo, 6th, 500 bars—value this month to date, $21,000; Northern Belle, Oct 31st, $12,002.21; Comanche, 31st, $3,286.81; Oslaveras, Nov. 1st, $2,600; Ophir, 2d, $17,177.81—total to date, $239,634.38; California, Nov. 1st, $105,884.24—total to date, $878,132.78; Con. Virginia, Nov. 1st, $42,340.04—total to date, $1,009,240.42; Ophir, Nov. 1st, $19,236 99—total to date, $222,456.57; Manhattan, Oct. 31st, $12,100—total to date, $119,700.

The double tunnel of the Main Feather River company, to which we referred recently, has been carried under the river for a distance of twenty-two feet, with good prospects of success. But two feet a day osn he pieroed, and it is expected that the work will be completed so as to reaoh paying dirt by the first of January.

South Almaden Quicksilver Mines.

The San Jose *Mercury* says: There are the very best grounds for belief that the Sonth Almaden quicksilver mines will soon command attention in the marts of trade, hearing close resemhlance to that which the New Almaden has so long enjoyed a monopoly of in this country. It is a fair presnmption that the stockholders will he much hetter pleased, even with the Sonth, than were its stockholders in New, through many of its past prosperons years. A *Mercury* representative accepted an invitation the other day from Mr. Adams, president of the company, and made the distance, throngh the Evergreen settlement, hehind the driver's spanking span of chestnuts, in abont ninety minutes, and made a pretty thorough inspection of the works.

The Sonth Almaden mining grounds, comprising an area of 4,200 acres, are locsted some ten miles east hy north from New Almaden. There are at present hut ahont twelve hands employed at the works. These are under the general supervision of Superintendent Goldworthy; Captain Smith, immediate foremsn. The furnace was not hreathing on the day referred to, hut hetween 40 and 50 tons of mineral rock were deposited close hy, ready to he relieved of its alloy; and flasks were waiting to receive the cinnabar. Superintendent Goldworthy is a man to the mining manner hred, and expresses strong confidence in the immediate fntnre of the Sonth Almaden. Captain Smith is also thoroughly experienced in qnicksilver mining, as indeed are all the hands there, and they look for strong development from the float and seam indications in several different portions of the grounds under lease. The management will he ohliged to confine their operations mainly to snrface ore, or shallow diggings for some time, that the yield may pay all rnnning expenses. But as they have a twenty-years' lease they can well afford to wait a while hefore pntting in heavy pumping works, which must finally he done to unwater the heavier hodies of ore. Rock carrying cinnahar very strong is now heing taken ont near the surface on hoth sides of Silver creek, and the cinnahar has also heen found strong in the ledges, cropping ont in several distinct places on the hrow of the hill to the west, from 600 to 1,000 feet distant. These are nnmistakahle indications of strong ledge deposits which must, as has heen inferred, hring South Almaden into prominence in the near fnture.

The settlement is limited at present to three or four plain, unplaned hoard honses located on the west side of Silver creek, under the deep foliage of white and live oak branches.

The Chance in Olive Oil.

We have formerly noted the fact that the California made olive oil is an excellent prodnct, and pleases consumers. It has heen largely introduced in the hotels and restaurants of this city. Owing to the penchant for the imported prodnct, our California oil hears a French hrand even in the honse of its friends. This is to he regretted, because while we are sailing under a foreign flag we are doing nothing in the way of establishing a standard of onr own. We can see no reason why a distinctive California hrand cannot he established, and finally made to secure the position in the markets of the world to which the qnality of the artiole entitles it.

This point is suggested hy the disclosnres which are heing made of the wretched adnlterations which are heing introdnced in the commercial article of olive oil. We read in the *Chemist and Druggist* that "some of the cheaper fixed oils found in the New York market are largely substituted for olive oil. Very little of that which is sold hy grocers is even imported from Europe. A New York merchant who is extensively engaged in hottling this article in imitation of the imported style, informed ns that for the cheapest grade he is in the hahit of putting up refined cottonseed oil, and for a somewhat better hrand the oil of henne. The expressed oil of mnstard, a hy-prodnct in the manufacture of tahle mnstard, is also applied to the same purpose. Onr Frenoh friend, whom we have hefore alluded to, also kindly informed us that in his conntry the ground nut oil (*Arachis hypogœa*) is used to an enormous extent for admixture with olive oil, so that hut very little of the latter is exported pure."

Here is the chance for a pnre California product to sell on its own name and estahlish a fame which will he for a time at least free from the frands of the adulterater. Not only are the French hrands used to cover the compounds prodnced in New York city, bnt even in Franoe, in olive oil, as in wine, the most detestahle frands are perpetrated. We think there is now opportunity for our olive growers to show their true colors, and hy a pure prodnct win the demand for their product.

ANTIMONY MINES.—C. W. Gilbert has sold his interest in the extensive antimony mines in the southern part of the county, to D. L. Healey, of Churchill. The purchaser proposes shipping the ore to San Francisco. The mines are represented as containing the most extensive deposits of antimony ore ever discovered on the coast. The ore is high grade, carrying from 60 to 72 per cent. metal.—*Silver State.*

IT is a curious fact that in the salt mines of Poland and Hungary the wooden pillars, supporting galleries, are fonnd to last nnimpaired for ages, in oonsequence of heing impregnated with the salt, while pillars of hrick and stone, used for the same purpose, crnmhle away in a short time, from the decay of their mortar.

ISSUED OCT. 1st, 1876.

Testing and Working Silver Ores.

The above is the title of an illustrated work of 114 pages, for miners and prospectors hy Chas. H. Aaron, which has just heen issned hy Dewey & Co. Mr. Aaron haa managed to give many useful hints and snggestions, free from all technicalities, and in snch a style as to he easily comprehended. It is written for the miner, with no chemical symbols or metallurgical technicalities to confuse those who are not chemists or metallurgists. The following summary of the contents of the work will give an idea of its scope:

Under the heading of the first chapter, "Testing Ores for Silver," we find paragraphs on ore formation, test for silver, with heat and water, acid or blow pipe. In speaking of testing for a process, the extent and richness of ore is considered, smelting ores, selecting and working sample, appliances for testing, roasting, etc. Under the head of "Working Ores" the author describes Aaron's process, has something to say of snperheated steam, preparation of dichloride of copper and protochloride of copper, use of copper and iron, quantity of chemicals, csrbonate of lime, chloride ores, amalgam, Patchen's prooess, etc. He also describes the methods of working roasted ores, treatment of base metals, stirring, heat of furnace, want of snlphur, etc. Under the head of "Leaching Processes" are the titles, Smelting, Mexican process, Kroencke's process, Chilean process, etc. Under "Pulverizing Machines" are described the arastra and its construction and operation, stamp hatteries, screens, Crocker's trip-hammer battery, Paul's pulverizing harrel, Kendall's hattery, Noice's pulverizer, a cheap rock breaker, etc.

In speaking of amalgamators the author describes a cheap amalgamator, grinding the ore, directions for making a barrel, preventing mechanical wear, use of quicksilver, copper in bars, Freiherg harrel, cheap barrel, trough, barrel on rollers, Aaron's amalgamator, separator, etc.

He describes an improved retort, roasting furnace, furnace tools and furnace huilding. Among the miscellaneous mention may he found Aaron's leaching apparatus, with two or three different arrangements a sm all mill, sampling tailings and settling tanks, dichloride of copper, etc. Mr. Aaron is a practical miner, of long working experience on this coast.

The book is a serviceable one for miners' and prospectors' use. Price, post free, (in leather,) $2.00. Address Dewey & Co., MINING AND SCIENTIFIC PRESS, 224 Sansome street, San Francisco.

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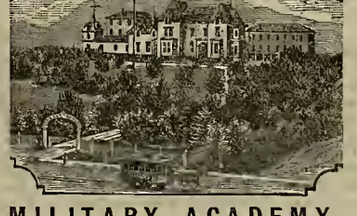

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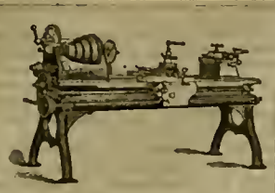

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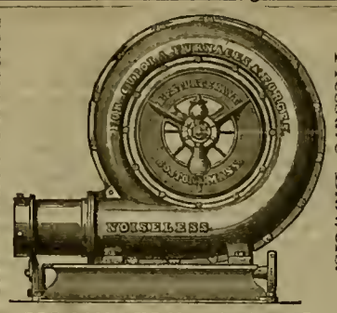

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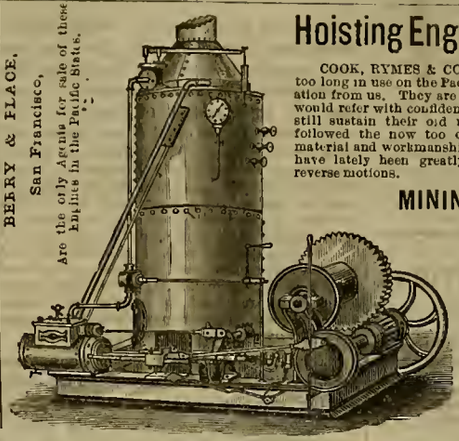

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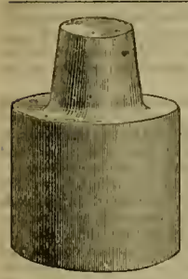

PATENTED

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Guaranteed Cheaper than the Best Iron.

IMPORTANT NOTICE.

Reduction in Price from 16 Cents to 12 Cents Per Pound.

Owing to our largely increased business, the present low price of iron from which our Steel is manufactured and the improved facilities for casting and forging, we take great pleasure in announcing that from and after this date we will supply our IMPROVED CAST AND FORGED STEEL SHOES AND DIES FOR QUARTZ MILLS at 12 cents per pound, delivered at San Francisco or Sacramento, instead of 16 cents, as heretofore.

We also furnish Steel Plates for Blake and other Ore Crushers, Steel Gut Gearing, etc., for Mills and Hoisting Works, Steel Pan Shoes, Battery Cams and Tappets, etc.

Address all orders, with dimensions or drawings, to

CAST STEEL SHOE & DIE CO.,

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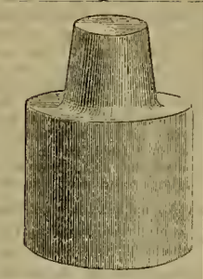

GOLD, SILVER AND COPPER MINING, Reducing and Concentration Machinery.

Patent Stamp Shoes
FRASER, CHALMERS & CO
SUCCESSORS TO EAGLE WORKS M'F'G. CO.
MANUFACTURERS OF
STEAM ENGINES, BOILERS AND STAMP MILLS
CRUSHING ROLLERS
AMALGAMATING PANS AND MACHINERY FOR SYSTEMATIC MILLING, SMELTING AND CONCENTRATION OF ORES
AGENTS FOR BLAKE STONE BREAKER
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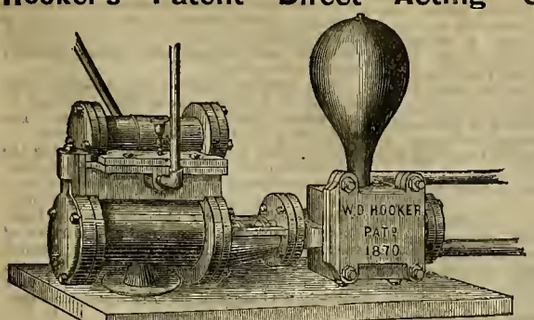
Hoisting Engines, Diamond Pointed Rock Drills, Manufactured by M. C. BULLOCK,

Address, FRASER, CHALMERS & CO., Chicago, Ill.

Hooker's Patent Direct Acting Steam Pump.



W. T. GARRATT,

Cor. Fremont & Natoma streets, S. F.,

Sole Proprietor & Manufacturer for the Pacific Coast.

SIMPLE, CHEAP AND DURABLE.

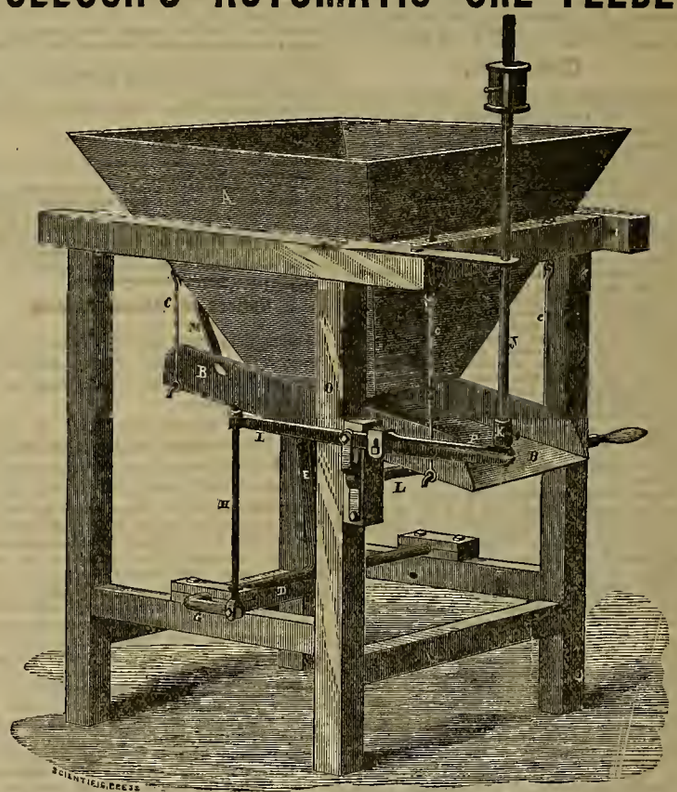
Adapted for all purposes for which Steam Pumps are used.

The Best Pump in Use.

☞ SEND FOR CIRCULAR

N. B.—Also manufacturer of Hooker's Deep Well and Double-Acting Force Pump. Received the Silver Medal awarded at the last Mechanics' Fair in San Francisco. 18y27-2am3m

TULLOCH'S AUTOMATIC ORE FEEDER.



The TULLOCH AUTOMATIC ORE FEEDERS have been practically tested during the last year and a half in 40 mills, of from five to 80 stamps each, and have, in every case, given perfect satisfaction. The Tulloch machine is so constructed that the drop of the stamp feeds the ore in just such quantities as the stamps require. Each drop regulates the supply required for the next drop, whether it be more or less, and this is the true principle of an automatic feeder. The tray moves longitudinally, and a stationary scraper forces the material forward at each backward movement of the tray, thus insuring the perfect feeding of all classes of ore, whether it be dry or wet.

We append a few extracts from the many testimonials which we have received from mill men and practical mining men, of the effectiveness and positive action of the Tulloch Feeder. We do not depend solely upon these testimonials, as we are aware that testimonials are easily secured for almost any machine, but the high character of the parties certifying to those herewith given, will establish their value and genuineness:

Mr. Jas. G. Fair has 28 in use; says: I regard them superior to any Feeder with which I am acquainted; I consider no mill perfect without them. Mr. E. R. Burke, Sumner mine, Kern county, has 16: They never get tired; no man living can feed a battery as well; they save us in labor alone $48 a day. Mr. Green, of the Phœnix mill (12), Amador, writes: The first machine we had is working away; is as good as ever; have not spent a dime on it; in use 14 months; you need fear no competition on wet ores. Mr. W. H. Armstrong, of Consolidated Virginia mill: We are running 60 stamps with your Feeders; they give unbounded satisfaction; they have not cost the company one dollar since starting up. Mr. H. C. Bidwell, Supt. Green Mountain and Gold Stripe companies, Plumas county, writes: From the start they have done splendidly; no trouble whatever; requiring but little attention; a boy can manage them; the saving in both labor and castings is fully one-half over the old style of feeding by hand. Mr. Preston writes: I have four of your Automatic Self Feeders, and my mill men each and all say they are the best they have ever used. They are an improvement on all I have ever seen, being simple in construction, and good for either wet or dry crushing; refer to over 40 mills using them; they are guaranteed to give perfect satisfaction. Send for circular.

F. OGDEN, 417 Market Street, S. F.

Continued from Page 317.

progress, the flow of water at the bottom being still quite strong.

NIAGARA.—Sinking the main incline is making excellent progress.

ALTA.—The new pump was got in place and the extraction of water commenced on Monday last.

ROCK ISLAND.—The pumps and hailog tanks are kept steadily running without being able to reduce the water to any very great extent.

WELLS FARGO.—The new machinery is all in place ready to start up as soon as a supply of water is obtained.

WARD DISTRICT.

THE CAMP.—Ploche *Record*, Oct. 29: We received yesterday a private letter from Ward, in which our informant states that the camp is lively and money scarce. Considerable excitement exists on account of town lots, as there have been a few attempts to jump lots already located. It is the intention of the citizens to allow nothing of the kind. There was a meeting held last spring on that subject, and a committee of five appointed to lay out the town and streets and to maintain the same. In one case since then the committee tore down a fence that had been erected on a cross street. Last Tuesday a lot located on some ground that had been donated to the town by the original locator was fenced in by the present owner. On Wednesday a meeting was called and upon organization it was resolved that the meeting "adjourn en masse and remove all obstructions," which was forthwith done, and the ground declared a public highway. The furnaces are running steadily and turning out considerable bullion. The Martin White company are grading out for a mill site and placing some of the machinery in position. Lumber is scarce and high priced.

TUSCARORA DISTRICT.

WORKING ORE.—*Silver State*, Nov. 3: The Humboldt reduction works are now engaged in reducing a lot of 100 tons of ore from the Grand Prize mine; and arrangements have been made by the owners of the Hornet mine to have several carloads of ore worked at the same place. Both mines are situated in Tuscarora district, and the appearance of the ore indicates that it is rich in silver.

WHITE PINE DISTRICT.

BULLION SHIPMENTS.—White Pine *News*, Nov. 4: During the week the Eberhardt & Aurora company have shipped by Wells, Fargo & Co. bullion amounting to $21,326.19, and the Stafford company shipped two bars valued at $3,327.56.

PAY DAY.—The Stafford company, of Treasure hill, who are employing a force of men in their mine at that place, and who have the old "Smoky" mill under lease and are running it, paid off all their employees on Wednesday last. The company have also shipped several thousand dollars in bullion this week. This begins to look like business, and demonstrates what three industrious miners can do who have a little pluck and energy. The company have the best wishes of this community for their success, and we have no doubt they will become wealthy, as they deserve to be.

Colorado.

BOULDER CONCENTRATION WORK.—Boulder *News*, Oct. 27: This establishment is now one of the fixed institutions of Boulder, and has started up to run steadily, so long as ore can be procured. There is no doubt about this matter; it is no longer an experiment, but has settled down to actual business. The tables upon which the concentrate is saved are constructed upon the vibrating principle, extended and improved upon by a careful scientific series of experiments, and the company now issue their price list, and purpose to buy all kinds of ores as stated, giving the miner his money or the privilege of reclaiming the product. Competent miners say that the prices offered are very liberal, especially on the lower grades.

EMPIRE.—Colorado *Miner*, Oct. 28: Negotiations are now in progress to erect a concentrating mill, with the latest improvements, in Empire district. The camp now shows many signs of returning prosperity, and on the completion of these works Georgetown will find a rival in her long neglected suburb.

VICE PRESIDENT.—The owners are pushing steadily on with the drifts from the tunnel, with excellent prospects. The ore vein is scattered at present on this level, but Fliger & Co. hope soon to cut the solid streak exposed in the upper level.

DIAMOND TUNNEL.—A new lode has been cut in the heading, 1,150 feet from the mouth of the tunnel, which shows 10 inches of good ore. It is supposed to be a portion of the lode cut 15 feet back, and will not be explored until the great Dives-Pelican vein ahead is intersected.

PULASKI.—A large quantity of very fine ore is being taken from the great Pulaski vein, by F. M. Taylor, for concentration at the mill of the Clear Creek company. This mammoth vein, in our opinion, is destined to rank with the best mines in Colorado. The owners are Eastern men, inexperienced in the business of mining, and their management has not been such as to produce much money so far, but there is, no doubt, great wealth in the property when rightly managed. The tunnel which is already driven in over 800 feet, is, we understand, to be soon put under contract for completion. This will fully develop the property at great depth, and certainly make it one of the best in the State.

SILVER GLANCE.—The lessees, Messrs. Morseman, Hammond & Co., have a bonanza in sight, which really merits that appellation. They have been driving a drift east from a point 500 feet inside of the Lane tunnel, which is now over 100 feet in length. This drift shows a continuous body of ore throughout its entire length, in two streaks, one on the hanging wall one foot thick, and the other on the foot wall, 13 inches wide. These vary somewhat in thickness, but are remarkably strong and regular as far as opened. The quality of ore has been improving as the drift was run in, and mill-runs have shown a value of 300 to 800 ounces per ton.

Idaho.

BANNER DISTRICT.—Cor. Owyhee *Avalanche*, Nov. 4: The accounts from the Banner mining camp represent that section of the Territory as unquestionably rich in mineral resources, but from a variety of causes operations have not been carried forward with any degree of success. Mr. Crafts, the principal owner of the Banner mill, informs us that the mill was in operation 118 hours during the present season and that during that time the rock crushed yielded bullion to the value of $3,400. The machinery is reported to have worked splendidly, and with such a result and the fact that there is an abundance of the same quality of rock in the immediate vicinity, many persons would be curious to know why operations were thus suddenly interrupted. We interviewed Mr. Crafts on the subject, and learned from him that there had been much difficulty in securing the right kind of an amalgamator to attend to the business, and that his own health was such as would not justify his continuance of the management of operations there this season. There are many reports in circulation concerning the suspension, none of which, however, we feel justified in giving publicity to. We may say, however, that such a district as the Banner, showing up as well as it does in rich deposits, and the lode in different directions still continuing to develop splendidly, it is a matter of surprise that such a camp should be allowed to remain dormant. That boundless wealth exists there, no man acquainted with the country will deny, and it is to be hoped that before this time next year Banner will be doing her part towards contributing to the bullion product of Nevada.

Utah.

LEEDS DISTRICT.—Cor. Salt Lake *Tribune*, Nov. 4: Heretofore our district has been under the necessity of shipping ores to Salt Lake City and Ploche, but now we are soon to assume the dignity of a bullion-producing camp, as the Leeds silver mining company, of San Francisco, have arranged for the erection of a 10-stamp mill, to be running in 60 days. This company, having purchased the Shepard & Lemon and two or three other mines, mean business, and will awake the slumbering denizens of this vicinity from their lethargy, with their 10 stamps crushing the argentiferous sandstone which we count and calculate by acres and miles. A custom mill will soon be erected by Ploche parties, and this will soon be followed by another to meet the increasing demands of the district. The last shipment of ores to Ploche by your correspondent and others, created quite a stir in mining circles, and the result has been that several prominent rock sharps and mill men came over to see what we had in this sandstone country. Several mines have been sold and bonded, and mills are to be erected. Several new mines have been located, and not a few old locations relocated or jumped. There are flattering prospects of one of the richest and liveliest camps to be found in Utah or Nevada. A line shaft has been sunk on the Barbes and Walker mines to the depth of 100 feet, which has cut four feet of ore, and is still in ore at the bottom. The Bonanza company have a good body of ore in their shaft. The Shepard & Lemon claim has several drifts and winzes exposing large bodies of ore. The Scott claim has a fine body of ore, and several other claims have shafts approaching the ore body, which seems to be continuous for miles. On the White or Pride of the West reef the Tecumseh company have a force of men at work taking out some rich ores. Several transfers have been made on the Morning Star reef to new comers, and work will be pushed forward vigorously. Salt Lake capitalists have missed it in not investing in this country. San Francisco will get away with the haggage, and the bullion products will pass through Ploche instead of through your city.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING OCTOBER 31ST, 1876.

NEWSPAPER FILE HOLDERS.—Alfred T. Dewey, Oakland, Cal.

EXPLOSIVE COMPOUNDS.—Egbert Judson, S. F.

MECHANICAL POWER.—Henry J. Gastman, Eureka, Cal.

COMPOUND STEAM BOILERS AND ENGINES.—William Hann, Gilroy, Cal.

POCKETS FOR GARMENTS.—Antonio Diaz Pena, S. F.

TRAPS FOR WATER PIPES AND CLOSETS.—Fred'k Pohley, S. F.

ROW LOCKS.—Eugene Spedden, Astoria, Ogn.

OSCILLATING VALVES.—George W. Van Deren, San Bernardino, Cal.

ADJUSTABLE SCHOOL DESKS.—Bruce Wolverton, Rohnerville, Cal.

RAILROAD SWITCHES.—Asa E. Hovey, S. F.

CAR-BRAKES.—Asa E. Hovey, S. F.

ORE-ROASTING FURNACES.—Henry J. Huttner, S. F., and Robert Scott, New Almaden, Cal.

——The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

PROCESS OF REFRIGERATION.—R. H. Lucas, S. F. This invention relates to an improved method of refrigeration, or the production of a cold atmosphere in curing and packing houses, refrigerators and other places where it is desired to cure or preserve meats, etc. The object of the invention is to produce an atmosphere having a low temperature and being at the same time dry and free from all impurities. The means by which this is accomplished consists in the application of a non-congealable saline liquid in immediate contact with or exposed to the atmosphere, and having immersed in it a pipe or pipes containing and conducting a refrigerant gas. By this arrangement the refrigerant gas keeps the non-congealable liquid at or below the freezing point of water, while the liquid acts upon the atmosphere, passing in contact with it to absorb all its impurities and moisture, and keep it at a low temperature. The refrigerant agent employed is anhydrous ammonia, but the patent does not confine the inventor to any particular medium for producing the necessary cooling of the non-congealing saline liquid. The application of this invention on a large scale is of great value when substituted for the large body of ice that is now used in curing and packing houses. The apparatus requires but little space, and by means of the very low and dry state of the atmosphere produced by the non-congealing liquid, meats can be effectually cured and preserved.

IMPROVEMENTS IN CLOTHING.—Antonio Diaz Pena, S. F. This invention relates to improvements in clothing, and consists more particularly in an improved method of constructing the pockets of pants, coats and vests; in an improved waistband for pants and overalls, and in the manner of uniting and applying the fly to the front opening of pants and overalls, all the improvements being intended to strengthen the parts and render the articles of clothing more durable. The first place that a pocket gives way is at the corner or angle at each end of the pocket opening. The corners are usually only held together by stitches or some patent fastening device, so that no substantial resistance is obtained except the limited portions of cloth held by the fastening devices or stitches. The improvement consists in forming the pockets without corners and angles to concentrate and receive the strain, consequently avoiding the necessity of using rivets or other re-enforcement for securing the corners. Any strain on the pocket or lower edge of the opening is received by the strength of four thicknesses of cloth alone, the entire rounded or circular portion at each end of the pocket thus giving ample strength of material to resist strain. Instead of the ordinary waistband the inventor forms a yoke which extends from the front around each side of the pants to the back, where the two yokes are united. Each yoke extends downward and backward, and is made in a single piece of goods, thus obviating any necessity of piecing out the portion around the pockets, and as it widens towards the back it gives the wearer greater comfort and a better fit.

VALVE FOR STEAM ENGINE.—George W. Van Deren, San Bernardino, Cal. This improvement is especially applicable to an engine previously patented by the same inventor. It consists in a novel method of constructing the semi-circular cylinder, so that one pattern will serve for both parts. The cylinder can be easily and truly bored out, and the parts are united by a soft metal tongue, which brings them truly together and makes a steam-tight joint. The cylinder is constructed with a diaphragm or head across its center, and its ends are left open. Two pistons work in the cylinder, one on each side of the head, and these pistons are united by a curved arm or piston rod, which passes from one head to another and is connected with a center about which the pistons work and by which they are supported.

WASTE TRAP.—Frederick Pohley, San Francisco. This invention relates to an improved trap for water pipes, and it is more especially useful for making connections with sewers, water closets, etc. It consists in the employment of a pipe having an exit valve at its lower end. This valve is connected with springs which operate to close it after a certain amount of water has run out, and the remainder is retained and acts as a trap to prevent the return of foul odors. The trap may be operated automatically by the weight of water in the pipe or by hand, foot, or other power, as in water closets, and may be so connected in the latter case as to open a valve and allow water to enter and wash out the basin.

ADJUSTABLE SCHOOL DESK.—Bruce Wolverton, Rohnerville, Humboldt county, California. The object of this invention is to provide certain improvements in school desks, and it consists first in a novel construction of the seat and top so that they can be elevated or depressed independently of the main frame and of each other, thereby making it easy to adjust each seat to the size of the pupil without interfering with the others. The invention also relates to a novel means for hinging and locking the seat and top in position and also for adjusting the angle of the top.

Pacific Coast Railroad Items.

Some 250,000 railroad ties have been received by the Southern Pacific railroad within the last two months. This is sufficient to lay 120 miles of road.

The Yuma, Arizona, *Sentinel* reports that the work on the Texas Pacific railway is going on, and the grading party is stretching out on both sides of the river, under charge of Mr. Reynolds, chief of construction, in the temporary absence of Col. Crowford, chief engineer and superintendent.

San Bernardino papers report that the gentlemen of the railroad committee on subscriptions are meeting with excellent encouragement, a very large amount having already been subscribed, and the work not yet completed. They are sanguine that a few short months will see San Bernardino in connection with all the world by steam.

A surveying party from San Francisco and Oakland arrived in Antioch Thursday night and commenced the survey of a route for a railroad from the water front to the Empire coal mine, five miles from that city, owned by Rouse, Hawxhurst & Co.

A correspondent at Seattle, under date of October 20th, writes: The *C. L. Taylor* arrived here last night, bringing for the Seattle and Walla Walla railroad one narrow gauge locomotive and tender. The locomotive was made by Mason & Co. of New York. It weighs 22 tons, and was bought originally for the Stockton and Ione railroad company of California. As soon as it is placed in running order it will be used in carrying the iron rails along the road, and in generally assisting in the work of construction. From present indications we have every reason to believe that the road will be built with but little delay—not only the first section but the entire line through to Walla Walla.

The people of the State of California, upon complaint of L. L. Robinson, bring suit in the Third District Court against the Pittsburg railroad company. The plaintiff alleges that on the 18th day of February, 1862, the defendants presented a petition to the Fourth District Court of Contra Costa county, demanding the condemnation of certain lands of rancho "Los Medanos," (New York ranch) for railroad purposes. The proceedings were had upon the petition, and the court empowered the defendant to use sufficient of such ranch for the maintenance and operation of a railroad. The road was in due time completed. The defendant is charged with having been guilty of a *non user* in this, to wit: since the day of its creation and completion it has not run a passenger car, never owned one, and never had a conductor; has no time table, nor any accommodation for carrying passengers. It never carries any freight for the accommodation of the public. Complainant further avers that the franchise was obtained by fraud and false pretenses, and that the defendant corporation was brought into existence by the stockholders of the Pittsburg coal mining company for their sole use and convenience. Complainant prays that the defendant's franchise be canceled and annulled, and that the defendant be dissolved, and for other relief.

The California Street wire cable railway scheme is assuming shape. The plans and drawings for the work have been completed, and proposals are now being received by the company for the iron and steel necessary for the work. A lot has been purchased on the corner of California and Pierce streets, upon which the building which is to contain the engines, working machinery, cars, etc., is to be constructed. The street is now being sewered as a necessary preliminary to the laying of the track and will soon be completed. The company expect to break ground for the road about the 1st of February, at which time the machinery and working apparatus will be ready. As the residents of California street intend to beautify it so as to make it a grand boulevard, the route will be one of the pleasantest. The road will begin at the corner of Kearny and California streets and the first section up to Fillmore street will be completed by the 1st of July next, and, soon after, the second section to First avenue, which will bring passengers within six blocks of the picnic grounds of Golden Gate park and the race track. Under the present means of travel the workingman who must be at his place of business by seven or eight o'clock in the morning, cannot reside beyond Gough street, and within this limit he cannot purchase a 25-foot lot upon which to build a homestead for less than $3,500 or $5,000, a sum far beyond the reach of the average workingman.

By practically abolishing the steep grades and by shortening the distance so far as pedestrians are concerned, will make the land outside of Gough street easily accessible. A good sized lot can be bought there for from $500 to $800, and the road will be an inducement for the sale of land and the erection of homesteads thereon. The value of property will be increased in a ratio commensurate with the increased population. The estimated cost of the road is put at $250,000. The capital stock is 500 shares of $100 each, making $500,000, all of which amount has been subscribed. The road will be constructed of first-class material, and the cars will run early enough to bring laboring men from the suburbs into the heart of the city in time to go to work, and late enough to bring home the theater-going people. The first section of steel wire cable will be about one and three-fourths miles in length, and the entire cable will run in a cast iron tube, about two feet in diameter. The rails will be of the first quality of steel, and the Clay street railroad grip will be used, for which the company has paid a large bonus.

Lixiviation.

EDITORS PRESS:—In your issue of October 28th, I note a letter from Mr. Ottokar Hofmann, on lixiviation, in which is at least one point of interest. He says: "Knowing that by precipitating with sulphide of calcium the chloride of silver, dissolved in hyposulphite of lime, the former transforms into a hyposulphite, * * * I leached some roasted ore (with water), precipitated all the chlorides (of base metals) and found the clear solution to dissolve chloride of silver very rapidly."

Are we to take this as it reads, and infer that oslcium hyposulphite is formed when a solution (in water) of copper or iron chloride is treated with calcium polysulphide, which is the reagent used in the Kiss modification of Patera's process? If so, I should be pleased to see the formula by which such reaction is expressed.

I should suppose that the decomposition of metal chlorides, in watery solution, by a soluble sulphide, would result in the formation of metal sulphides, and in this case calcium chloride, and nothing else except probably some free sulphur.

That calcium chloride will dissolve silver chloride is, I believe, known, but it will not do so to any great extent unless heated. The explanation of Mr. Hofmann's discovery (?) probably lies in the fact that in making the calcium sulphide by boiling lime with sulphur, a certain quantity of calcium hyposulphite is also produced, so that his "clear solution" which dissolved silver chloride rapidly (I presume without heat) was really a mixture of calcium chloride and the hyposulphite which previously existed in the precipitant, but which was not *formed* in the precipitation. I only notice this because of its misleading tendency.

C. H. A.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

General News Items.

THE San Francisco candle factory, on the Potrero, was burned on Tuesday last.

THE only news on the Eastern question is that the Powers are discussing the coming conference.

TUESDAY, election day, was a legal holiday all over the country, and banks, public offices and courts were closed.

THE man-of-war *Nelson*, of 7,000 tons displacement, 6,000-horse power and 20 guns, was launched at Glasgow on Saturday.

DR. MEARES reports that small-pox no longer exhibits itself in an epidemic form. During last week only eight new cases were reported.

A fire in Oakland, Alameda county, on Thursday morning, destroyed the Oakland flour mills, the ice factory, and several small dwellings.

CARDINAL ANTONELLI, the eminent friend and counseller of the Pope, is dead. During the political power of the Pope, Antonelli was either the Pope's prime minister or chief adviser.

JOHN J. BERRY committed suicide, on Tuesday, in Calvary cemetery, by shooting himself in the forehead. His wife died recently, and he left a short note declaring that he preferred death to insanity.

PRESIDENT GRANT has accepted an invitation of the Centennial commission to assist in the formal close of the exhibition on the 10th inst. He will be accompanied to Philadelphia by the members of the cabinet.

JUDGE SAWYER has affirmed the decision of Judge Hoffman in favor of the libelants in actions brought by Honolulu merchants against the Pacific Mail steamship *Costa Rica*, to recover damages for goods on board, when the vessel was beached near the Heads on the 17th day of September, 1873.

LIEUTENANT MCCLERNAND, of the Second cavalry, and topographical engineer of Gibbon's command on the Yellowstone river and Big Horn, has made a survey of the Yellowstone river, and a report on its adaptability to steamboat navigation. The report has been forwarded to Washington.

MANY whalers in this city are of the opinion that no fears need be entertained regarding the fate of the men left in the Arctic ocean by the recent disaster to the whaling fleet. They say the autumn winds and currents will drive the vessels upon the southern shore, when the men will have no difficulty in landing. The vessels have a good supply of provisions and fuel on board and the natives are said to be friendly. They think it quite probable that the men and vessels may yet be saved.

The Gould & Curry Fan—The Work it is Doing.

The fan that was started at the east entrance of the Gould & Curry mine about three months ago, and is still running without interruption, is giving a good deal of satisfaction. A reporter of the *Chronicle* accompanied W. H. Patton, construction engineer, one afternoon to observe the working of the fan and note the velocity of the air. The distance from the mouth of the tunnel to the Gould & Curry shaft is 1,500 feet, and the opening into the shaft is 250 feet below the surface, and air-tight coverings are placed over the openings of the different compartments of the shaft to keep the air from entering in from above. The fan when operated as a sucker, by anoking the impure air from lower levels to the opening of the tunnel and thence into the atmosphere. Observations were made yesterday with the anemometer. The instrument was placed in the center of the tunnel about 20 feet east of the fan, and the minute-glass elevated. The fan was making 90 revolutions a minute and the air was coming through the tunnel at the rate of 1,500 feet a minute, which was found to be equal to a displacement of 4,400 cubic feet a minute, the area of the tunnel being 26 6 cubic feet. The temperature of the mine has been greatly reduced since the fan commenced operations, and miners now experience no discomfort whatever in working even in the lowest levels.—*Virginia Chronicle.*

KNIGHT'S American Mechanical Dictionary is a book for all persons who make, buy, sell, use, or want to know anything about tools for machines, or are curious as to the history and development of mechanic art. It is a descriptive word-book of tools, instruments, machines, chemical and mechanical processes; civil, mechanical, railway, hydraulic and military engineering; a history of inventions; general technological vocabulary; and digest of mechanical appliances in science and the industrial and fine arts, etc. For circulars or price address or apply to A. Roman & Co., wholesale and retail booksellers, 11 Montgomery street, San Francisco.

GLENN'S SULPHUR SOAP is not only a curative for specific inflammations of the joints and eruptions of the skin, but it renders the complexion fair, and the texture of the cuticle velvety, and the cheeks blooming with the hues of health. Sold everywhere.

METALS.

[WHOLESALE.

THURSDAY, M., Nov. 9, 1876.

American Pig Iron, ₩ ton	32 00	@	—
Scotch Pig Iron, ₩ ton	31 50	@	32 00
White Pig, ₩ ton	49 00	@	50 00
Oregon Pig, ₩ ton	31 50	@	32 50
Refined Bar	—	@	4¼
Boiler, No. 1 to 4	—	@	5½
Plate, No. 5 to 9	—	@	6¼
Sheet, No. 10 to 14	—	@	5½
Sheet, No. 16 to 20	5¼	@	—
Sheet, No. 22 to 24	8	@	—
Sheet, No. 26 to 28	6½	@	—
Horse Shoes, per keg	7 00	@	8 00
Nail Rod	10	@	—
Norway Iron	8½	@	9½
Rolled Iron	4	@	8
Other Irons for Blacksmiths, Miners, etc.	—	@	4¼
COPPER.—			
Copper Tin'd	37	@	40
Sheathing, ₩ lb	24	@	40
Sheathing, Yellow	21	@	22½
Sheathing, Old Yellow	11	@	11
Composition Nails	21	@	—
Composition Bolts	24	@	—
STEEL.—English Cast, ₩ lb	20	@	25
Anderson & Woode' ordinary sizes	—	@	16
Drill	—	@	16½
Fist Saw	18	@	20
Plow Steel	8¼	@	8
TIN PLATES.—			
10x14 I O Charcoal	11 00	@	—
10x14 I X Charcoal	13 00	@	—
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	24	@	—
Australian	25	@	—
ZINC.—By the Cask	—	@	11
Zinc, Sheet 7x3 ft, No 7 to 10 ₩ lb	—	@	11
do do 7x3 ft, No 11 to 14	—	@	11½
do do 8x4 ft, No 8 to 10	—	@	12½
do do 8x4 ft, No 11 to 10	—	@	12
NAILS Assorted sizes	3 60	@	3 75
QUICKSILVER, per lb	—	@	50 —

GENERAL MERCHANDISE.

WHOLESALE.]

WEDNESDAY M., Nov. 8, 1876.

BAGS.			
Eng. Stand Wht..	10	@	11
Neville & Co's			
Hand Sewed	10	@	11
24x38	10½	@	11½
22x40	11	@	11
Machine do 22x36	9¾	@	10½
Flour Sacks ½s	9	@	11
" " ¼s	8	@	7
" " ⅛s	4½	@	5
Hessian 40-in	12	@	13
do 45-in	10	@	—
do 40-in	8¾	@	—
Wool Sacks, 3½ lbs	45	@	50
do 4"	50	@	52½
Stand. Gunnies	11½	@	12
Bean Bags	7	@	8
CANNED GOODS.			
Assort'd Pie Fruits			
in 2½ lb cans	2 75	@	3 00
do Table do	3 75	@	4 25
Jams & Jellies	2 25	@	—
Pickles ½ gl	2	@	3 50
Sardines, qr box	65	@	1 90
do hf boxes	3 00	@	—
COAL.—Jobbing.			
Anstralian, ₩ ton	8 00	@	8 25
Coos Bay	7	@	9 00
Bellingham Bay	—	@	9 00
Seattle	—	@	9 00
Cumberl'd	—14	00 @	16 00
Mt. Diablo	5 75	@	7 75
Lehigh	—	@	22 00
Liverpool	8 50	@	10 00
West Hartley	—	@	14 00
Scotch	8 00	@	10 00
Scranton	13 00	@	18 00
Vancouver's Isl	10 50	@	12 00
Charcoal, ₩ sk	75	@	—
Coke, ₩ bbl	—	@	60
COFFEE.			
Sandwich Island	—	@	21½
Costa Rica per lb	21½	@	—
Guatemala	20½	@	21
Java	—	@	24
Manilla	—	@	19
Ground in oil	25	@	—
Chicory	27	@	—
FISH.			
Sac. Dry Cod, new	5½	@	6½
cases	6	@	7½
do boneless	8½	@	10
Eastern Cod	3	@	9¼
salmon in bbls	8 50	@	7 25
Scale	½ bbls	3 75	@ 4 00
do	2lb cans	2 40	@ —
do	1lb cans	1 10	@ —
do Oil, R.	½ lb	3 00	@ 4 50
Pick. Cod, bbls	22 00	@	—
do	½ bbls	11 00	@ —
Mack'l, No.	1, ½ bls	11 00	@ —
"	Extra	—	@ 12 00
"	in kits	1 90	@ 2 25
"	Ex mess	3 50	@ 4 00
"	Ex mess, ½ bs	—	@ 12 00
Pic'd Herr'g, bx		3 00	@ 3 50
Soc. Sm'k'd Her'g		40	@ 50
LIME, ETC.			
Lime, St'a Cruz, ₩ bbl		2 00	@ 2 25
Cement, Rocendale, do		2 75	@ 3 50
do Portland		4 75	@ 5 50
Plaster, Golden Gate Mills		3 00	@ 3 25
Land Plaster, ₩ ton		10 00	@ 12 50
MISCELLANEOUS.			
Pulu		—	@ 7½
NAILS.			
Assorted size, keg	3 25	@	4 00
OILS.			
Pacific Gins			
Neat F't No. 1	1 00	@	90
Pure		—	@ —
Castor Oil, No. 1	1 05	@	1 10
Saker's A A		—	@ 1 10
Olive Plagniol	4 85	@	5 00
do Poucel	4 45	@	4 50
Palm lb		9	@ —
Linseed, raw		—	@ 65
do boiled		—	@ 70
Oconnut		—	@ 60
China nut in casks		65	@ 70
Soerm		2 00	@ —
Coast Whales		60	@ 85
Polar, refined		—	@ 80
Lard		1 15	@ 1 17½
Oleophine		—	@ 37
Oewee's Brill's		38	@ 38
Eureka		32½	@ 33
Barrel kerosene		32½	@ —
Oowner Kerosee's		45	@ —
Elaine		—	@ 42
PAINTS.			
Pure White Lead		9¾	@ 10¼
Whiting		—	@ 1¾
Putty		4	@ 5
Chalk		—	@ 2½
Paris White		—	@ 2½
Oobre		—	@ 3½
Venetian Red		—	@ 3½
Averill Chemical Paint, per gal.			
White & tints	2 00	@	2 40
Green, Blue & Ch Yellow	3 00	@	3 50
Light Red	3 00	@	3 50
Metallic Roof	1 30	@	1 80
RICE.			
China No. 1	5¾	@	6½
Hawaiian, ₩ lb	7	@	—
Carolina, ₩ lb	10	@	—
SALT.			
Cal. Bay, per ton	10 00	@	14 00
do Common	5 00	@	7 00
Carmen Island	12 00	@	15 00
Liverpool fine	13 50	@	16 50
SOAP.			
Castile ₩ lb	10	@	10½
Common brands	4½	@	6
Fancy do	7	@	8
CANDLES.			
Grant's	16	@	16½
Mitchell's	18	@	20
SPICES.			
Cloves ₩ lb	45	@	47½
Cassia	23½	@	28½
Pimento	28	@	30
Nutmegs	95	@	97½
Whole Pepper	14½	@	17½
Pimento	16	@	17½
Gr'nd Allsp'ce		—	@ 12
do Cassia		—	@ 20
do Cloves		—	@ 50
do Mustard		—	@ 20
do Ginger		—	@ 00
do Pepper		—	@ 00
do Mace		—	@ 00
Sowen's Pure Ground ₩ lb		—	@ 50
SUGAR, ETC.			
Cal. Onbe per lb		—	@ 12¾
Circle A crushed		—	@ 12
Powdered		—	@ 12¾
Fine crushed		—	@ 12¾
Granulated		—	@ 11¾
Golden C		—	@ 11¾
Hawaiian		10	@ 11¾
Cal. Syrup in kgs		—	@ 67½
Hawaiian Molasses		25	@ 27½
TEA.			
Oolong, Canton		19	@ 25
do Amoy		28	@ 50
do Formosa		40	@ 80
Imperial, Canton		25	@ 40
do Pingsuey		45	@ 80
do Moyune		60	@ 00
Gunpo'der, Canton		75	@ 00
do Pingsuey		50	@ 90
do Moyune		65	@ 25
Y'ng Hy., Canton		28	@ 40
do Pingsuey		40	@ 70
do Moyune		65	@ 87
Japan, ½ chests, bulk		30	@ 75
Japan, lacquered bxs, 4½ and 5 lbs		45	@ 67
Japan do, 3 lb bxs		45	@ 90
do pl'n bx, 4½ lb		35	@ 65
do ½ & 1 lb paper		30	@ 55
TURPENTINE.			
Eastern		50	@ 55

LEATHER.

[WHOLESALE.]

WEDNESDAY M., Nov. 8, 1876.

ole Leather, heavy ₩ lb			25@—
do do light ₩ lb			20@22
Jodot, 8 Kil., per doz	48 00	@	50 00
Jodot, 11 Kil., per doz	68 00	@	70 00
Jodot 14 to 19 Kil., per doz	82 00	@	84 00
Jodot, second choice, 11 to 16 Kil. ₩ doz	57 00	@	74 00
Cornellian, 12 to 16 Ko	57 00	@	67 00
Cornellian Females, 12 to 13	63 00	@	67 00
Cornellian Females, 14 to 16 Kil	71 00	@	76 50
Simon Ullmo Females, 12 to 13, Kil	58 00	@	62 00
Simon Ullmo Females, 14 to 15, Kil	66 00	@	70 00
Simon Ullmo Females, 16 to 17, Kil	72 00	@	74 00
Simon, 18 Kil. ₩ doz	61 00	@	63 00
Simon, 20 Kil. ₩ doz	65 00	@	67 00
Simon, 24 Kil. ₩ doz	72 00	@	74 00
Sobart Calf, 7 and 9 Kil	35 00	@	40 00
French Kips, ₩ lb	1 00	@	1 15
California Kip, ₩ doz	40 00	@	60 00
French Sheep, all colors, ₩ doz	8 00	@	15 00
Eastern Calf for Backs, ₩ lb	1 00	@	1 25
Absep Roane for Topping, all colors, ₩ doz	9 00	@	13 00
Sheep Roane for Linings, ₩ doz	5 50	@	10 50
California Rnasett Sheep Linings	1 75	@	4 50
Best Jodot Calf Boot Legs, ₩ pair	5 00	@	5 25
Good French Calf Boot Legs, ₩ pair	4 00	@	4 75
French Calf Boot Legs, ₩ pair	4 00	@	—
Harness Leather, ₩ lb	24	@	32½
Fair Bridle Leather, ₩ doz	48 00	@	72 —
Skirting Leather, ₩ lb	33	@	37½
Welt Leather, ₩ doz	30 00	@	50 00
Sniff Leather, ₩ foot	17	@	20
Wax Side Leather, ₩ foot	17	@	⅜

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, NOV. 8, 3 P. M.

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GOLD BARS, 880 to 890. SILVER BARS, 12@20 per cent. discount.

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QUICKSILVER in S. F., by the flask, per lb, 50c.

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LIVERMORE, Oct. 1st, 1875.

MESSRS. DEWEY & CO., Patent Solicitors: *Gentlemen*—Yours of the 29th ult. containing my patent to Elevated R. R. duly received, and I hereby return my sincere thanks to the MINING AND SCIENTIFIC PRESS Patent Agency for your promptness and honesty in regard to our business connections. I have received a flood of circulars from Eastern firms, desiring to deal with me, but I have declined any communication with them and prefer, as soon as circumstances will permit, to negotiate with and patronize a home institution; one in which I have faith and confidence—DEWEY & CO.

Again thanking you for your promptness in securing my patent, I remain, obediently yours,

WM. H. HARRISON.

HARD ON THE PUBLISHERS.—Some of our subscribers when called upon by our agents insist that they have sent us notices through (perhaps) a neighbor, the postmaster, or a letter, and we have taken no notice of their orders, for which they feel hard towards us. Now, we never received such notices without responding to them. *It would be suicidal to our interest to ignore them.* The fact is that it too frequently happens that people misdirect their letters; too frequently forget to put the right (or any other) kind of stamps on their letters; they too often send a copy of the paper back, which may never reach our business office, or if it does reach us, may lack the name of the town and county in which the subscriber lives, in which case we cannot (if we have his name) tell what part of our list to find it, to cross it off or change it, without looking over some 10,000 names. Postmasters and their clerks make omissions and mistakes as well. ☞ When you have business with this office remember postal cards and letter stamps are cheap, and ask no one to do that which you can well do yourself. tf

HOW TO STOP YOUR PAPER.—If a subscriber wishes to stop his paper, do not direct the postmaster to return your paper. That will not stop it. Do not write upon it and return it yourself. That lays you liable to a fine. There are three ways to stop it: 1st. When you subscribe, state that you wish the paper to stop at the expiration of the time paid for. 2d. If you did not so expressly order, send a postal card, to reach us any time before the expiration. 3d. If you have neglected these two simple methods, and the time to which you have paid is past, send a letter enclosing pay for each paper issued since your subscription expired, at the rate of eight cents a copy or 33⅓ cents a month. If your paper does not stop promptly thereupon, you may be assured your letter has been misconstrued; and, to test the fact, send a "postal" at once, that measure may be instituted for finding it or recovering the money.—*N. Y. Independent.*

HAMILTON, NEV., May 28th, 1876.

To Messrs. Dewey & Co., Patent Agents:

GENTLEMEN—I write to acknowledge the receipt by express of the U. S. letters patent on my invention for breech loading ordnance, and to tender you again my very sincere thanks for the careful attention you have bestowed upon my application since I first placed it in your hands for the evident great interest you have manifested in it, and for the uniform patient and cheerful courtesy which has constantly marked your correspondence in reference to it. I have had some dealings with other agencies in the same line in times past, and I can assure you that my correspondence with yours has been more pleasant and satisfactory than with any others, and I shall always take great pleasure in recommending your agency to any and all my acquaintances without hesitation or reservation, as I should certainly prefer to entrust my own business in your hands should I have any to transact in the same line hereafter. Yours, etc., J. R. N. OWEN.

WOODLAND, CAL., Aug. 8th, 1876.

MESSRS. DEWEY & CO.—*Gents:* Your letter containing the patent for my Centennial churn has come duly to hand, and you will please accept my many thanks for the prompt manner in which you attended to the business intrusted to your care, and I will take great pleasure in recommending you to any one having anything to attend to in your line. I am having a number of the churns put up, which will be ready for sale in a few weeks. Yours truly, JAMES ROOT.

CAMPO, SAN DIEGO CO., CAL., July 3d, 1874.

MESSRS. DEWEY & CO.—*Gentlemen:* To-day I received the patent and other papers of my animal trap, that you so successfully worked through the patent office for me, for which please accept my best wishes. The chances are that I will have another application for you to make for me before long. I am well satisfied with your manner of doing business, and I think inventors of this coast stand in their own light when they do not put their business into your hands.

I remain yours truly, A. M. GASS.

MINERAL CITY, WHITE PINE CO., NEV., May 2d, '76.

MESSRS. DEWEY & CO.—*Gentlemen:*

I have just received Canadian letters patent for Fuse Lighter. Also, Canadian letters patent for the Drill Extractor. I return you my thanks for the able manner in which you have conducted the business.

Yours respectfully, JOHN W. PLATT.

GOOD PRINTING INK.—We prefer Chas. Eneu Johnson's printing inks, having used them on this paper for the past four years. H. S. Crocker & Co., printers, stationers, blank book and paper dealers, are Johnson's S. F. agents.—DEWEY & Co., Publishers.

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Contents of Pamphlet on Public Lands of California, U. S. Land Laws, Map of California and Nevada, Etc.

Map of California and Nevada: The Public Lands; The Land Districts; Table of Rainfall in California; Counties and Their Products; Statistics of the State at Large.

Instructions of the U. S. Land Commissioners.—Different Classes of Public Lands; How Lands may be Acquired; Fees of Land Office at Location; Agricultural College Scrip; Pre-emptions; Extending the Homestead Privilege; Ent One Homestead Allowed; Proof of Actual Settlement Necessary; Adjoining Farm Homesteads; Lands for Soldiers and Sailors; Lands for Indians; Fees of Land Office and Commissions; Laws to promote Timber Culture; Concerning Appeals; Returns of the Register and Receiver; Concerning Mining Claims; Second Pre-emption Benefit.

Abstract from the U. S. Statutes.—The Law Concerning Pre-emption; Concerning Homesteads; Amendatory Act Concerning Timber; Miscellaneous Provisions; Additional Surveys of Land for Pre-emption; List of California Post Offices.

Published and sold by DEWEY & CO., S. F.

UNITED STATES

Mineral Land Laws, Revised Statutes,

And Instructions and Forms Under the Same.

We have just issued a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office. The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statute of July 9th, 1870. Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Register's Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,

Publishers of MINING AND SCIENTIFIC PRESS, S. F.

To Mining Secretaries.

An amendment to Section 336 of the California Code, taking effect July 1st, 1874, provides that in addition to the regular publication, daily or weekly, of the assessment and sale notices as heretofore,

PERSONAL NOTICE

Must be served as provided in the following quotation from the law:

"The notice must be personally served upon each stockholder, or in lieu of personal service, must be sent through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where the principal office of the Corporation is situated."

The above refers to the ASSESSMENT NOTICE only. Advertisers in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assessment notices printed on slips suitable for serving personal notice under this law at short notice.

DEWEY & CO., Publishers.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Office Cascade Blue Gravel Mining

Company—NOTICE:—A meeting of the stockholders of the Cascade Blue Gravel Mining Company will be held at the office of the company, 311 California street, rooms 3 and 4, second floor, San Francisco, Cal., on Monday, November 20th, 1876, at two o'clock P. M., for the purpose of disposing of the company's stock, and authorizing the sale of the entire property of the company, with any other business that may come before said company. R. F. KNOX, President,

J. M. BUFFINGTON, Secretary.

San Francisco, Oct. 13th, 1876.

Eagle Quicksilver Mining Co.—Location

of works Santa Barbara county, Cal. Principal place of business, San Francisco, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 30th day of September, 1876, an assessment (No. 9) of two hundred and fifty ($250) dollars per share was levied upon all the shares of said company, payable immediately, in gold coin of the United States, to the Secretary, at his office, rooms 5 & 6, No. 302 Montgomery street, San Francisco, Cal.

Any shares upon which said assessment shall remain unpaid on Wednesday, the 29th day of November, 1876, shall be deemed delinquent, and will be duly advertised on Saturday, the second day of December, 1876, for sale at public auction, and unless payment shall be made before, will be sold on Monday, the fourth day of December, 1876, as provided by the articles of agreement of said company, to pay the delinquent assessment, together with cost of advertising and expense of sale. By order of Board of Trustees. WM. H. WATSON, Secretary.

MAGAZINES.	P. A.
Harper's	$4 0
Atlantic	
Godey	
New York Ledger	
Blackwood	
Hours at Home	
Good Words	
Peterson's	3 00
Arthur	
Lady's Friend	
Harper's Weekly	5 00
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Literary Album	
London Society	8 00
All the Year Round	
London Ill. News	15 00

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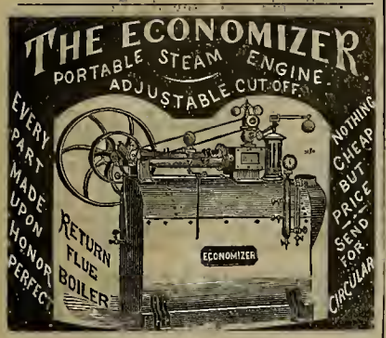

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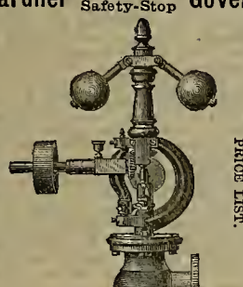

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REVOLVING FURNACE,

For Chloridizing, Desulphurizing and Roasting Ores.

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Best of its kind in use. Price, complete, $215. Also, small Pony Planers and Planing Machine Knives, which are recommended as superior and extra in quality. 100 Scroll work designs free on receipt of stamp. For circulars giving detailed information, address

Patented Mar. 30th, 1875.

GEO. PARR, Buffalo, N. Y.

THE O'HARRA

CHLORIDIZING FURNACE.

Guaranteed to Chloridize from 85 to 95 per cent. of any gold or silver ores that are not more profitable for smelting. Will also desulphurize ores and put them in proper shape for working in cupola furnaces.

Cost of Roasting and Chloridizing by this Process:

Two cords of wood at $6	$12.00
Two firemen at $4	8.00
1500 lbs of salt at 1½c	22.50
Wear of shoes and power	1.50
Cost for 15 tons	$44.00
Cost for one ton	2.93½

In a furnace of three or four times this capacity the cost is decreased by 20 per cent.

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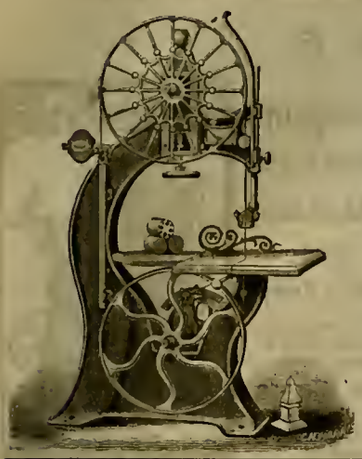

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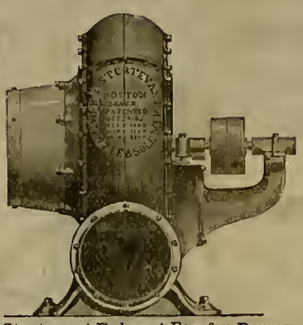

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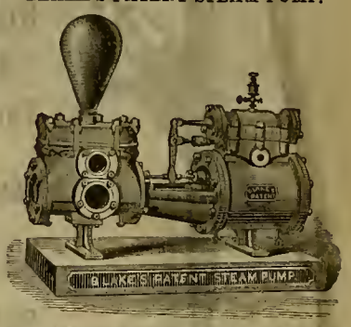

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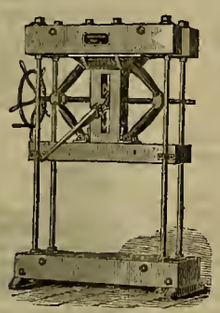

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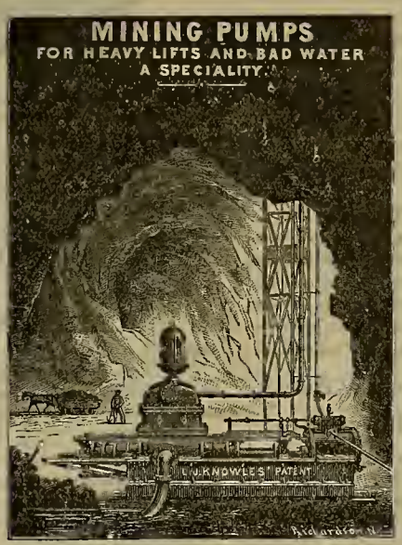

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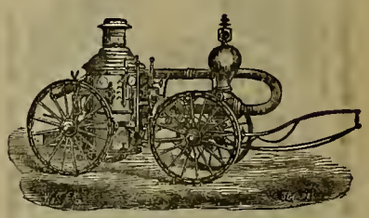

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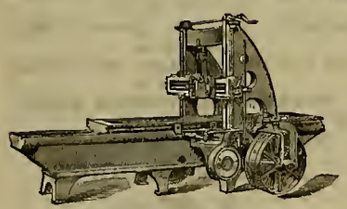

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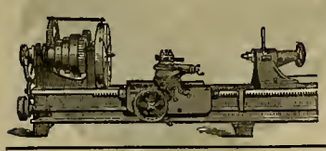

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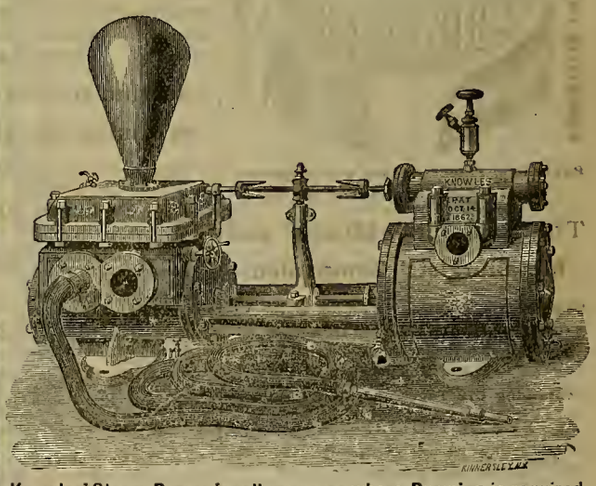

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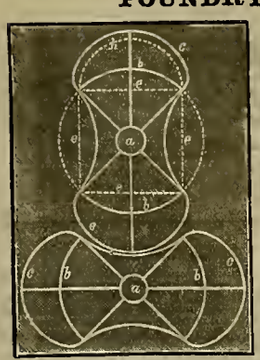

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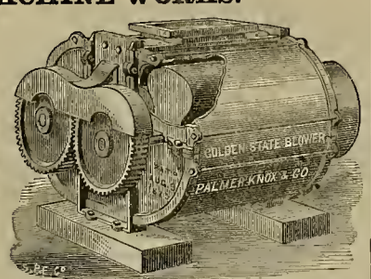

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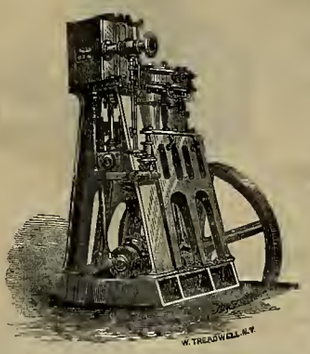

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DEWEY & Co., Patent Solicitors, S. F.—*Gents:* I am much obliged to you for courtesy shown me, and am well pleased with the manner in which you have done my business, and assure you, will cheerfully recommend you to my acquaintances needing such services. Hope to have a case again before long, of my own. I have been an inventor all my life, but let others reap the benefit, or had work stolen from me. Please have the extra copies of my patent, etc., mailed to me direct, and oblige Yours truly, J. H. WOONRUM.

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, NOVEMBER 18, 1876.

VOLUME XXXIII. Number 21.

Items of Interest from the Mines.

We give below items of interest from prominent mines, most of which are collated from letters of the respective superintendents on file at the offices in this city. Considerable of this news is later than that procured from the interior journals:

From the Melones Consolidated company, which has formerly yielded such rich telluride ore, the report of the 12th says: Stopes above lower tunnel are yielding good ore; one has gold in sight all the time. When south drift on 30-foot level is run in say 20 feet, shall, unless instructed to the contrary, sink down 25 feet. Shaft at this point now showing gold in the ledge.

The shaft of the Mint mine is now down 1,301 feet.

The upraise from cross-cut No. 2 on the 1050-foot level of the Baltimore is improving and continues in good ore.

The pump on the Hale and Norcross lowered the water 24 feet last week.

Letter of the 12th from the superintendent of Crown Point, says: The incline is down 137 feet below 1800-foot level, leaving 52 feet on the slope to run to reach 1900-foot level. The Burleigh drills are working admirably; with them we are making three feet per day in the incline, a great saving of time and money over hard labor. We have stopped extracting ore and are making necessary drifts of men in consequence. The Rhode Island mill will shut down as soon as the ore on hand is worked up. The combination pump is now taking our water, and so far as at present tested, is working well.

The various ore breasts on the Consolidated Virginia are looking well. The large blower on the 1500-foot level at the double winze is erected and connected with the large air pipe.

In the Justice mine the 400-foot level northeast drift winze and ore stopes as a whole is looking much better than at any time since the development was made; 500, 600 and 700-foot levels, ore stopes produce their regular uniform grade ore; main north drift 600-foot level looks remarkably well and is advancing in new unexplored ground. North and south drifts on 700-foot level are developing an extensive as well as a valuable body of ore.

The average of ores worked the past week from the Manhattan has been $180 per ton.

In the Best & Belcher the large blower at the double winze on the 1500-foot level is erected and connected with the large 15-inch air pipe which has been extended to the 1700-foot level. It works splendidly.

Operations at the Challar last week were as follows: No. tons extracted, 723½; No. tons forwarded to mills, 894½; average assay value of ore mined, $31.50 per ton.

The work on the 600-foot level south is being pushed ahead as fast as possible, and at present with most gratifying results. The face of drift is showing over two feet of very fine ore, assays from which go from $43 to 1,260. There is no doubt but a short time will develop a splendid body of ore at this point in the mine.

Advices from Virginia City dated the 14th, say that a party of gentlemen, consisting of Lorenzo Sawyer, United States Circuit Judge; Hillyer, United States District Judge; R. S. Messick, attorney for the Comstock mining companies; T. H. Williams, attorney for the Sutro tunnel company, and Adolph Sutro, had a narrow escape from death, on Sunday noon, while inspecting shaft No. 2 of the Sutro tunnel. They had no sooner left the shaft building than the fly-wheel of the hoisting engine, weighing four tons, burst, making a report like that of artillery, and by a centrifugal force sending fragments weighing from 100 to 1,000 pounds in every direction, and through the roof, some of them landing on the hill to the westward, 500 feet distant. The damage is rapidly being repaired, and work in the tunnel header was only delayed one day.

Ophir produced in October $250,000; Belcher, $190,000; Chollar, $49,100; California, $1,178,209; Con. Virginia, $1,150,600; Justice, $174,000; Leopard, $70,000; Manhattan, $119,700; Northern Belle, $171,600; Ontario, $64,900; Tybo Con., $70,000; Modoc Con., $40,000.

Improvement in Hinge Joints.

Menzo Spring, of this city, has recently patented through the Mining and Scientific Press Patent Agency, a new and useful improvement in hinge joints, which we herewith illustrate:

This invention, while susceptible of a wide range of application, is especially adapted to the needs of that class of hinge-joints which are employed in artificial legs at the knee-joint or articulation, where the combined qualities of lightness and strength to resist the usual strain on such parts are great desiderata, and a distribution of bearing and wearing surfaces essential to obviate and overcome the constant wear by friction, means also being employed, whereby, in case such difficulty be not entirely overcome, a repair may be readily effected without injury to the artificial leg or joint.

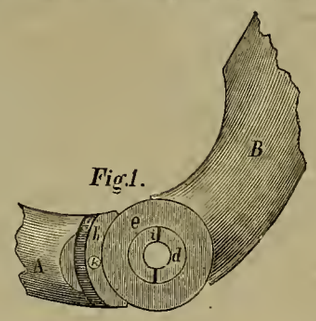

Fig. 1.

Fig. 2.

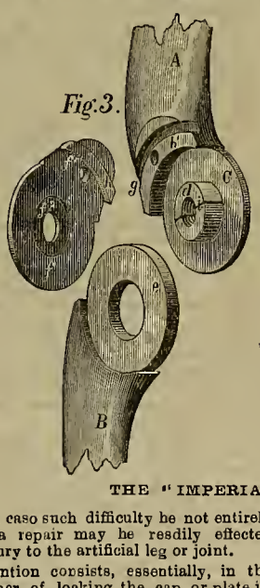

Fig. 3.

Fig. 4.

THE "IMPERIAL" HINGE JOINT.

The invention consists, essentially, in the novel manner of locking the cap or plate in position, as hereinafter more fully described.

Referring to the accompanying drawings, Fig. 1 is a side view of the joint, with the plate or washer, *f*, removed. Fig. 2 is a section, and Fig. 3 is a perspective view of the different parts of the joint separated. Fig. 4 is a top or plan view of the cap-plate and full joint. In Fig. 1, *A B* represents the two bars of the improved hinge-joint. The bar *A* is provided at one end with a disk-shaped seat, *C*, from which rises a hollow and centrally-located hub, *d*. A ring-plate, *e*, is formed upon one end of the bar *B*, and fitted over this hub in order to form a joint or junction of the two bars.

In order to relieve this junction of parts from such lateral strain as would, in case an ordinary washer or protecting-plate and screw were employed, materially impairing the joint, the inventor forms or casts the washer or cap-plate, *f*, with a suitably-shaped extension-piece, f^1, and connects this said piece with the bar *A* by means of a lock or dowel-fastening.

The present construction of this lock or dowel-fastening consists of a curved rib, *h*, cast transversely across the under side of the extension of the cap. This rib *h* is formed to fit with a correspondingly-shaped groove, *g*, in the bar *A*, so that when the cap is placed over the hub and side of the joint it adds materially to the strength of the joint, preventing lateral bend at the hub, and rendering it as effectual for resisting all ordinary strain, as if of solid construction. A recess, f^2, formed upon the under side of the cap *f*, fits over the hub *d*, as shown in Fig. 2, in order to protect the screw from strain. The cap is also further secured in place by means of a screw or screws, *k*, which may pass into the rib *h'*, between the groove *g* and the ring-seat. Any dowel-fastening, however, may be employed in this connection, so that it may be remote from the hub, and securely interlock the washer-plate with the arm.

The screw, which passes through the washer and the hub, will be entirely freed from antero-posterior strain, and removed from contact with the working surfaces of the device, and protected from lateral strain.

As joints of this class are liable to become worn by reason of the constant use to which they are subjected, Mr. Spring forms a split, *i*, in the hub *d*, through which one end of a thin flat wire (equal in thickness to the portion worn away) may be inserted, and said wire then bent around the hub half way, and the end of the wire inserted in the opposite split, thus effectually rendering the joint as tight as in the first instance.

Those desiring further information on this subject may address Menzo Spring, 166 Tehama street, San Francisco.

The furnaces at Ward district are both running, and the mill is progressing nicely.

Mining Suits.

There is trouble in the Lady Bryan company. George W. Reynolds brings suit in the Nineteenth District Court against the Lady Bryan mining company *et als*, to secure the issue of an order of injunction restraining the defendants from proceeding with the sale for delinquent assessments, levied September 15th, or selling any stock so advertised to be sold until the further order of the court, that a receiver may be appointed to take charge of said company. It is alleged that 13 assessments have been levied, aggregating $675,000, and there has been expended not to exceed $350,000, and that the balance has been squandered by the board of trustees of the company; that one of the trustees has not fully paid his proportion of the last three assessments, but has had the same fraudulently marked paid by the secretary; that the books of the company show, under the head "bills payable," $30,000 due by the said company, in notes of said company, but do not show to whom the same are payable nor for what indebtedness said notes were given, and that plaintiff is informed and believes that the said notes were fraudulently issued by said board, without consideration. The sum of $25,000 is alleged to have been expended in collusive purchases. It is also alleged that while plaintiff was inspecting the books of the company, they were mutilated and amended. He finally alleges that if said corporation continues to be managed in the same manner and by the same persons, its property will be wasted and extinguished and the stock of the said company will become worthless and the corporation insolvent, and that a receiver is absolutely necessary to protect the rights of the stockholders.

Upon this complaint, Judge Wheeler has granted an order to show cause and an injunction restraining said delinquent sale.

James H. McCord *et al.* bring suit in the Nineteenth District Court against the Oakland quicksilver mining company. The plaintiffs allege that they are, and for a long time have been, owners in common with defendants, of land in Sonoma county known as the "Lost Ledge;" that defendants deny their right, and forcibly hold possession, and that they have taken upwards of $100,000 worth of cinnabar from the premises. Plaintiffs ask damages in $100,000 and the recognition of their rights.

In the Twelfth District Court L. L. Robinson has commenced suit against the Pittsburg coal mining company, Contra Costa county, to recover $5,000 damages done to his lands and improvements; that the defendant be enjoined from depositing more waste matter on or in Markley creek; that defendant be prohibited from discharging water from its mines into the creek, or from washing refuse material of the mine into said creek.

In the United States Circuit Court, A. P. More, of More Brothers, Santa Barbara, brings suit against Thomas A. Scott, Barker Gummere, Thomas Bard, H. M. Newhall and the Philadelphia and California petroleum company. It is alleged that in 1864 Thomas A. Scott became possessed of the property of the petroleum company, by buying in the mortgages on the property, while he at the same time was the principal director of the company. He caused them to be foreclosed to pay the mortgage debts, which nominally amounted to $81,759, but in reality to about $42,000, a fact alleged to have been well known to Scott. Under a decree of foreclosure he caused all the landed property to be sold for about $90,000. It is alleged that the property was then at least worth $350,000, and is now valued at $500,000. The plaintiff being a stockholder of the company, asks for an accounting between Scott and the company and ascertain what is really due him from the company on account of the mortgages, that the property be sold under the direction of the court, the other *bona fide* debts paid and the surplus money divided among the stockholders. One hundred and seventy thousand acres of land in Los Angeles and Santa Barbara counties are embraced in the suit.

A Brick Machine Wanted.—Francis A. Drake writes us from Prescott, Arizona, to gain information of a cheap and simple brick machine to run by horse-power. If any of our subscribers know of an effective machine in the market, will write to us or our correspondent, they will confer a favor. Such things should be advertised.

Improvements in Treating Ores.

The depression which has for some time prevailed in the metsl trades has certainly been prodnotive of one advantage—it has caused thoee who are engaged in the extraction of metals from their ores to exercise their ingenuity to find waye of doing it more economically or efficiently; and msny of the inventions recently patented give at least some proof that their efforts have not been fruitless. For example, Mr. George Dalton, of Leeds, has designed an improvement in Blake's stone-breaker, with a view to render the application of that machine still more extensive. According to the improved arrangement, the face of the movable jaw ia provided with teeth or corrugations of any suitable shape and pitch, and extending straight from the top to auy required distance below which the teeth or corrugations, which may he either of the same or smaller pitch as the upper ones, are diverted laterelly as has previously been proposed; hut according to the present invention, in lieu of msking the front face of the teeth a cortinuous contour from the top of the jaw to the bottom thereof, the lower or diverted teeth recede—that is to say, the teeth are so arranged that the face of the upper teeth projects to some extent beyond the fece of the lower, or diverted teeth. The stationary jaw is provided with upper teeth and lower diverted teeth in a similar manner, but the teeth are arranged by preferenoe so that the face of the teeth ie straight or forms a continuous contour from the top to the bottom; or the stationary jaw may he made of a counterpart form to the movable jaw or, otherwise, the object being to cause the stone under operation after it has been first broken by the upper teeth on reaching the top of the lower or diverted teeth to roll or turn over by reason of the sudden cbange or recession in the plane of the face of teeth from the upper and lower sets of the teeth of the movahle jaw projecting the one beyond the other, wherehy the stones are reduced to a more perfect cnboidal form in lieu of a semi-elongated form, as is frequently the case when operated upon in the apparatns as previonsly constructed.

Another improvement due to the same gentlemsn, and of still more importance to miners, relates to machinery for crushing or reducing stones and other hard and hrittle snbstances to a fine state of division, and it consists in the employment of two discs, the one rotating and the other stationary, hetween which the snhstances under treatment are to be operated on. The discs are provided with teeth or projeotions, arranged by preference in radial sets, either all of the same dimensions or otherwise, over the whole or any reqnired portion of the face of the discs, and which form the acting or reducing surfaces. The rotating disc is mounted in a suitable frame or cssing on a shaft or axis, by preference arranged horizontally, and provided with driving pulleys and gear, eo as to enable the diso to be driven alternately in opposite directions, in order to equalize the wear of the teeth. The stationary disc is fitted in the frame in such a manner as to admit of its position relatively to the rotating disc being adjusted to snit the degree of division to which the substances are to be reduced. One or hotb of the discs is or are made slightly dished or ooncave for the reception of the substances to be operated upon, and which are fed thereinto from a hopper through an apertnre in the center of the stationary disc. The teeth of the diso are made of hard or chilled cast-iron, by preparing a metal plate or mold to the ehape of the conterpart of the diso with its teetb to be produced, and first pouring in whito iron in a molten condition to a sufficient height to form the teeth, and then filling the mold with hematite or other suitable iron in one continuous operation, wherehy great durahility of the wearing surfacee of the disc ie obtained.

A modification of Carr'e disintegrator, applied to the pulverizing of ores, hae heen designed by Mr. J. Francois, of the Vieille Montagne company. The apparatne he proposes consiste of a hed-plate on which ie fixed a oasing provided with doors for giving acceae to the interior; a top crose frame supported on the tope of fonr columne bracing the whole firmly together. The columns are firmly bolted to a suitahle foundation, the bolte also serving to fix the hed-plate; there is an aperture at the middle of the top frame to receive the hnsh in which the upper jonrnal ot the shaft revolves, the said bueh being made in three parts and centered in the aperture by means of wedges made adjnetable by bolts; there is an intermediate cross frame also fixed to the colnmns, and provided at its center with a sinffing hox through which the vertical ehaft of the mill passes. To the frame is attached a cover in which there are two apertures, one for ehovelling in raw material and the other for receiving the grose fragmenta from the sizing trommel; horizontal discs are fixed one above the other on the ehaft at proper intervale apart; and there are conical hoppers or shoots for returning the mattere after heing projected hy one diac to the center of the diso next helow; toothed or ribbed plates or linings against which the matters are projected by the centrifugal force are provided, the said plates being removable when worn; the bottom of the casing reats on the hed-plate, and ie provided with a stuffing box at ite center, throngh which the shaft passee, and also with an opening or spout through which the pulverized mattera are discharged. The hottom of the casing has also an inner lining, whioh is removable when worn. All the joints are hermetically packed in sheepskin. The shaft is driven at the rate of ahout 500 revolntions per minnte. The essential feature of novelty in the mill is that the snbstances are projected hy the action of the centrifngal force not once only bnt repeatedly against the sides of the apparatns, the substance heing returned each time by the action of gravity in order to be again acted on, and so on. The mill consists of a series of superposed horizontal revolving discs by which the substances to he pulverized are projected against the sides of the apparatns. The said snbstences are thus acted on hy all the discs snccessively, being each time conducted hack by a fixed incline to the center of the diso next below, the operations heing repeated any nnmber of times by increasing the number of discs according to the degree of fineness reqnired.

The next invention to which reference may be made is that of Mr. E. L. Mayer, of Glasgow. It is well known that Spaniah and other pyrites of cupreous minerala contain small qnantities of cobalt and nickel, and if the bnrnt ores resulting from these minerals are subjected to the treatment called the "wet process" of extracting copper, that is, if they are roasted with common salt or other chlorides, or with sulphates, and afterwards lixiviated with water and dilute acids, and the copper precipitated from the resulting solutione hy means of metallic iron or its equivalent—the liquors—which are technically called iron solntions or waste liquors, contain small qnantities of cohalt and nickel, together with chlorides or sulphates of iron, lead, sodium, and other metals. These wsste liquors have hitherto haen mostly thrown away, and the cobalt and nickel contained therein have thns been lost. It ia a remedy for this that Mr. Mayer seeks, and his invention consists in the recovery of the cohalt and nickel and lead from these liquors, or other liqnors containing cobalt, nickel, lead, iron, copper, or any of these, hy precipitating the cohalt and nickel in the metallic state by means of zinc.

The waste liquors are heated by steam, or other heating medinm, to a temperatnre of from 50 to 100 degs. Centigrade, according to the composition of the liquor, the greater the quantity of chloride of sodium and iron in the liqnor the lower the temperature and the longer and slower the treatment throngh the ducts, and are then rnn slowly in a thin stream into shallow tanks containing scrap zinc; or preferebly through shoots or dncts made of zinc of from 50 to 200 feet in length, which enables the cohalt, nickel and lead to be precipitated upon the zinc, and when desired to maintain an eqnable temperature of the liquors the shoots or ducts may he heated. The precipitate is then taken from the scrap zinc by friction, agitation, and washing, or otherwise, as soon as the latter ie found to have ceased to act effectively upon the cobalt and nickel in the solution or weste liquor, or when zinc shoots or dncte are used, the deposit is hrushed or scraped off the surface of these at intervals of two honrs or so; or when the precipitate has attained a maximum thickness of ahout the 32d part of an inch, the shoots being made sufficiently thick to admit of this coustant corrosion and ahrasion by the metals deposited on it. This deposit is a marketahle product of considerahle value, as it contains the metallic cobalt and nickel with lead, zinc, iron, copper, and other metals, which may be separated therefrom, and the cohalt and nickel recovered hy means well known for the separating of these metals.

Considerable advantage resnlting from having facilities for thoroughly roasting and drying pulverized ores with rapidity, the invention of Mr. L. Cawell, of Hampton, New Brunswick, is worthy of attention. A hollow cylinder, consisting of a lining of fire-brick or other refractory material, contained within a shell of plate iron, is employed, or the lining may he otherwise hound so as to render the structure snhstantial and permanent. The cylinder has a cover and reste on an annnlar plate supported on columns, a central ehaft passes through the cylinder and has its upper bearing in the cover. Within the cylinder, and extending entirely across the same, are a number of circnlar stationary plates arranged at equal distances apart, these plates alternating with discs which do not extend to tbe interior of the cylinder. The diecs have central clutch-like hnbs adapted to the shaft, and the hnh of one disc is connected to the hubs of the discs above and helow by sleevee, which embrace the shaft and pass through openings in the stationary plates. The lowest disc of the series is arranged to revolve as closely as possible to the annular plate on whioh the cylinder etands, and the hnh of thia diso is clutched to a fixed collar on the ehaft, or has clutch-like projectione adapted to recessee in the hnh of a hevil wheel on the shaft, which ia driven from a horizontal shaft through the intervention of another hevil wheel. The clutch-like hnhe of the eeveral discs and the connecting sleeves form a continuous tube driven from the heviled wheel at the lower end of the eerice, and the aeries of discs ia driven from the said wheel through tbe medinm of this tube, and the central shaft is subjected to no torsional strain, ite eole purpoae being to maintain the discs in their proper lateral positions concentric with the cylinder. He prefers to make the upper surface of each diso slightly convex or inclined downwards from its center to the outer edge. On the uppermost diec rakea bear, each having arme ninged to luge on the under aide of the cover; these rakes have a tendency to move the pulverized ore to the edge of the diec, whence it falls into the flanged plate helow. This plate he prefers to make slightly concave or inclined from the edge downwards towsrds the central opening. Rakes similar to those ahove are hinged to the under side of the disc, and bearing on the plate tend to move the pulverized ore inwards towards the central opening, whence it falle into the second, and tbe ore by the movement of the discs and action of the rakes is made to pursue this zig-zag course until it reaches the lowest diec, from which it is raked into an annular ohannel, and so to the outlet opening. The pulverized ore is introduced into the cylinder through an opening in a hopper at the top of the cyliuder, the hopper heing provided with a rotating sorew which agitates the ore. Heated products of combustion from an adjacent furnace or furnaces are introduced into the cylinder, and passiug npwards in a zig-zag course meet and are brought into intimate contsct with the pulverized ore as it descends through the same course, the products of combustion finally esceping through an outlet to a proper dust chamber or chimney.—*London Mining Journal.*

The Polar Sea.

I have always believed iu the existence of an open polar sea, says Dr. Hayes in the New York *Herald*. I think I stood upon its shores in 1861. I believe thst sea is navigable, and I am utterly at a loss to understand why the *Alert* and *Discovery* did not sail upon its waters, unless we assume that the spirit which animated Baffin, Ross, Parry and the long list of Arctio heroes has died out with the advance of steam, the telegraph and home comforts. Now, please remember that this great English expedition really started where I left off. The North pole was only approched by some 80 miles nearer than I approached it. It is stated that the ice was 80 feet thick. In plain English, I don't believe it, and I don't understand how it happened that a grand expedition, fitted out with snch a great flourish of trumpets, at such enormous coet, should have got frightened after one winter, and hurried home with the old cry that the North pole can't be reached. They did not stay there long enough to prove it or tell anything abont it. To he sure, the matter of getting to the North pole is of little consequence in a business point of view. It may be of no consequence whatever, hut here is an expedition fitted out expressly to do it; has unlimited time; has every possible advantage; has the unqualified support of the British government, and yet, frightened hy one winter's experience, hurries home to report another failnre. The *Polaris* did hetter, for even after the death of poor Captain Hall, it stuck until it was crushed hy the ice. Had Captain Buddington heen imbued with the same emotions as actuated Captain Hall, I believe he could have steamed to the North pole, and I ventnre to say that, whether the *Alert* conld or could not have gone there, one year's experience was not enough to prove it.

I am a firm believer in an open polar sea. It is not a sea available for the purpose of commerce, hnt it is certainly a sea or ocean, as you may please to call it. Whatever interest attaches to it is of a purely scientifio character. To pursue science requires patience, and to go with a great government expedition, especially to make scientifio discoveries, with the distinct understanding that there is no other motive, seems to me to require something more than a simple "It can't he done." So far as getting to the North pole is concerned, I am sure it can he done, and, in failing to do it after only one year's trial, I think the Engliah expedition has shown a lamentable lack of English pluck. They say that they had a dreadful time of it; some people were frozen, and three or four of them died. That was their own fault. Traveling in the Arctic regions is not more terrihle or more dangerous than traveling anywhere elee. It is a matter of care and judgment. Accidents may happen, but it ia the duty of a commander to see that they don't happen. I believe I have made ae long a sledge journey aa any one on record. I experienced a temperature during that journey of 70 degrees helow zero, and yet there was never in all the 60 daya occnpied hy the journey so much aa a frost-hite to any of the party, and yet thia was in the exact region where the English expedition has been finding ae they say, 80 feet of ice. The *Polaris* wae in the same qnarter and got nearly as far north.

The *Polaris* met with no such ice, bnt met with the same evident demoralization. In my opinion, there is no eerions tronhle about getting to the North pole, but I don't believe it can be done in one year, and maybe not in two, and I must say, and that most emphatically, that the resnlts of thie laet of the Arctic expeditione are in no way commensnrate with ite pretensione any more than they are with its opportunities. Its like will never he seen again, and the chance for a grand achievement haa heen thrown away. In short, the whole thing is a failure without the explanatory clause. "We stnck till the last moment, and did what we could." They had food and all manner of stores for two yeara more, and ehould, in my judgment, havo elaid there unti those stores were eaten up.

In the Arctice it is generally down to 29 degrees, hut even there it does not freeze unlese the air ie entirely calm, for water in motion does not freeze. I have seen waves rolling at 50 degreee below zero, without a particle of ice in eight. The next day, when the air fell to calm, the whole sea waa covered with a cryatal mantle. The Arctic ocean is over 2,000 miles in diameter, and if anybody will once get over the land-clinging ice belt and into the middle of the Arctio eea, he might sail there to his heart's content, and I, for one, cannot see why this English expedition should so soon have abandoned the field. There are certain avenues to this great, mysterious, unknown water. There is the oft-tried Behring strait, there is Baffin hay, there is Spitzbergen sea and the Greenland sea. In this last quarter the Germans have found a new land. This land lies midway hetween Spitzbergen and Nova Zembla, which land I predicted many years ago in an address before the American geographical society. It completes the almost continuous line of land that invests the great polar basin.

In conclusion, allow me to say this great English expedition from which so much waa expected looks very like a farce. The *Pandora* was sent out to carry letters, which she left at Lyttleton island, near where I wintered in 1860-61, and, with the beat intentiona in the world, discovered the great expedition, not where it was expected to he, hnt in mid-ocean on its way home. And now, after all, the great object has not been attained. The scientifio world and the curious of all civilized nations are grievously disappointed. Bnt they are convinced that, since the British government has expended its hest efforts and spent its means to the extent of $750,000, we ehonld have some positive knowledge as to what nature is busy with about the North pole.

Georgia's Gold Mines.

Few people have any idea of the amount of gold that is dng out of the north Georgia hills and shipped to Atlanta every month. Some days ago we published a news-note in which we stated that James R. Wylie & Co., of this city, received about $3,000 a month in gold dust from that region. We learn that Messrs. Moore, Marsh & Co. receive donble as much, and that others receive fnlly that much. In fact, it pours in a yellow stream from the rich mountsins into our favored city. There are single mills at Dahlonega that get out $5,000 worth of gold per month. We do not helieve that less than $30,000 worth of gold per month reaches Atlanta from north Georgia every month; possibly $50,000.

Around Dehlonega there is a perfect nest of mills. The Hand gold mining company are running at present a 20-stamp mill; the Benning mine a 10-stamp mill; the Lawrence mine a 5-stamp mill; the Findley mine a 29-stamp mill; the Huff mine a 5 stamp mill. There we have 64 stamps in mills working witbin less than 2 miles of Dahlonega. Mr. Lombard has an 8-stamp mill, and the Ogle mill with a 5-stamp mill are within 2 or 3 miles of the other. Beeides these there are several mines in White county heing worked successfnlly. There are others in Hall county doing qnite as well. Apart from the mills there is a perfect swarm of vein workers or operators, who work deposits or veins instead of the ore. They simply wash sand and dirt iu hnge shsking-troughs, and gather the gold specks with quicksilver, which gathers every particle of the metal into an amalgam. These operationa need no mills, hut hring a very large amount of dust into market. Among others of the rich mines are notably the Ballafield, the Glade, the old Findley, the Veasey and the Jonea.

There are scores of these vein or deposit mines. The little hoys in and ahont Dahlonega spend their leisnre hours in sifting the loose soil in a panful of water, and make 30 to 70 cents a day. We were shown on yesterday a solid nugget of gold as large as the first joint of your little finger, that waa picked up by the street workers in Dahlonega, as they were grading the public road. Atlanta is the market for all these companies. They ahip a quantity of their dust here and buy their gooda here. There is hardly a day bnt that strangers pass through the city en route to the gold fields, and north Georgia will, hefore long, literally swarm with miners. We saw on yeterday several specimens of eilver ore takeu from a field near Gainceville, which sssay $76 to a ton. There were huge blocks of it picked up at random and eent to the asaayist, who upon returning the assay, made an offer of $13,300 for 30 aoree, which wae accepted. The aeaayist, Mr. Loman, of Boston, ie now preparing to forward machinery to crush the ore and win the eilver heart ont of it.—*Atlanta Constitution.*

THE BLACK HILLS TELEGRAPH.—Mr. Wm. H. Hibhard, the energetio projector and hnilder of the telegraph line now completed and in fnll operation hetween Cnster City and Fort Laramie, arrived in Deadwood yeterday. The pnrpose of his visit is to arrange for the extension of hia line to thia place, and we hope to-day that such arrangements may he effected as will seenre us telegraphic commnnication at an early date. Mr. Hibhard informs us that at an interview with General Sheridan, at which Captain Gardner wae aleo present, the General expressed himself aa anxions that the telegraph line should be completed to Deadwood, promising at the same time that if the line he completed he (the General) wonld canee a road to be hnilt immediately hetween Tongne river and Deadwood, and make the latter place the supply hase for the Tongue River post. The importance of such a tributary to our city is great, as the snppliea for over 1,200 troops will go from thie market, to say nothing of the advantage which must result from settlemeut along over 150 miles of a good thoroughfare.—*Black Hills Pioneer.*

WAXED shoe-pegs (saturated with shoemaker's wax) are claimed to make shoes that are durable, impervious to water, easy to the feet, and not liable to rip in the shank.

MECHANICAL PROGRESS.

Making Stone with Steam Hammears.

The Ciucinuati *Journal of Commerce* describes the manufacture of an artificial etone under the steam hammer, as follows: After long and weary years of close and uuinterrupted application a result hus been attained in the mauufacture of a most excellent and enduring quality of etoue which bids fair to completely revolutioniz9 the existiug state of things. By the application of the etroke of the steam hammer upou properly mixed proportious of hydraulic and commou limes, hydraulic cements, pulverized iron elsg, saud, broken stone, marble or granite, clays and minerals, inclosed in properly coustructed molds and dies, a stoue has been produced which is pronounced by the most skilled artisans and mechanical engineers superior to anything hitherto made; enduring as the Pyramids of Egypt themselves and unsurpassed in beauty and appearance by any stoue ever quarried. Eveu marble has been made by this process equal in general effect to the purest Italian and defying the best experts to tell it from the native marble itself. And this marble is made in all the different colors and variegations, with any desired design or configuration upou its surface. Any design which can be cast or cut upou iron and steel plates, no matter how elaborate or delicate, can instantaneously be reproduced in marble or stone by the use of the marvelous means employed in the manufacture thereof. Not only can the work be done thoroughly and rapidly, but blocks of auy desired size can be made, from the smallest and tiniest tiling stone to the largest and most massive blocks used in civil engineering. The time employed in making these blocks is no less marvelous than the invention itself. So quickly are they turned out that within a week to a month's time, according to the character and extent of the work, the blocks will all be ready for use in the hands of the builder. By the same method bricks of any desired quality, make, size and color, can be forthcoming, and of a finish far superior to the most perfect pressed brick now in use, and with a rapidity of production hitherto unapproached. One great peculiarity about the Phœuix stone is this, that while the grain of the stone presente the appearance of ordinary stoue, and is almost identical with it, so dense does the stoue become under the repeated and heavy blows of the steam hammer, that it loses all porosity, or porosity is reduced to the minimum, rendering it absolutely impervious to water or moisture. The absorption of water by brick is very great, as we all know, and to a greater or lesser degree this is true of all stoues, but the most repeated and prolouged tests by water fail to make any impression upon the surface of the Phœuix. This, it will be observed, is of the utmost importance, especially where stone is required under water, and whereit is subjected to the actiou of the elements, frost, etc., as well. A steam hammer with a ram of 2,500 pounds is capable of manufacturing at the rate of 100,000 brick and 10,000 feet of flagging daily.

SHEFFIELD COMING TO AMERICA.—We have formerly noted that the fact that some Sheffield steel manufacturers, finding their American business dwindling away and enormously cut down, owing to the heavy duties imposed at the United States ports, had resolved to emigrate to this country in part if not in the whole of their interest. Messrs. Sandersou Bros. & Co., of Sheffield, have issued a circular announcing a transfer of their business to the State of New York. They say: "Inasmuch as the founders of our house were the pioneers of the American trade, and were conspicuous among the earliest manufacturers of cast steel after the death of the iuventor in 1776, it seems appropriate that we should also be the first to accept the logic of events, and transfer the manufacture of English steel to America; we have, therefore, the pleasure to announce the orgauizatiou of Sanderson Bros. steel company, an American company that will continue the business of our present firm in America. The new company has taken our stocks of steel in the United States, has acquired the right to use our name, trade marke and good will, and will produce precisely the eame qualities of steel as we have hitherto done, using the eame brands of Swedish iron until American iron shall be found to equal it. The new corporation has bought what have hitherto been known as Sweet's manufacturing company's works and premises, which are situated at Syracuse, State of New York, and have already commenced operations with prospects which are of the most promising character. The capital of the corporation is $450,000, equivalent to rather over £100,000 of our currency, in portions of 4,500 shares of $100 each."

A RUSSIAN MANUFACTURER.—Demidoff is said to be the richest man in Russia, and he ie certainly more extensively engaged in industrial occupations thau any other subject of the Czar. He owns the town of Nigetalisk, in the Ural, and his 13 establiehmente cover altogether an area of about 38,000 acres. It is more particularly with iron that Mr. Demidoff deals, but he finde aleo upon his property manganeee, copper, lead, gold, diamonds, etc. At his iron works, Mr. Demidoff now producee iron in bare, platee, raile and steel to the aggregate extent of 27,000 tons per unnum. The number of workmen employed by Mr. Demidoff is about 11,000.

PREVENTION OF SMOKE.—A new iuvention, having for its object the prevention of smoke which ordinarily arises from the firing of steam furnaces, has been patented by Messrs. Thomas Ellin & Co., of the Sylvester works, Sheffield. It is upon an entirely new principle. In the front of the boiler is built a furnace, having in the interior an arch of fire-brick. The firing is done on an entirely new principle. At the front of the furnace, in three tiers, are placed slantiug bare, the end of each tier resting on a grate. In front of each of these grates is placed a shelf of iron, and it is upon these shelves that the coal is thrown. It is then thrust through a niche into the fire, where it is ignited, and as it is consumed the ashes and slag fall down the tiers of bare until they are deposited in a pan at the bottom of the furnace. The result is that the furnace is always clear of dirt and a bright fire is insured. As the coal is put in beneath the bars, the lighter gases are ignited in the fire, and the heavier ones are consumed by the heat which is radiated from the upper portion of the furnace. No matter how much coal is "put on," the whole of the smoke is consumed as fast as it is made, and were this invention adopted in all cases in the town where steam boilers are employed, not only would there be a saving in the cost of fuel, but the town would have a chance of losing its present cognomen of "the city of soot."

AMERICAN PROGRESS.—The London *Times*, of August 14th, gives prominence to a letter written by an English judge at the Centennial, who says he saw enough here to convince him that American manufacturers had been making remarkable strides during the past 20 years. Mr. Douglas Galton was a British judge in the group of railway appliances, and immediately upon his return home he penned this letter. He had previously visited this country years ago, and during the interval we all know that American manufacturing progress has been remarkable. He speaks of the great advance in our industries as shown by the growth in the amount of coal mined, and says that our higher wages, compared with England, are counter balanced by the use of machinery to an extent much exceeding that generally in use in England. Observing the substitution of steel for iron rails on our railways, he candidly remarks that the new raile are almost all made in the United States, and that it is not probable that England will be called upon much longer to supply us with rails. He goes further, and, speaking of general manufactures, says England not only can no longer expect to get a market for her manufactures in the United States, but she must be prepared to find our manufacturers competing with her in every market to which they have access.

SOFT STEEL.—The *Chemical News* gives an account of some experiments with the chrome iron alloys, in which a strange phenomenon was observed. It is well known that chromium is very hard, and scratches even hardened steel; meanwhile an alloy was obtained which was malleable, and in a fresh state could be easily bent. It was also remarked that sometimes in opening the crucibles nothing but slag was found, but in breaking the crucibles the alloy was found to be in the bottom of them—which may be attributed to the corrosive properties of the liquid alloy, as this often penetrates even through the bottoms of plumbago crucibles. The above mentioned alloy was analyzed, and the following average composition was found: Metallic iron, 96.40 per cent.; metallic chromium, 2.30 per cent.; carbon traces, lime, silica, 1.30; total, 100. By melting a mixture of cast iron, tin and lead in the following proportions a very liquid alloy is obtained, viz, 79 per cent. cast iron, 19.50 tin and 1.50 lead. This alloy is of handeome appearance and fills perfectly well the casting mol is, being thus adapted for use in the casting of small articles.

BLOWERS.—Improved blowers have, within a few years, been adopted in many smith-shops, and the leather bellows—which was once so characteristic a feature of the wagon and horseshoers' shops—is rapidly becoming a thing of the past. The modern blowers are operated by hand, foot, or very frequently by steam power, and the principal advantages which they possess over the old bellows are: first, great economy of room; second, durability; third, the production of a force-blast that can be varied according to the requirements of the work in hand; fourth, saving in fuel, owing to more perfect combustion; and, fifth, great saving in time, as the operator has a more perfect control over the fire, which can be rekindled and the heate taken in a much shorter time than is poseible with the bellows.

ACTIVITY IN CAR BUILDING.—The close of the Centennial will eo diminish travel, that for a considerable time very few new paesenger cars will be needed. With the freight equipment of the roads, however, the case is different. In order to meet the requirements of traffic, renewals muet be made in the near future on a much more extensive scale than at any time within the past three years. A large portion of the present stock is old, and has become eo battered and worn that it will shortly be unfit for service. This must be replaced by new; and it ie fair to conclude that business in the car shope will be brisk for the ensuing year.

GRUMBLING BUOYS.—Buoys have been placed in New York harbor which give out a moaning sound when rocked by the waves. They are intended to warn vessels away from shoal places in foggy weather. Under favorable conditions they can be heard three miles.

SCIENTIFIC PROGRESS.

Fruit Pollen.

Among the interesting questions by no means as yet definitely settled, says the N. Y. *Independent*, is that which refers to the immediate effect of pollen on fruits. Up to a few years ago it was thought that there was no immediate effect, and that the influence was only seen in the plante produced from the seed. But in the case of the Indian corn it is clearly proved that there is an influence direct on the seed itself. It is also thought that there is an influence on pumpkins, squashes, and other cucurbitaceous plants; but this is little more than an impression derived from cultivators, and, so far as we know, there have been no experiments directly made to test the point. There have been many curious facts placed on record that seem to be explicable on no other theory; but it is a good rule not to accept a guess in cases where direct experiment can be made. In the Indian corn the change immediately effected seems confined to the seed. The carpellary structure remains the same. If the cucurbitace, or other class of plants of a somewhat similar character, had their fruits immediately affected, it would be regarded as more remarkable than that the naked seed of corn should change. Mr. C. W. Garfield, of the Michigan agricultural college, deserves the credit of attempting direct experiments with the apple, and he believes there was a direct effect on the fruit. He made ten crosses, of ten specimens in each cross. There appears to have been ninety-seven fruit resulting. Only three kinds showed any change from the peculiarities of the female parent. In one it was the pollen of the Wagener variety on a Tallman Sweet. Unfortunately, the Tallman Sweet is known to be variable, independent of cross fertilization, so that this needs to be gone over again. If a number of trials between the two always had the same result, it would be conclusive. Another was a Tallman Sweet on a Red Astraoban. The distinct character of these apples renders the result interesting. The apples were mild, color (deep red in the female, yellow in the male) modified, and the form flat. There is no doubt of a great probability here; but it would be still well to repeat the experiment with the same two kinds another year. The other case in which change was noted was where the Wagener was the female, and the Tallman Sweet the male parent. The change was in respect to flavor and color. These are among the most interesting facts we have met with in relation to this subject. Flavor (that is, in respect to "sour or sweet"), form, and color will vary so, even in the same variety and when there is no thought of cross-fertilizing agency, that it would be safe to ask for a few more experimente before regarding the matter settled. There are other points not subject to inherent variation, that it would be as well to watch the effect of hybridization on.

The Meeting of the National Academy of Sciences.

The fall session of the National academy of sciences opened in Philadelphia on October 17th, under the presidency of Professor Joseph Henry. Professors Joel Allen, of Cambridge, George F. Barker and W. H. Gable, of Philadelphia, and E. S. Morse of Salem, and General John Newton, were elected members. Professor J. E. Hilgard read an essay on the variations in the standard bars to which all measures are now referred in France, England and in this country. He had compared the iron bars sent to the United States as duplicates of the English bronze bar, and found a variation of 0.00034 inch, which is not an admissible error. Professor Hilgard believes that the bronze and not the iron has changed, and that the alteration is due to one of the metals in the alloy being in a state of tension when the standard was made. In making the platinum standard meter in Paris recently, the metal was remelted and worked over nearly 200 times. The duplicate standards, made of cast steel, for this country, are correct to the .0001 of an inch, and differ from each other by less than .00001 of an inch.

Dr. J. L. Leconte read a paper on the hydrocephalus, an insect which resembles a fat mole cricket, and of which there is a specimen in the Brazilian Centennial exhibit. He considered that a careful study of existing insect life will do more to demonstrate the course of development than all that can be accomplished by means of fossils, owing to the fact that insects have kept such forms as they have now, with comparatively slight change, during many ages. The hydrocephalus is especially of service as a missing link between such relatione.

THE POSITION OF SCIENCE IN MODERN LIFE.—In the opening address, the president of the French association for the advancement of science said: Natural science is no longer content with the contemplative attitude which sufficed for Newton and Laplace. Science is now mixed up with all the personal acts of our existence; she interferes in all measures of public interest; industry owes to her its immense prosperity; agriculture is regenerated under her fostering care; commerce is forced to take her discoveries into account; the art of war has been transformed by her; politics is bound to admit her into its councils for the government of states. How could it be otherwise? Have not mechanics, physics, chemistry, the natural sciences, become intelligent and necessary agents for the creation of wealth by labor? If comfort is more universal, the life of man more prolonged, wealth better distributed, houses more commodious, furniture and clothing cheaper, the soldier better armed, the finances of the state more prosperous, is it not to the sciences that all this progress is due? Whether we wish it or not, we must needs accept science as a companion to possess her or to be possessed by her. If you are ignorant, you are her slave; if you are skilled, she obeys you. The future belongs to science; unhappy are they who shut their eyes to this truth.

Purification of Metals by Filtration.

Prof. Lampadius, of Freiberg, concluded that at a certain low temperature of fusion the metallic impurities present in the more easily fusible of metals would separate, partially as such, and partially as definite crystalline compounds, and float in the fused mass, from which they could be removed by filtraton. Experiments by him in this direction were so far successful that the expected definite compounds were found upon the filter, but the metallic filtrate was still very impure. The filter was made of quartz sand, slag, etc., which was not wet by the molten metal. Carter, however, according to a communication by him, in trying to adapt this principle to the purification of Bohemian tin, on a commercial scale, sought for material for a filter, which would be wet by the metal to be purified without being dissolved in it. Iron, with its comparatively high temperature of fusion, and its adhesion for tin, as manifested in the tinning of iron, was employed for the filter. Five hundred strips of tinned iron, as thin as paper, about six-tenths of an inch long, and one-fourth as broad, were packed tightly in a square iron frame by the aid of wedges, and the frame was then luted into a suitable opening in the bottom of a graphite crucible. The tin, melted in a second crucible, was allowed to cool until the separation of fine crystals on the surface was noticed, and the thickening metallic mass was then poured into the filtering crucible, when the still fluid pure metal passed through, and a pasty magna was left in which iron, arsenic and copper, concentrated to a great degree, were found combined with tin, while the filtered tin proved to be almost chemically pure. Fifty hundred weight were purified in the crucible described. Other forms and other materials for filters are suggested, and other possible application of the method, as in the separation of silver from lead containing the former metal.

Electro-Magnetic Experiment.

EDITORS PRESS:—I fancy that I have found something new in electro-magnetic force, for I do not know what else to call it. I was polishing a glass door for a small cabinet. It lay on a table where were scraps of paper, leather and nut shells. I was rubbing the glass with a piece of sheep skin, tanned white. Soon I noticed that all the particles began to hop about, as though endowed with life, and would adhere to the glass. I then put under larger pieces of paper, cut in various forms, and they would whirl and hop, etc. I noticed that the grain side of the leather was positive. As I was rubbing the glass with that side, everything was in motion, and so rubbing the glass with the other side, the particles and paper would drop down and lie quietly. The glass lies to lie in a frame, puttied in. My glass is 17 by 24 inches; the larger the glass the stronger the magnetic force. I would like to have you make the experiment, as it is a nice parlor amusement, and give us an idea of what you think about it, through the columne of your paper, and thus oblige a subscriber. —OLIVER LEPPER, Dutch Flat, Cal.

Our correspondent's discovery is nothing new; it is only one of a hundred exhibitions which can be made of electricity as excited by friction. The kind of electricity developed in a body has long been known to depend not only upon the nature of the body, but the nature of the body with which it is rubbed. The kind of excitement is also affected by the direction of the rubbing, as is shown by rubbing silk ribbons cross and lengthwise. The color of the body has also been found to affect the kind of excitement. The experiment our correspondent describes is, as he says, a nice parlor amusement, but there is nothing about it which has not been described before.

THE WINDINGS OF RIVERS.—Prof. James Thompson, at the meeting of the British association, exhibited a model to illustrate the action of rivers in modifying the forme of their windings. He said that most treatises on hydraulice speak of this action as if water consisted of particles impinging against the outer side of the bend, and so wearing it away. This is objectionable, as water does not impinge but presses against the outer bank. The action is more properly as follows: The stream lines of water flow less rapidly from the center to the outer, and more rapidly from the center to the inner side. In consequence of this and fluid friction, there is a flow of water at the surface from the inner to the outer side, and below from the outer to the inner. This causes the earth at the outer side to be transferred along the bottom to the inner bank. He illustrated these remarks by the behavior of threads attached to pins stuck in at different parts of the bend of the model river. The bottom threads inclined towards the inner side, while the upper threads inclined slightly towards the outer. The actual state of matters could also be seen from the mud raised by the flow of the stream in the model.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 Wk to Sept. 26.		1 Wk to Nov. 2.		1 Wk to Nov. 9.		1 Wk to Nov. 16.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	25c							
Advance								
Alpha	45½	43½	46	44	45	41	41	30½
Alta	3	2½	2¾	2	2¾			
Amer'n Flag								
Amer'n Flat							75c	
Andes	2¾	2	2½	2		1⅞	2	1⅜
Alps			50c					
Amazon								
Belt'n & Con	3½	2	2	1⅞	3	1¾	2½	2
Belcher	18¾	18¼	18¼	16	17	16	15¾	13¾
Belmont	2				2		2¾	2
Best & Bel	49¼	44¼	49	44¼	48	42½	43	41½
Buckeye								
Bullion	34½	35¾	36	34	33	31½	35	24
Caledonia	10½	10	11¾	9¼	9¼	9	8⅞	8¼
California	59¼	57	57½	56	57¼	54¾	55¼	50
Challenge			3		3		3	
Chollar-P'ot	81½	78	79	76	76	72½	72¾	67
Confidence	16	15¾		15	14	13¾	13¾	12
Con Imperial	4	3 80	3.85	3.57½	3.62	3 50	3.45	2½
Con Virginia	55	51½	54¼	50	52	49¼	49¾	43½
Crown Point	13	11¾	11½	9⅞	10¼	9¼	10	8¼
Coso Con	25c		40c	25c	50c	35c	35c	20c
Daney								
Davis		4½	5		4½	4	3½	2½
Eclipse								
Empire (Id)								
Eureka (G V)								
Eureka C	14	13¼	13	12¾	13¼	11¾	12	11¼
Exchequer	15¼	14¾	15⅝	14¾	14¾	14	13¾	11¾
Europa								
Gila	75c	65c	70c	65c	65c		60c	55c
Globe Con								
Golden Chariot				75c	1¼	1¼	1¼	
Gould & Cur	16	14¼	15⅜	13¾	15	13	13¾	12¼
Hale & Nor	9	6¼	8½	7¾	7½	7¾	8	6¾
Ida Ellmore								
Jefferson	24c		25c					
Julia	7½		7¾	6¾		6¾	6¾	5
Justice	25¼	24	24½	23	24½	21¼	22½	20¾
Jackson	5	4¾	4½		4½	4	3½	
K K Con	3¼		3		3	2¾		
Kentuck	13	12	13¾	10½	14¼	11¾	13½	10¼
Knickerb'k'r								
Kossuth	2½	2¼	2¼	1¾	1⅝	1¼	1¼	
Lady Bryan	80	60c	75c	50c	70c	65c	65c	60c
Lady Wash	3	2¾			2¾	2¼	1¾	1¼
Lee								
Leopard	8¾	7½	7	6¾	7	6	6	6¼
Leviathan	75c				70c	65c	70c	65c
Mahogany								
Mansfield			15c		30c	25c	25c	
Meadow Valley	55c	35c	50		50c			
Mexican	29⅞	25⅝	28¾	26¾	28	25¼	25	22¼
Midee								
Mint	25c				13	12½c	25c	15c
Monitor-Bel								
Newark								
New York	1½	90c	1	85c			1	62½c
Niagara	19c	17c	14c	12c				
Northn Belle	24	22	23½	24¾	30½	26¾	32	28¼
New Coso	2¾	2½	2¾	2½	3¼	2⅜	2¾	2¼
Occidental								
Ophir	54	47½	51½	49½	51¾	47½	48¾	41¾
Or Gold Hill								
Overman	83	79	84½	80	83	79½	78	73
Pacific	37½c		30c	25c	25c			
Phil Sheridan	3	2¾	2¾	2½	2½		2¼	2
Pioche								
Poorman	25c	20c	15c	10c	10c		10c	
Prospect	90c	65c	1¼	60c	1¾	1	1½	1
Prussian								
Ray & Ely	6	5½	5½		5½		5	
Rock Island	1¾	1¼	1		1¼	1	90c	
Rye Patch								
Savage	15	12½	14		13¾	11½	12	10½
Seg Belcher			70			71	71	62
Sierra Nev'da	13	11¾	12½	12	12	11½	11¾	10½
Silver Hill	9½	9	9		10	8½	9	7¾
Sth Chariot			50	11	62½	50c	62½c	
Success	25c		50c		40c		30c	
Union Con	14	12½	13¾	12	12¾	12	12	10¾
Utah	18¾	16½	18	16	17½	16¾	16	13
Welle-Fargo	17c	15c					10c	
Woodville	1¾	1½	2¼	1¼	1¼	1	1¼	
Yel'w Jacket	23¾	23¾	23¾	20½	22½	18¾	16½	14½

Sales at S. F. Stock Exchange.

FRIDAY, A. M., Nov. 10.

385 Alpha	41@39½
1450 Best & Bel	42¾@42
370 Belcher	15¾@15
90 Bullion	33@32
295 Caledonia	9¼
30 Confidence	13
380 Crown Point	10@9¾
697 Con Imperial	3.46@3.43
1099 Califa	54¾@54½
70 Chollar	71@72
2100 Con Virginia	49¾@49¾
65 Dayton	3@3¼
130 Dardanelles	2¼
445 Exchequer	13¾@13½
480 Gould & Curry	12¾
775 Hale & Nor	9@7¾
560 Justice	22@22½
480 Julia	6¾@6¾
1075 Kentuck	13@13½
100 Koseuth	1¾
770 Lady Bryan	65@60c
1050 Mexican	25@24½
25 N New York	85c
1200 Ophir	48¾@47¾
400 Overman	76@78
100 Rock Island	1@81¾c
265 Sierra Nev'da	12@11¾
455 Sierra Nevada	10¾@11
30 S Hill	8
10 Seg Belcher	71
30 Utah	16@16½
1070 Union	12@11¾
50 Woodville	1¾
2030 Yellow Jacket	16½@16¾

AFTERNOON SESSION.

129 Alpha	40@39¾
100 Amazon	60c
50 Adams Hill	30c
120 Belcher	15¾
230 Best & Belcher	43¾@43
215 California	54¾
10 Chollar	73
200 Coso Con	35c
120 Con Virginia	49¾
729a Con Imperial	3.40@3.35
30 Eureka Con	11¾
60 Gila	55c
225 Golden Chariot	1¾
150 Geo Thomas	1¾
250 Hale & Nor	7¾@7¾
135 Julia	6¾ 6 6¾
100 Jackson	3½
305 Kentuck	13@13¾
240 Leonard	6¾@6¾
125 Leviathan	6 c
625 Modoc	5¾@5¾
150 Nth Con Va	1¾
225 Northern Belle	30@30¾
850 New Coso	2¾@2¾
130 Ophir	47½@47¾
80 Overman	7@78¾
580 Prospect	1¼@1½
240 South Chariot	62½c
25 Savage	12
270 Trojan	65@62½c
250 Tahoe	1
130 Union	12@12¼
205 Yellow Jacket	16½@16¾

SATURDAY, A. M., Nov. 11.

60 Andes	1¾
350 Alpha	38¾@39
325 Best & Belcher	42¾
110 Belcher	15¾@15¾
350 Baltimore Con	2¾
170 Bullion	33½
80 Caledonia	9¼
1185 California	54¾@54½
75 Crown Point	9¾@9¾
200 Conservatilan	35c
2135 Con Virginia	47¾@47½
2300 Con Imperial	3.38@3.30
60 Confidence	13¾
20 Dayton	2¾
200 Exchequer	13¾@13
9 Eureka Con	12
110 Gould & Curry	12¾@12¾
880 Hale & Nor	7¾@7¾
20 Julia	6¾
1105 Justice	22½@22¾
2170 Kentuck	13½@13¾
200 Kossuth	1¾@1⅝
350 Lady Bryan	60c
615 Mexican	24½@24¾
70 New York	75c
140 North Con Vir	1.10@1.14
1215 Ophir	48¾@47¾
70 Overman	78@79
420 Prospect	1@1¼
100 Phil Sheridan	2¼
10 Seg Belcher	70
410 Savage	12@11¾
1185 Sierra Nevada	11@11¾
200 Tahoe	1
210 Un Con	12@12¼
50 Woodville	1¾
575 Yellow Jacket	16½@16¾

MONDAY, A. M., Nov. 13.

585 Alpha	38@33
70 Andes	1¾@2
10 Bullion	32
100 Belmont Con	2¾
305 Belcher	15¾@15½
370 Best & Belcher	42¾@42½
1205 California	54¾@54¾
80 C Point	9¾@9¾
2755 Con Virginia	47¾@47½
1270 Con Imperial	3.10@3
120 Chollar	70¾@69¾
80 Challenge	3
100 Confidence	12¾@12
400 Caledonia	9¼@9
50 Dayton	3
445 Exchequer	12½@13
165 Florida	1
100 Gould & Curry	12¾@12¾
615 Hale & Nor	7¾@7½
1395 Justice	21¾@22¼
65 Julia	6¾@6¾
50 Kentuck	13¾@14
500 Lady Bryan	60c
100 Leviathan	70c
25 Lady Wash	2
1075 Mexican	23¾@23¼
100 North Con Vir	1.10@1.12
200 New York	75c
640 Ophir	45¾@44¾
415 Overman	75@74¾
400 Prospect	1¼
730 Sierra Nevada	10½@10¾
495 Savage	11¾@11¾
250 Silver Hill	8¾@8
305 Union	11¾
95 Woodville	1½@1
840 Yellow Jacket	15¾@16

AFTERNOON SESSION.

200 Alpha	33@33½
230 Belcher	14¾@15
240 Best & Belcher	42¾@43
225 California	54¾@53¾
1265 Con Virginia	46¾@46½
650 Caledonia	9@9¾
50 Coso Con	35c
1970 Con Imperial	3@2¾
400 Cornucopia	70c
40 Eureka Con	11¾@11¾
230 Gould & Curry	12¾@12
215 Gila	60c
200 Golden Chariot	1¾
50 Jefferson	60c
100 Jackson	3½
555 Justice	21½@21¾
260 Kentuck	13
1010 Leopard	6¾@6¾
430 Mexican	23@22¾
700 Modoc	5¾@5¾
600 Mansfield	25c
70 Manhattan	1¾@1¾
975 Northern Belle	32@31½
925 New Coso	2¾@2¾
630 Ophir	43¾@43½
2300 South Chariot	60@62½c
135 Sierra Nevada	10¾@10¾
100 Silver Hill	8
330 Union Con	11¾@11½
320 Yellow Jacket	15@15¾

TUESDAY, A. M., Nov. 14.

780 Alpha	39½@39
665 Best & Belcher	41½@42
960 Belcher	13¾@14
20 Bullion	33
3570 California	53¾@53¼
470 Caledonia	9¼@8¾
2950 Con Virginia	45@44
315 Crown Point	8¾@9
3015 Con Imperial	2.9@2.8
110 Chollar	69@68
305 Exchequer	11¾@12
230 Gould & Curry	12¾@12¾
1150 Hale & Nor	6¾@6¾
2420 Justice	21@20¾
780 Julia	6@6¼
60 Kentuck	11@11¾
50 Lady Bryan	65c
685 Mexican	22¼@22¾
130 Overman	73
3405 Ophir	44¾@42¾
740 Savage	11¾@11¾
725 Sierra Nevada	10¾@10¾
150 Succor	50c
10 Seg Belcher	68
760 Union	10¾@10⅞
5 Utah	13
1940 Yellow Jacket	14¾@14⅞

AFTERNOON SESSION.

485 Alpha	32@3 ⅛
40 Andes	1¾
810 Belmont	3¼
595 Belcher	13¾
550 Best & Belcher	42¾@42½
150 Baltimore	2¾@2¾
295 Coso Con	30c
1260 California	53¾@53
3515 Con Virginia	45¾@44¾
973 Con Imperial	2¾@2.70
190 Exchequer	12
200 Eureka Con	11¾
60 Gen Thomas	62½@50c
860 Hale & Norcross	7@6¾
395 Justice	21¾@22
215 Kentuck	11@10¾
35 Kossuth	1¾
1810 Leopard	6¾@7
222 Lady Wash	1¾@1¾
885 Mexican	22¾@23¾
270 Manhattan	15¾@16
1:0 Mint	15c
200 Modoc	5¾
375 North Belle	31
200 New Coso	2¾
350 N Con Vir	1¾@1¾
125 New York	75c
2880 Ophir	42¾@43¾
160 Overman	72@74
100 Pacific	20c
275 Phil Sheridan	2
475 Prospect	1½@1¾
25 Rock Island	90c
25 Raymond & Ely	5¾
100 Sierra Nevada	10¾@11
80 Silver Hill	8@7¾
915 Savage	11@11¾
300 South Chariot	58c
10 0 Trojan	62½c

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY, A. M., Nov. 9

230 Alpha	42¾@43¾
100 Andes	2
335 Best & Belcher	45¾@45½
140 Bullion	37@38
230 Belcher	16¾@16¾
80 Baltimore	2½
120 Crown Point	10¼@9¾
670 Con Imperial	3 55
2670 Con Virginia	52@51½
1630 California	56@55½
40 Caledonia	9¼
50 Chollar	74@75
250 Dardanelles	2½
355 Exchequer	14¾@14¾
300 Gould & Curry	13¾@13¾
640 Hale & Nor	7¾@7¾
1480 Justice	23¾@22¾
270 Julia	7
810 Kentuck	12½@13
325 Leviathan	67½c
250 Lady B	70c
584 Mexican	26¾@26¾
583 Ophir	50¾@50½
15 Overman	81
615 Prospect	1¼@1¾
75 Rock Island	1
260 Savage	13¾
200 Sierra Nevada	11½@11¾
160 Succor	40c
20 Silver Hill	9
1100 Trojan	75@70c
570 Union	12¾@12¾
25 Ward	1¾
220 Woodville	1@1¼
695 Yellow Jacket	18¾@19

AFTERNOON SESSION.

70 Belmont	2
40 Best & Bel	44¾
235 Coso Con	35c
745 Con Virginia	50¾@50¾
410 California	56
10 Chollar	75
30 Caledonia	9¾
200 Gila	60@55c
750 G Char	1¾
100 Gen Thomas	87½c
595 Hussey	30@31¾c
830 Hale & Nor	7¾@8
380 Justice	2 7¾@24¾
50 K K Con	3¾
70 Kentuck	13
710 Leopard	6¾
160 Mexican	26¾@26¾
810 Manhattan	15¾ 16
675 Modoc	5¾@6
100 Mansfield	30c
820 Northern Belle	30
100 New Coso	2¾
500 Onbir	49¾@49¾
70 Raymond & Ely	5¾
230 Sierra Nevada	11¾@11¾
1300 Union Con	12¾@12¾
830 Yellow Jacket	17¾@18¾

Pacific Board—Latest Sales.

WEDN'SDAY, A. M., Nov. 15.

60 Alpha	33
335 Belcher	14¾
80 Best & Bel	42¾@43
20 Chollar	68
625 Con Imperial	2.70@2.75
225 Crown Point	9¾@9¾
370 California	54¾@54¾
1265 Con Virginia	46¾@46¾
1885 Con Virginia	45¾ 45¾
850 City of Bost	2¾
30 Exchequer	12¾@12¾
150 Gould & Curry	12¾
50 Hale & Nor	7
155 Julia	6¼@6
50 Justice	22¾@22¾
100 Knickerbocker	25c
150 Leviathan	75c
620 Mexican	23@23¾
515 Ophir	43¾@42½
5 Overman	77
420 Prospect	1¼@1½
430 Savage	11@11¾
60 Sierra Nevada	11¾
1100 Trenton	8½@9
100 Twin Peaks	1¾
70 Union	11¾@11¾
460 Yellow Jacket	13@15¾

AFTERNOON SESSION.

70 Alpha	34
40 Belcher	14¾@14¾
65 Best & Bel	43½@43
30 Crown Point	9¾@9
30 California	54½@54¾
50 Con Imperial	2.90@2.75
45 Exchequer	13 12¾
620 Gen Thomae	65@75c
250 Gold Chariot	87½c
450 Gila	60@55c
50 Genesee Valley	2¼
20 Hale & Nor	7¾
100 Julia	6¾
270 Justice	22¾@23
270 Leopard	6¾@6¾
20 Manhattan	15
50 Mexican	23¾@23½
85 Northern Belle	29@29½
170 N Modoc	5¾
100 N Coso	2¾
1095 Ophir	43¾@43¾
300 Poorman	10c
50 Superior	10c
10 Savage	11¾
350 Sierra Nev	10¾@11¾
190 Union	11¾@11¾
75 Yellow Jacket	16@15¾
725 Union Con	11¾@11¾
25 Woodville	1

WEDN'SDAY, A. M., Nov. 15.

505 Alpha	34@33¾
355 Belcher	14¾@14¾
40 Bullion	32
920 Best & Belcher	43¾@42¾
2590 Con Virginia	45¾@45¾
475 Crown Point	9@8¾
1000 California	51½@50¾
3570 Con Imperial	2.80@2.85
270 Caledonia	8¾@8¾
140 Chollar	70½@71
20 Confidence	13@12¾
130 Exchequer	12¾@12¾
325 G & Curry	13@13¼
1345 Hale & Nor	6¾@6¾
1075 Justice	22¼@22¾
450 Lady Bryan	55c
100 Mexican	23¾@23¾
1374 Ophir	42¾@43¾
75 Overman	75@75½
1810 Savage	11@11¾
1045 Sierra Nevada	11@11¾
50 Utah	14¼
945 Yellow Jacket	16@15¾

AFTERNOON SESSION.

170 Alpha	33¾@34
150 Am Flat	75c
150 Amazon	7@60c
30 Andes	2
575 Belmont	2¼@2½
385 Baltimore Con	2¾@2¾
250 Best & Bel	43¾ 42¾
200 Caledonia	8¾@9
190 Crown Point	8¾@9
100 Con Virginia	45¾@45¾
245 California	57½@57¼
50 Coso Con	30c
2745 Con Imperial	2.85@2.90
200 Cornucopia	50c
100 Cromer	2½
20 Dayton	2
260 Eureka Con	11¾
200 Exchequer	12¾@12¾
790 Gen Thomas	75c
100 Gould & Curry	13¼@13¼
160 Golden Chariot	1¾@1
340 Gila	60c
725 Hussey	30c
170 Hale & Nor	7¾
580 Justice	23@23¾
1695 Leopard	6¾@6¾
60 Lady Wash	1¾
335 Mexican	23½@23¾
375 Manhattan	15¾ 15
100 Mint	25c
260 Modoc	5¾@5¾
320 Northern Belle	28¾@29
80 Overman	76@75¾
200 Ophir	43¾@43¾
200 Poorman	10c
280 Prospect	1¾@1¾
25 Phil Sheridan	2¼
105 Silver Hill	8
290 Savage	11¾@11
440 Trojan	70c
480 Union	12
200 Welle-Fargo	10c
10 Woodville	1
240 Yellow Jacket	16@15¾

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Shs.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business.
Baltimore Con M Co	Washoe	12	1 00	Oct 6	Nov 8	Nov 27	C A Senkey	331 Montgomery st
Belmont M Co	Nev	9	50	Sep 18	Oct 24	Nov 21	W H McClintock	418 California st
Cherry Creek M Co	Nev	7	30	Oct 3	Nov 10	Dec 6	D F Verdenal	409 California st
Crown Point M Co	Washoe	28	1 00	Oct 26	Dec 10	Dec 29	J Newlands	4 9 California st
Dayton G & S M Co	Washoe	6	1 00	Nov 6	Dec 12	Jan 2	W E Dean	419 California st
General Thomas M & M Co	Nev	3	50	Oct 27	Dec 1	Dec 20	W Willis	309 Montgomery st
Globe Con M Co	Washoe	9	25	Oct 27	Nov 30	Dec 20	W F Bogart	402 Montgomery st
Golden Chariot M Co	Idaho	15	50	Oct 26	Nov 13	Dec 26	W P Shaw	408 California st
Gould & Curry S M Co	Washoe	28	1 00	Nov 15	Dec 29	Jan 16	A K Duthrow	309 Montgomery st
Hale & Norcross S M Co	Washoe	52	1 00	Oct 10	Nov 14	Dec 5	J F Lightner	Nevada Block
Hussey Con M Co	Nev	2	20	Oct 21	Nov 22	Dec 11	R H Brown	426 California st
Jefferson S M Co	Nev	1	50	Oct 11	Nov 16	Dec 11	C A Sankey	331 Montgomery st
Knickerbocker M Co	Nev	16	*1 25	Nov 13	Dec 16	Jan 4	J H Sayre	320 Pine st
Lady Washington M Co	Washoe	9	50	Nov 11	Dec 14	Jan 2	D L Thomas	419 California st
Meadow Valley M Co	Ely Dist	13	75	Sep 29	Nov 6	Dec 4	T W Colburn	418 California st
Mint M Co	Washoe	15	15	Oct 12	Nov 15	Dec 7	D A Jennings	401 California st
Mitchell G & S M Co	Nev	10	Sept 7	Nov 6	Nov 25	A C Hammond	401 California st
Monitor Belmont M Co	Nev	—	25	Oct 17	Nov 20	Dec 19	B B Minor	509 Montgomery st
Niagara M Co	Washoe	3	25	Oct 3	Nov 4	Nov 24	W R Townsend	309 Montgomery st
North Carson M Co	Nev	5	10	Oct 3	Nov 6	Nov 27	W A Van Bokkelen	320 Sansome st
Overman M Co	Washoe	36	3 00	Oct 21	Nov 25	Dec 15	Geo D Edwards	414 California st
Pioche M Co	Nev	25	Oct 4	Nov 8	Dec 5	F Swift	419 California st
Pioche S M Co	Ely Dist	Nev	14	50	Oct 5	Nov 8	Dec 1	F V Smith	419 California st
Poorman G & S M Co	Idaho	7	25	Oct 23	Nov 27	Dec 16	W Willis	309 Montgomery st
Sierra Nevada M Co	Washoe	46	1 00	Oct 24	Nov 23	Dec 15	W W Stetson	309 Montgomery st
Succor M & M Co	Washoe	16	50	Sep 26	Oct 31	Nov 22	W H Watson	302 Montgomery st
Trojan M Co	Washoe	3	10	Oct 20	Nov 21	Dec 11	D Wilder	328 Montgomery st
Utah S M Co	Washoe	14	2 00	Nov 15	Dec 20	Jan 9	G C Pratt	309 Montgomery st
Wells-Fargo M Co	Washoe	6	15	Nov 6	Dec 9	Dec 29	O H Bogart	402 Montgomery st
Yellow Jacket M Co	Washoe	24	1 00	Oct 28	Dec 4	Jan 3	G W Hopkins	Gold Hill

*$1.25 old stock; 30c new.

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Atlantic Con M Co	Nev	1	25	Oct 20	Nov 28	Dec 19	P Robineon	330 Pine st
Aureola G & S M Co	Nev	2	10	Sep 23	Oct 30	Nov 21	T S Fitch	240 Montgomery st
Cabinet M Co	Washoe	1	2	Sen 21	Oct 26	Nov 27	J F Sterling	330 Pine st
Carlher Hydraulic M Co	Cal	2	15	Sep 29	Oct 30	Nov 20	Chas T Bridge	224 California st
Eagle Quicksilver M Co	Cal	9	250 00	Sep 30	Nov 29	Dec 4	Wm H Watson	302 Montgomery st
East Branch M Co	Plumas Co	Oel	5	10	Sep 26	Nov 6	Nov 25	E P Sanford	514 Washington st
Emigrant S M Co		Cal	1	1 00	Sep 22	Nov 8	Nov 29	W H Chickering	426 California st.
Gold Canyon Con M Co		Nev		10	Sep 15	Nov 20	Dec 20	A A Pardow	636 Clay st
Gold Hill Con M Co		Cal	14	60	Nov 14	Dec 21	Jan 10	C C Palmer	41 Market st
Houston M Co		Nev	1	5	Oct 2	Nov 6	Nov 21	W Stairley	410½ California st
Lexington M Co		Nev	1	5	Nov 10	Dec 12	Dec 28	H B Congdon	330 Pine st
Minietta Belle M Co	Inyo Co	Cal	1	25	Oct 4	Nov 4	Nov 27	J G Riley	209 Seneome st
Morgan M Co		Cal	3	1 60	Sep 19	Oct 23	Nov 20	J H Watson	108 California st
New England Tun & Smelting Co		Cal		30	Nov 2	Dec 6	Dec 23	C C Tripp	401 California st
Nonpareil G M Co		Cal	7	1 00	Oct 13	Nov 16	Dec 4	A DuPrat	503 Jackson st
Purdy S M Co		Colorado	1	2 00	Sep 23	Nov 14	Dec 5	A J Bell	331 Montgomery st
Renton Coal Co		Washington Ter	3	50	Sep 7	Oct 16	Nov 23	T H Henderson	24 Sacramento st
Rising Star M Co		Oel	2	10	Nov 8	Dec 9	Nov 21	J W Coppage	330 Pine st
San Francisco Sulphur M Co		Nev	1	10	Sep 29	Oct 30	Nov 21	J Rebere Jr	328 Montgomery st
South Ophir M Co		Washoe	1	10	Oct 9	Nov 23	Dec 12	A C Gilbert	224 Montgomery st
Volcano Gold Gravel M Co		Cal	1	10	Oct 20	Nov 21	Dec 11	E A Peck	330 Pine st
Young America M Co		Nev	5	20	Sep 29	Oct 31	Nov 13	R H Brown	426 California st
Yarborough S M Co		Cal	7	50	Oct 24	Nov 29	Dec 23	E Barry	415 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Amazon Con M Co	Nev	John A Reichert	330 Pine et	Annual	Nov 28
Cshinet M Co	Nev	J F Sterling	330 Pine st	Annual	Nov 28
Cascade Blue Gravel M Co		J M Buffington	311 California st	Special	Nov 20
Gold Bar Gravel M Co	Cal	A C Hammond	401 California st	Annual	Dec 2
Kentuck M Co	Washoe	W R Townsend	Nevada Block	Annual	Nov 22
Napa Con M Co	Oal	W W Parrish	328 Montgomery st	Annal	Nov 8

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	O D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California et	40	Oct 11
California M Co	Washoe	O P Gordon	Nevada Block	2 00	Nov 15
Consolidated Amador	Cal	E B Latham	426 California et	25	Oct 9
Con Gold Hill Quartz M Co	Washoe	R Wegener	414 California st	25	April 17
Cons Virginia M Co	Washoe	A W Havens	Nevada Block	2 00	Nov11
Comenche M & M Co	Nev	W W Traylor	Nevada Block	20	Oct 25
Empire M Co	Nevada Co	Cal D A Jennings	401 California et.	2 00	April 11
Empire M Co	Sierra Co	Cal Chas Colliehonn		50	Sept 26
Empire M & M Co	Washoe	W E Dean	414 California et	25	April 17
Imperial S M Co	Washoe	W E Dean	414 California et	25	April 17
Leopard M Co	Nev	R H Brown	426 California st	50	Nov 15
Manhattan S M Co	Nev	J Crockett	419 California st	1 10	Nov 10
Northern Belle M & M Co	Nev	W Willie	309 Montgomery st	1 00	Nov 15
St Patrick M Co	Cal	D F Verdenal	409 California st	30	Mer 10
West Comstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Feb 24

California Board—Latest Sales.

WEDNESDAY, A. M., Nov. 15.

50 Alpha	32@32¼
50 Alta	2
150 Alome	2⅞

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR.

Clean-Up.—Amador *Ledger*, Nov. 11: A clean-up of about 15 tons of rock from the Griesback mine, crushed at Mace's mill, above Volcano, realized about $1,200. The rock was considered only of second grade quality. The mines in the northeastern portion of the county continue in a flourishing condition.

The Olive Mine.—This is a promising claim at Drytown, owned by C. Nickerson and seven other gentlemen. Several men are engaged in developing it. A ledge of rich rock has been uncovered, and the indications are favorable for a permanent and valuable mine.

The Volunteer Mine.—Amador *Dispatch*, Nov. 11: We understand that a company from San Francisco have taken charge of the Volunteer mine, near this place, and that the work of thoroughly developing it will soon be commenced. The lumber and machinery have already been ordered for the putting up of substantial hoisting works. Mr. Stephen Kendall, who is well known as a practical miner, will, we believe, have the superintendency of the works, and he informs us that it will not be long until we can know whether the mine is a valuable one or not. The prospects so far have been good. We hope the company will realize their highest expectations.

BUTTE.

Lava Beds.—Oroville *Mercury*, Nov. 11: During the past summer quite a large number of Chinamen have been at work mining in the lava beds below town, with a considerable degree of success. Some companies have taken out a great deal of gold and made very good pay, while others have barely made expenses, and still others have completely failed to make enough even to pay for provisions. Probably not more, on an average, than $20,000 per month has been taken out, though some months a much larger sum has rewarded their labors. A few days before the late rain we visited about every part of the lava beds. Acres upon acres of earth are upturned. Long lanes that have been mined out show the direction of the pay streaks of dirt. In every direction were to be seen columns of smoke rising from steam engines used by the different companies to keep the water out of their claims. On visiting the mines a few days after the rain we saw a number of the engines idle and the mines full of water. The Chinamen dread to mine where there is the least danger. The saving of a bank, whether he is injured or not, puts a stop to his work. Fire and water he will not contend with. During the coming winter but little will be done, and most of the Chinamen will scatter away to the mountain works and ravines to mine until spring, when they will return to engage in the work anew.

CALAVERAS.

The Emerson Hydraulic.—Calaveras *Chronicle*, Nov. 11: Piping has not been resumed in the Happy Valley hydraulic since the great clean-up lately made, it being the intention of the proprietor to facilitate the working of the mine before commencing washing again. The bedrock tunnel, through which the flume is laid, is to be extended 100 feet further, bringing it close up to the gravel bank, and the flume is to be considerably lengthened before any more piping will be done. The contemplated work will probably consume about three weeks' time; then look out for a succession of clean-ups that will make even the denizens of the richest mining section in the world stare. We tell you, now.

Progress at the Calenco Consolidated.—The transverse drain tunnel of the Glencoe Consolidated reached the west vein last week. Five feet of vein matter and a streak of solid ore one foot thick have been cut through, which all contains gold. The tunnel will cut the west fissure 50 feet farther. A test lot of ore from the central portion of the west vein, 10 tons and 200 pounds, paid a fraction over $22 per ton.

EL DORADO.

The St. Lawrence Bonanza.—*Mountain Democrat*, Nov. 11: Reports from the St Lawrence mine are of the most flattering character. One ounce of gold was taken out last Saturday which would yield at least $1,000. Superintendent Rosewarn is in high spirits and promises a $40,000 crushing before the end of the year.

INYO.

The Mines.—Inyo *Independent*, Nov. 11: The Eclipse mill has been running steadily and successfully for a number of weeks, or ever since steam was introduced in the pans. Both the Kearsarge and Rex Montis mills are yet steadily at work, and turning out bullion at a most encouraging rate. The probabilities are, however, that both of the last named will soon have to suspend operations on account of the weather interfering in getting ore down from the great altitude of the mines, particularly of the Rex Montis. A friend of ours, in whose judgment we place great reliance, and who speaks from a disinterested standpoint, says the last named mine is truly the most promising one in all this region so far as his personal knowledge (which is not limited) extends. Regarding the others here referred to we have nothing new or definite with respect to their developments, but believe them to be entirely satisfactory. All of them are shipping bullion, as will be noted in another item.

The Rex Montis.—This mine is likely hereafter to be the subject of frequent reference among mining men throughout the country, and therefore a word in reference to its locality and history will bear repetition. It is situated on the north side of Kearsarge peak, 12 miles by the road west of this place, but in an air line apparently not half that distance away. Its altitude is something near 10,000 feet, or nearly 6,000 above that of this place. It was discovered and located in 1865, by the irrepressible Jimmy Sharp, Jim Wall, Scott Broder and G. W. Brady, with which party John R. Hughes, not of Cerro Gordo, held an equal interest. Two years since it was leased to Jack Curtis and others, and while under this lease attracted the attention of Mr. J. H. Holt, the present manager and a stockholder in the Rex Montis incorporation. Mr. Holt bonded it over the lease and last year took out enough ore to satisfy himself that it was a mine well worth attention. During this time Scott Broder deeded his interest to Mr. Holt. A short time since he completed the purchase, buying out the remaining four of the original owners, the purchase money to the amount of $4,000 each being paid over this past week. The company was duly incorporated last spring. Since then, Mr. Holt has pushed work continuously, and has proved it to be really a most valuable mine. The first lot of ores from the Rex Montis was about six weeks ago reduced in the Kearsarge mill, yielding handsomely; since then that work has been carried on in the old Silver Sprout mill, which the company purchased conditionally and refitted so as to do excellent work.

Bullion Shipments.—Bullion shipments through Wells, Fargo & Co.'s office at Harris & Rhine's, to the amount of $10,525 were made in the past few days, in lots from different mines as follows: Lida Valley, $600; Kearsarge, $2,300; Eclipse, $2,000; Rex Montis, $5,600; one parcel, $25; total, $10,525.

NEVADA.

Allison Ranch.—Cor. Nevada *Transcript*, Nov. 11: The mining prospects in this district are improving, and the times promise to be as lively as in the palmy days from '56 to '66. The Franklin is still turning out plenty of quartz of good quality. They are running two drifts, and the ledge in both is looking well. The work of sinking the shaft is still progressing, and a ledge two feet wide makes the owners feel confident it will soon be the most valuable quartz mine in Nevada county. The crushing mill is erected with ten stamps, and ten more are soon to be put up. Martin Ford, the Superintendent, is rushing things, so there will be nothing wanting when winter sets in. The Homeward Bound company have met with encouragement in the shape of a good ledge. The crew working here is small, on account of there being no room for more. A number of men have been discharged at the Omaha mine during the last week. This has proved itself to be rich, with the prospect of a continuance. The old Larimer crushing mill, now leased by Joe Southron, is constantly working. Joe gives good satisfaction to customers, and gets plenty of rock to run steady.

The Washington Bayou is a failure. The Colbert mining company have been prospecting the mine for nearly two years, and now will abandon it. The Alaska company have put up a mill and machinery where the John Bright stood. The John Bright was worked by several parties, but would not pay any more than expenses. The company now owning it will spare neither money nor trouble to open the mine, and work it to the best advantage. The Pennsylvania mine has failed to meet the expectations of the owners. The rock reduced by the Fryer process was a failure.

Every person here is seized with a mania to own a quartz ledge, consequently every piece of ground is claimed, and nearly every ledge is being prospected. It is believed there are claims here which, if developed, would rival any mine in the county. From Grass Valley to Forest Springs, on both sides of Wolf creek, miners are at work. Some have met with encouragement while others are working with the expectation of obtaining good results. The richest quartz mines in Nevada county are situated on the above mentioned creek, and persons think that if they find a ledge near Wolf creek they are on the road to fortune. We have had failures and successes as well as every mining district, but now they are forgotten, as there is plenty of work for men and good times ahead.

Champion.—*Foothill Tidings*, Nov. 11: This is the name of a mine likely to come into prominent notice ere long if reports from there be true. It is an extension of the Providence mine and the Ural, over on Deer creek, and the developments recently made are a ledge from four to six feet thick, showing gold and giving promise of a rich and permanent pay shute. The company, consisting of Messrs. J. F. Schuitess, H. Vogelmen, C. C. Townsend, D. Binkelman, Geo. C. King, and perhaps others of this place, are about to incorporate and proceed to open up the mine in good shape.

PLACER.

A Bonanza.—Dutch Flat *Forum*, Nov. 11: J. A. Stone, Superintendent of the Gold Run hydraulic mining company, limited, visited this place last week and reports the striking a bonanza in that mine. He exhibited to us $22 of coarse gold, the result of one pan of gravel taken from a powder drift they were then running, and that it was not any more than an average of richness of considerable ground they had prospected recently. Having with him also several large nuggets taken from a prospect shaft sunk 60 feet from this powder drift, the gravel in which yielded $12 to the pan. They are busy at present putting in flumes, raising inclines and running powder drifts, and will be ready to commence washing in three weeks if water can be had. Mr. Stone is confident that during the next year their company will pay the largest dividends ever received from any gravel mine in this part of the country.

Mining Items.—The fine weather of the past week has enabled the several mines to be rapidly put in shape. Elmore Hill commenced washing Monday. Central continues washing. The Southern Cross, which, in our last issue, we stated was plugged in the incline, started up washing again Wednesday, and is now retarded only by the immense boulders rolling into the ground sluicee. Baker claim is now rigged, and it will be ready to turn on water in a few days. The Miners' ditch company's claims, at Gold Run, are now nearly ready for water. The South Yuba canal company has about 1,500 inches to sell, but the various claims that purchase water of it are not yet ready to use it.

Bar River Mines.—The Centennial mine is being worked steadily with good results. Our informant, one of the owners, states that the last car of dirt taken out of this mine was washed separate and yielded $5, thus showing the ground to be very rich. On the Dom Pedro a contract has been let to run a tunnel through the bedrock into the hill, and the work is progressing.

Shady Run Mines.—The Wild Yankee claim has ceased drifting for the season and is now making preparations for hydraulicing, which will take about one week to complete. J. Brink sold his one-third interest in this mine, on the 8th inst., to Charles Wedgewood, one of the old shareholders. The air in the North American mine being improved, there is now a large force of men at work drifting and washing.

Remington Hill Mines.—The Rhode Island claim is owned by Knight Bros., who work their tract of mining ground according to the different seasons of the year. In the spring, when water is plenty, they work their deep hydraulic diggings; in summer, when the supply of water is short, they ground sluice; and in winter, when the snow is deep and the weather cold, they work drift diggings, found in old river beds, for which this part of the country is noted. By working in this manner for a number of years, the Knight Bros. are now classed among the solid miners of this county, being able to respond with a few thousand when necessary. Although very little is known of the Wide West mine as yet, the prospects have been so encouraging that the owners are now running an extensive tunnel, through which to work drift diggings the coming winter.

St. Patrick Mining Company.—Placer *Argus*, Nov. 11: This company is pushing the rebuilding of its mill with great energy. The contractor began work three weeks ago, and now has the building up and enclosed. Two weeks more will have it ready for operation, and we may confidently expect a profitable run during the month of November. The mill is commodious and well constructed, and contains all the latest improvements in mining machinery. It is 86 feet long and 38 feet wide, and put up in a most substantial manner. There are three batteries of five stamps each, the stamps weighing 700 pounds. There are six concentrators and four pans. The contract price for the mill is $15,750, but extras will swell the cost to about $17,000. The power will be supplied by a Knight water wheel, run by something over 100 inches of water under a pressure of about 160 feet. The mine itself is looking well. The shaft is down 576 feet, and is still sinking. The intention is to sink to the 620-ft level, when drifting will begin. An additional force of men will be employed next week, and in a short time we may expect operations to be fully resumed.

PLUMAS.

Spanish Ranch.—Plumas *National*, Nov. 4: On Monday last we made a flying trip to Spanish Ranch, and found the little burg quiet as usual, but showing strong indications of prosperity. Messrs. Thompson & Kellogg have one of the best business stands in the county, being, as it is, the center of a large and prosperous mining district. Their capacious warehouse is filled to the roof with all kinds of goods suited to their trade, and "Uncle Dick" informed us that their freight was all in with the exception of two loads. The store is also full, and the gentlemanly clerk, Mr. N. K. Wright, seemed busy as a bee in attending to the wants of customers. Mr. Kellogg was hard at it in the blacksmith shop, and the miners up that way seem to think his work the best in the world. The Ranch is conducted on strictly temperate principles now-a-days, no liquor being sold there. We hope the owners will continue in the prosperity which they at present enjoy.

Foorman's Creek Claims Sold.—Henley & Lanthier, of Foorman's creek, sold out their mining claims to a Boston company last week for the sum of $7,000 in gold coin. Mr. J. H. Thomas, of La Porte, acted as agent for the company. From the fact that these claims paid richly last spring, we should judge that the Boston company had made "a good buy."

SONOMA.

Local Mining News.—*Russian River Flag*: A. Phelps returned last Saturday from the Mt. Jackson mine, where he has been for some time engaged in putting up machinery for the Mt. Jackson company. As has been stated in a previous issue, this company has three ten-ton Eames furnaces completed and in working order; finding, however, that more crushing capacity was required, Mr. Phelps was engaged to attend to the matter. One week ago last Saturday he completed a new machine and put it to work, and when he left about 30 flasks of mercury had been stored up. The new crusher will prepare for the furnaces 30 tons every 24 hours; that is, one day will crush ore enough to supply all the furnaces for the 24 hours which they run. The Great Eastern mine, adjoining the Jackson, keeps a 10-ton Eames fired up night and day. Both mines possess leads of hard and soft cinnabar; the former is of a much higher grade, but is so situated that water has thus far prevented its tapping. The Jackson company, however, are now contemplating the running of a tunnel, which will drain the lead and afford easy egress of ore. When this is done, the already paying mine will become a very rich one. There is a good prospect that the Eames furnace will greatly revive quicksilver mining in this section. Its working at the Jackson and Eastern mines has demonstrated that it is far superior to any furnace yet known for working refractory ores. As an indication of the extremely low grade ore that it will work, Mr. Esmes has offered to put up furnaces for companies owning leads of two per cent. rock and accepting ahores in part payment. He claims that it will also extract the "native" without difficulty, which it seems to us will yet render some of the already located "native" leads fabulously valuable. Superintendent Bacon, of the Bacon mine, Pine Flat district, visited Mr. Esmes at the Jackson mine about five weeks ago, and it is understood negotiations are pending for the erection of Eames furnaces at his mine. The tools and other personal property belonging to the Excelsior quicksilver mining company were sold by the sheriff at the mine on Monday, to satisfy a judgment in favor of Joseph Jones for $150. There has been no work done at the Excelsior for some weeks.

Nevada.

WASHOE DISTRICT.

North Con. Virginia.—Gold Hill *News*, Nov. 15: A large air compressor has been added to the machinery and is now ready for use. The hoisting machinery has just been given a good overhauling and put in the best of condition for winter use. The blacksmith and carpenter shops have both been greatly enlarged and prepared for more extended operations.

Rock Island.—The old pumps and rods are being taken out and their places supplied with large 14-inch pumps. This has been made necessary by the strong flow of water recently struck on the 850-ft level. It has not been decided yet as to whether the engine will have to be replaced with a larger and more powerful one or not. The prospects of the 850 ft level, when the flow of water was struck, was better than anything ever before found in the mine.

Yellow Jacket.—The north drift at the 1940-ft level will make connection with the drift south from the Imperial within a week, after which cross-cutting the ledge from that level will be commenced. On the 2040-ft level the south drift is being pushed forward for a connection with the south winze from the 1940-ft level. The shaft is 60 feet deep and timbered throughout.

Ophir.—There is no material change in any of the ore breasts in any portion of the mine during the week. Everything is looking well at all points, and all the mill will be running again in a very short time. The north drift on the 1700-ft level is steadily advancing, the face in very favorable ground.

Crown Point.—The extraction of ore has been entirely suspended for the present. The grade of ore was too low to pay the expense of extraction and cost of reduction. As a matter of course the Rhode Island mill will have also to stop. Sinking the main incline shaft, below the 1800-ft level, is making better progress than it has for some time past.

Silver Hill.—The troubles caused by the loosening of the fly-wheel of the pumping engine, last week, have been overcome, and the water at the bottom of the main incline has been extracted and the sinking resumed. The main east drift on the 650-ft level is being again driven ahead at the rate of six feet per day. The north drift on the 444-ft level is in a distance of 785 feet, the face in good running ground.

Superior.—The drift or tunnel from the ravine to connect with and drain the shaft is now in 128 feet, and has to go about 150 feet further to reach the shaft. It will intersect the shaft about 30 feet below the bottom of it, when a connection can easily be made by an upraise.

Belcher.—Daily yield 250 tons of ore. The ore breasts show no change, and the character of the ore is still low-grade, though paying well for milling and extraction. Sinking the main shaft is going ahead rapidly. Sinking main incline shaft at the old works is also making good headway.

Kossuth.—Two new cross-cuts have been run on the 350-ft level during the past few weeks that have developed some fine ore. The west drift on the 600-ft level is now in 63 feet, and must without doubt soon strike the ore vein.

Hale & Norcross.—The water has been lowered 27 feet during the past week. The pumps are doing splendid work, and it now begins to look as if it would not take more than 30 days more to reach the bottom and enable the resumption of work on the lowest levels.

Cosmopolitan.—The drifts both north and south from the bottom of the winze below the tunnel are being pushed ahead, following the vein. The south drift continues in excellent ore, but the north drift is not showing quite so well at present.

Monumental.—Preparations have been completed for starting up work on this mine again in a very few days. The shaft is situated about 700 feet southeast of the Woodville, and is down 180 feet.

Mexican.—The face of the west drift on the 1465-ft level is in clay-quartz, carrying some favorable spots of ore. The upraise from the same level is still showing well and is making good progress. The west drift on the 1300-ft level is making rapid headway, without material change to report.

Con. Virginia.—Daily yield, 450 tons of ore. The ore breasts at all points in the mine are yielding the usual amount of rich ore, and look as promising for the future as ever. The Brunswick mill, which was shut down for repairs, was again started up on Monday last, and along with all the rest is crushing ore to its full capacity. The large blower at the 1500-ft level, placed there to furnish air for the drifts and crosscuts on the 1700-ft level, is a complete success, and must greatly aid the development of that portion of the mine. The damage done by the water-burst on the 1400-ft level is nearly all repaired. The mine has not been in better condition for many months past than it is at present. The connecting drifts with the ore body on the 1500-ft level to the southward are all being put in good working condition again. The new side track of the railroad is finished to the C. & C. shaft, and the splendid large ore house below the shaft is completed. As soon as the west drift on the 1650-ft level of the O. & O. shaft reaches the vein, the extraction and shipment of ore can be commenced.

California.—Daily yield, 450 tons of ore. The ore breasts in every portion of the mine were never looking better or yielding richer ores. The ore breasts on the 1500-ft level are still extending to the eastward, tha ore being of the same uniformly rich character. The south drift on the 1600-ft level has now penetrated a distance of 200 feet south from cross-cut No. 5, the entire distance in good ore. In the face of this drift the ore has shown great improvement in the past few days, being at this time of a very rich quality. The main west drift at the 1650-ft level of the C. & C. shaft is being pushed ahead at the rapid rate of 10 feet per day. It is now in a distance of 270 feet, and will have over 250 feet yet to run to cut the ore vein. The station at the 1650-ft level is being enlarged and put in condition for big runs of ore when the ledge is reached. The new pump tank in the shaft below this level is fast approaching completion. The flow of water at the bottom is unchanged, and keeps the pump running at the rate of six strokes per minute.

Justice.—Daily yield, 230 tons of ore. The ore stopes on the 400, 500, 600 and 700-ft levels are yielding well and look more promising now than they have at any time in the past. A drift north is being run on the 600-ft level, which is opening up splendid ore. Both the north and south drifts on the ore vein on the 700-ft level are also developing fine bodies of good ore. The winze sinking below the 700-ft level is making good progress, the bottom still being in rich ore. The northeast drift on the 1000-ft level is steadily advancing, with very encouraging prospects. Several stringers of good ore have been cut by this drift during the week, some of which were from eight to 12 inches in thickness and quite rich.

Utah.—Sinking the main shaft is going ahead finely, the bottom in good blasting ground. The flow of water is now well caught up at the tank stations in the shaft, so that it gives little or no bother whatever in sinking. A station has been opened at the 950-ft level and a drift started to cut the ledge at that point. This drift will open the ore vein at a depth of 450 feet below where the last level was prospected, and will therefore have that extent of entirely unprospected virgin ground to prove.

Bullion.—The east cross-cut from the north drift on the 1400-ft level is developing some fine quartz, with every indication of soon reaching the main ore vein. The south drift on the 1500-ft level to connect with the main incline for air purposes is fast approaching completion.

Imperial Con.—Sinking the north winze below the 2,100-ft level is going rapidly forward, the bottom showing some fine quartz and ore.

Gould & Curry.—The great heat created by the flow of water from the Con. Virginia entirely stopped the work at the 1700-ft level during the first two days of the week. The water, however, ceasing its flow, work is again resumed at all points. The water is entirely drained and the drifts are being put in good working condition as rapidly as possible.

Sierra Nevada.—The north and south prospecting drifts, at the first, second and third station levels, are all steadily advancing at a fair rate of speed. On both the second and third levels the drifts going north are showing much more encouraging prospects than for some time past.

New York.—Three sets of men are employed at three different points in the shaft, raising up on the third compartment. This third compartment is designed for a pump shaft. The pumping engine is already erected and is one of the finest in the State.

Baltimore and American Flat.—The winze on the ore vein in the east cross-cut on the 1050-ft level is down 50 feet, the ore in the bottom beginning to widen and being of a much richer quality than where it was first struck on the 1050-ft level. The upraise above the level is also showing some good ore.

Julia.—The face of the main south drift on the 1600-ft level has shown a great change in the past three or four days. The entire face of the drift is in soft clay mixed with quartz, with every indication of paying ore. The face shows some signs of water, but every precaution has been taken to receive it should a body be tapped.

Caledonia.—A strong flow of water was encountered in the bottom of the shaft four or five days ago. The flow was so strong that sinking the shaft had to be suspended for the time being. The pumps are kept running at their full capacities, but the water yet continues too strong to admit of a resumption of the sinking.

Succor.—The old pumps and columns are being taken out of the shaft, preparatory to putting in the new. The erection of the pumping engine is making steady headway.

Trojan.—Very good ore developments are being made in the northwest drift at the 300-ft level, both by the east and west cross-cuts. Whenever ready, a large amount of good ore can be extracted with the utmost facility. The upraise is 85 feet above the track floor, and a drift is being run to connect with the shaft for air circulation purposes.

Herald.—The excellent ore at the bottom of the main incline still continues, with the most favorable prospects of large and extensive development. The main incline is now down 190 feet. Superintendent W. H. Broadhead has gone below to contract for hoisting machinery.

South Comstock.—The drift east from the 300 ft station is being pushed ahead as fast as possible, but the rock in the face of the drift is exceedingly hard and tough.

Lady Washington.—The east drift cross-cutting for the ledge at the 850-ft level is in 105 feet to-day, with the face in ledge porphyry. No water at present; drift dry and hot.

Prospect.—Drift west from the shaft, at the 400-ft level, is in 110 feet. Material in face, hard porphyry, with occasional good streaks of quartz coming in.

Dayton.—Two new cross-cuts have been started from the north drift on the 700-ft level. The prospects of the ledge on both the 500 and 600-ft levels are showing a steady improvement.

Ward.—The shaft is down 720 feet, the bottom in good blasting ground, and sinking progressing at the rate of 25 feet per week. The water no longer gives the least trouble.

Chollar-Potosi.—Sinking the main incline below the 1600-ft level is progressing at the rate of two and a half feet per day. Sinking the combination shaft is also making excellent progress.

Cabinet.—Work was resumed in this valuable mine on the first of the present month. The old shaft is being enlarged to three compartments.

Union Con.—The west cross-cut from the main north drift on the 1300-ft level is still showing some quartz and low grade ore.

Buckeye.—The north drift on the 550-ft level is being pushed ahead with all possible vigor to reach the rich chimney of ore known to extend downward from the 300-ft level, at a point about 600 feet north of the shaft.

West Belcher.—The extraction of ore from the various openings of the 300-ft level will be commenced shortly, full arrangements having been made to that effect.

Aurelia and Argentina.—The new shaft is down 98 feet to-day, and work progressing well. The material at the bottom is porphyry and quartz, with occasional small bunches of low-grade ore. The rock is hard, but blasts well.

Sutro Tunnel.—Total length of tunnel, 14,970 feet. Material hard, tough-working porphyry, with occasional streaks of quartz, carrying considerable pyrites of iron which give good gold assays.

Pontiac.—The developments in this mine are still confined to the cross-drift through the croppings of the ledge. This drift is showing some good ore.

North Carson.—Bottom of shaft in very hard rock at present, with seams or feeders of rich ore.

Phil. Sheridan.—Sinking the shaft is being urged ahead at a very rapid rate of speed. The bottom is

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The Engineer.

The New York and Brooklyn Bridge.

The first permanent wire of the Brooklyn bridge, over tha East river, connecting New York and Brooklyn, wss thrown across on the 22d of September. The travelers are wire ropes of three-fourths of an inch, whila the csrrier is a cable of one and three-fonrths in diameter and weighs 21,000 pounds. Seven years ago —that is, in October, 1869—work was begnu on the foundations, piers, anchorages and approsches of this great work; and that being finished, the snperstructure of bridge proper is commenced. As the connection of the 1,000,000 city of New York with the 450,000 city of Brooklyu is a matter of some importance to the former and of very grest importance to the lattar, let us, says the *American Manufacturer*, take a glance at what the proposed bridge is to be, what it is to cost and how it came to be built. A granite tower rises on esch bank of ths rivar, and behind each—farther up town on both sides—is an anchoraga, from which an approach lsvels the track down to the city grades. The following figures are feet measnrements of the bridge: Lengch of river spsn, 1,595; Length of New York land span, 1,870; Length of Brooklyn land span, 935; Length of New York approach, 1,562; Length of Brooklyn approach, 971. Total lengih, 6,933.

The towers npon the two hanks measure, in feet also, as follows: Below high water, 78; from high water to roadway, 135; above roadway, 149. Total hight of towers, 462.

The width of the roadway with its five tracks is msde up as follows: Two carriage roads, 18 each, 36; two car traoks, 13 esch, 26; promenade for foot pssscngers, 15; divisions, 8. Total width of rosdway, 85.

The main snpporters of this immense work sre four wire cables of steel, something over 3,600 feet in length and some 15 inchee in dismeter. These are to be streiched from anchorage to snchorage. They will be wrought in position. Esch is to consist of some 6,000 separate wires, two of which will be laid at a time. Tha two cables are to be made into an andless chain, which will be driven by au engine on ths Brooklyn side. The wires of the grand cables mnst he clasped together, and for this purpose a temporary bridge mnst be built all the way across. This will he the next work now. Two other 1.75 inch cables will be thrown aoross on the upper side, and thus the other two grand cables will go on at nearly the same time with the first two—all four at the ssme time, that is to say. The wire to be used in these grand cables ie what is known in the trade as No. 7 galvsnized steel wire, about 1.6 inches in diameter. Each grand cabla is to consist of 19 strands, and when these are clamped iuto a round form the whole will be wound spirslly with No. 10 wire, so closely pressed as to be water-tight, the whole being saturated with psint during the process of constrnction. It is expected that two months will be sufficient time to oomplete the temporary cables, and then will begin the work on the grand cables. The time of this preparatory work depends very much npon the westher, as littla csn be done during high wiuds and nothing during fogs. Tha expense of the work thus far has been $6,758,611.12.

Shortest Line Acaoss the Isthmus.—Resr-Admiral Cochrane has written to tha London *Standard* snggesting that it would be to the interest of England if steps were tsken for snrveying a ronte for a cansl which is traced by proceeding np the Bayano river, which debouches into the Psoifio abont 20 miles to the eastward of Panama, to a farm or village oslled Jesus Maria; from thence in a more or less direct line, to proceed to the hsrbor of San Blas, on the Atlantic. The map, "Selfridge's," and Admiralty chart, demoustrates at a glsnce the advantages of adopting this route on acconnt of its shortness, if it is fonnd on survey to he otherwise suitsble. The conrse he recommends for survey is the shortest across the Isthmus of Panama, viz., about 29 miles. He states that he ascended the Bayano river in May last, with two steam pinnaces, to Jesus Maria, in three snd one-half houre of steaming, and oarried a depth, excepting over some sand hars, of several fathoms. There he caused to be obtained observations for latitude and longitude, which showed that he had sttained within 19 miles, in a direct line, of the port of San Blas, on the Atlantic, and the tidal rise of the Pacific extended several miles beyond the point attained by him.

The Tallest Lighthouse in the World.—The firm of Cail & Co. have begun the constrnction of the great lighthonse which is to stand on the brow of the Trocadero, in Paris, during the great exhibition of 1878. The lighthonse in the 1867 exhibition was only 53 metars (about 180 feet) high, wharess the present one will reach 127 meters, or 413 feat, in hight. Tha lighthouse hae been ordered for Plymouth, and its white and red lights will be seen 7 leagnes on the main. It will contain 10 roome for attendante, 2 provision bunkere, an infirmary and a bedroom with 10 bads for the shipwrecked. Abont 50 metere (162 feet) abova the level of the sea a movable annular plate ie provided, carrying a big cannon for shooting the salvage line within a range of 8,000 to 10,000 maters. Naar the base of this gigantio pharoe there ie a completa and improved lifehoat arrangemant, which allows of a lifaboat baing lowered by oua man.

Roofs of Enormous Width.—The desire to construct the largest single roof in the world wss achieved in the roof of the Midland railway station at St. Pancras, which now possesses that distinction, having eclipsed the roof of the Imperial riding school of Moscow by a few feet, the span of the former being 240 feet, and that of the latter 235 feet. Bnt, apart from ambitious motives, the principal reason for adopting these large single spans is, that it obviates the necessity for columns or other intermediate supports which hamper the station arrangements and interfere with alterations, should they become necessary. The most recent examples of large spsn roofs are to be found at Glasgow and Manchester, both of which are in conrse of construction. The Glasgow roof is to cover the large new station at St. Enoch sqnare for the Glasgow Union railway, and which is to be used by the Glasgow and Southwestern and Midland railwaye. This roof, which is well advanced towards completion, is of the same general character as that of the Midlsnd railwsy, already referred to. It is, however, smaller, the Glasgow roof having a spsn of 198 feet and a lengih of 518 feet, as against a span of 240 feet snd a length of 689 feet in the Midland roof. The new roof will be 90 feet high from platform level, and will be supported by 15 msin ribs, 12 of which are alresdy erected in plsce, and the ironwork for the remsining three is being sent forward. The total weight of the ironwork in this roof is about 1,400 tons. The roof at Manchester is for the new joint ststion of the Midland, the Great Northern, and the Manchester, Sheffield & Lincolnehire railways, and the works have recently heen commenced. The design is also of tha ssme character as that of the St. Pancras roof, the spsn being 210 feet and the length 550 feet. The cast and wrought iron will weigh upwsrds of 2,300 tons, of which nesrly the whole will be in the roof itself. It is expected that the Glasgow roof will be completed next summer, and the Manchester roof dnring the following year.—*London Times.*

The Lonoest Bridge in the World —A piece of engineering enterprise of great magnitude and importsuce is just now, says *Iron*, making rapid progress, namely, the new viaduct across the estuary of the Tay. The first stone of the Tay bridge was laid on the Fifeshire side of the Tay in the month of July, 1871. The estimated cost of the nndertaking wss from £200,000 to £220,000. The object of the nndertaking was that of connecting the important msnufacturing town of Dundea with the North British railway company's branch between Edinhurgh and Tayport. The length of the bridge is 10,321 feet, and in shape it is not nnlike the letter S. It is the longest bridge over a running stream in the world. On tbis account its constrnction was looked npon as one of the most importsnt engineering works of recent times. Nor was it in respect of length alone that it claimed to be nniqne, and threstened to tax all the constructive resources of its builders. It was beset with even grester trials on account of the Tay being a tidal river, liable to enormous floods and exposed to blasts of wind from east to west, which seemed likely not only to hinder the progress of the work bnt to destroy such progress as had actually been made. For a long time very little progress was made in the work of construction on account of the experimentsl chsrscter of the operations and the frequent accidents that befel. Dnring the last 18 months, however, very substsntial progress has been made.

Stone-Cutting Machinery.—At the English society of engineers, a paper on stone-cutting machinery, by Mr. Henry Conradi, was read. The author first noticed the ordinary stone-sawing machines as worked by hand. He then described the improved machinery for cutting and dressing stone as in nse at the New Law Courts by Messrs. Bull & Sons, the contractors. It consists of a timber stand, carrying a cast-iron ssw-frame suspended by the corners to the npper psrt of the frame. The ssw-frame is raised or lowered by means of winches and chains. The anthor also described some saw-frames for stone, with both horizontal snd vertical revolving disc-cntters by which the stone is cut. The author then proceeded, by the aid of disgrams, to describe a stone-sawing machine designed by himself, and which has been made and nsed in Frsnce. In this machine the author reversed the principle adopted in ordinsry stone-sawing frames, making the fixed stand a movable one, carrying the saw-frame with it in its forward and backward motion, the frame receiving its vertical motion from a suspension arrangement. This sawing-frame is usually driven by means of a semi-portable engine of speoial construotion, which was decribed by the anthor.

French Railways.—In Frsnce all railrosds are built nnder the supervision of the government. The State axarciaes tha most minnte supervision. At the expiration of ths period of concession, the government succeeds to all the rights of tha company over aach road. If the company do not keep the road in good repair, the State reservee tha right to eeize several yeare before the coucession terminates. Tha State determinee tha styla of oars that shall be employed, fixee the rate at which passengere shall be charged per kilometer, and the tolls of freight, whather at low speed or high, and does not permit a lowering of theee ratas except after au extended notice of such propoaed reduced rates has been published. It prescribee now the mails shall be osrried, and at what cosi, etc.

Another Submarine Tunnel.—Stimnlated donbtless by the project of joining England to the continent by a snhway nnder the Straits of Dover, which has arrived at its first prsctical siage, a Madrid pamphlateer proposss to tnnnel the Straits of Gibraltar and nnits Europe with Africa, while turning the flank of the fortress of Gibraltsr, on the English occupation of which the Spsnisrds hsve long looked with an evil eye. He snggeste thst the passage should commence hetween Tarifa and Algesiras on the Spanish, aud come out between Ceuta and Tangiers on tha African side. The submarine part of this tnnnel would be little more than a third of the length of thst between Eoglaud and France. On the other hand, as the maximnm depth of the sea at tha point in qnestion is 500 fathoms, and as it is proposed to lesve 300 feet of the rock betweeu the arch of tnnnel and the sea bottom, the tunnels of approach would have to be nearly six miles long on each side. The cost is estimsted at abont £4,000,000 sterling. It is very questionable, however few the engineering difficnlties, whether such a work could ever become a commercial success; bnt in conneotion with the snbmarine wsy under the channel, it would, ss its projector points ont, allow of an overlsnd railway route to India without change of carriage.

American Bridges for Brazil.—The favorite Americsn systems of bridge building have been adopted by the Brazilian government for nse in all future internsl improvements. The problems involved in the development of Brszil, says the *Iron Age*, are so similar to those which have been solved here, that her rnlers can doubtless imitate with profit snd advantage msny of our public works, purchase many of our supplies, and extend the process of buying cars and locomotives to the constrnction of Amerioan bridges and the nse of American coal.

Watering the Desert.—It appears from reoent explorations and surveys that the work of turning the Atlantio ocean into the Grest Desert of Africa is not so formidable an undertaking as was st first supposed. It is only neoessary to cut a channel through a bar about 300 yards wide. The level of the desert immediately behind this obstruction is some 330 feet below the sea level, which will give a pretty fair depth of water over which to stesm into the fertile hesrt of Africa.

A distinguished Frenoh engineer and secretary of the French geograpical sociaty, arrived at Washington recently to secure aid for a complete survey of the Centrsl Americsn isthmus. He was sstonished to learn that at vsrious times duriug the last 25 years this whole region has been surveyed, and 40 different routes over it proposed.

The Sun's Temperature.

The actual heat of the sun's snrface is one of the nnsettled questions of science, and estimstes have varied between 10,000,000 deg. and 2,700 deg. Fah. Professor S. P. Lsngley read a psper at the late meeting of the National academy of sciences, detailing how he compsred the sunlight with that from the molten steel poured ont of the Bessemer converter, and thus approximately estimated the solar temperature. A helioostst arrangemeut was employed to transmit a sunbeam into the foundry of the Edgar Thomson steel works, and a Ritchie photometer was nsed to measure the respective intensities of the lights. The first conclnsion reached was that the sun's light, which turns the light from the molten steel into a black spot, mnst be at least 50 times the greater. Than the spectroscope was employed and the two rays oompared. The stael rays were agsin blotted out. Hence the suu rays must have been at least 64 times brighter. Next, Professor Langley made comparisone of the snn's rays with those from the flames above the converter when the latter were at their brightest. This was a less difficult proceeding and furnished more specifio results. The photometric compsrison conld be made directly. It is admitted, however, that the flame light may not be quite as bright as that of the molten steel. The arrangement was somewhat like thst of a camera obscura. It gave the image of the sun so accurately that sun spots could be easily examined; it also gave an exsct representation of the furnace flame. Each was alternately superposed on the other. The conclusion is that the sunlight is at least 2,168 times brighter thsn the furnsce flame. As the heat is presumably of the same relative order, the result is adverse to the law of Dulong and Petit. The actnsl heat of the sun is probably among the higher values thst have been suggested.

Rich Ore.

Some very rich ora is now being takeu out of the ohimney recently cut in the Paxtou vein, Bowman incline, of the Manhattan mines. Thie ie tha narrowast vein (at thie point) now being worked by tha company, but the high grade ore which it carriae compeneatee in a graat measure for the narrowness of tha vein, and as it has been a good eized vein where worked in other portione, there ie avery reason to supposa it will increase in size. It is now about eight inchee in thickness, of the richest character of ruby silver ore, and aesaye up into tha thoueands. The ore vein on this ohimney is now baing worked throngh what ie known as the Paxton east drift, from the Bowman incline, and ae tha drift ia extended shows increaeed signs of regularity and permanancy. It has not yet been prospected above the drift, but as soon as the drift is extended to a sufficient distance into the chimney a shnte will he raised to prospect it above the Great Eastern works, a distance of about 50 feet, which will also giva ventilation to this psrt of the mine. Soms specimens have heen taken from this chimnay which assay $4,000 per ton in silver; bnt of course this is by no mesns au aversge, thongh lots of pieces of this kind can be picked from any portion of the chimney, and it could bs easily sorted to make a first claes that would work $3,000 per ton. It pays better, however, to send to the mill without sorting, as ora ranging from $300 to $500 can be worked to better advantsge than that of a very high grade.

The richness of the Lander hill ruby and antimonisl ores is so well known thst the production of ores ranging from $3,000 to $5,000 per ton has ceased to he a subject for wonder or astonishment to the people of this section. Comparatively lsrge bodies of this rich ore have heen enconntered before, near the snrface, but were generslly marred by breaks or slips, hut the workings have now penetrated beyond these influences and these bodies of exceedingly rich ore are found in regular chimneys, continning both lsterally and dowuward, without slip, hreak or interruption of any kind.—*Reese River Reveille.*

Idaho Mining Operation.

The Owyhee *Avalanche* says: From varions sources we are pleased to learn that mining operations in the Basin this sesson have been attended with more promising success than dnring aither of the psst five years. The people are in a hopeful mood and claim owners generally are well satisfied with the resnlt of their work during tha psst snmmer and the present fall. Thie section of the Territory will probably never witness such a prosperous period as that which fell to their lot some 12 years ago, but it may be safely predicted that the day is not far off that will, according to the present ontlook, ensure to them a degree of permanent prosperity in their mining operations, snch as will guarantee a comfortable support of more than donble their preseut population. The quartz claims open out most promisingly, and many parties interested in them have done a handsome businese dnring the past six months, while tha placer claims have yielded generally very satisfsctory returns. Information that we havs obtained from qnite reliable sonrces places the valne of the bullion snd dust shipments from the Basin this year st figures somewhat in excess of $1,000,000. From Idaho City alone tha shipments will exceed the snm of $700,000, and it is calculated that the amount realized from claims in Placerville, Pioneerville, Grsnite Creek, Qusrtzburg and other sections of the basin, will reach abont 50 per cent. of that figure. This is a good showing, and we shonld not be surprised, in view of the prospects of work at Banner, with operations on a larger sosle in the qusrtz mines generally in this district, that the product of the coming year for the Basin will fall not far short of $2,000,000. The merchants and business men generally here feel quite hopeful over the sitnation. Their oredit is good abroad; their losses for the past few years have been mainly made up and future prosperity may be counted upon with tolerable certainty. The Basin to-day occupies a more promising position than most of the other miuing districts of the Territory. The dark clouds have all passed away and the faith of the people in future success is well fonnded.

The Dsnskin Bros. do a heavy business on claims in the vicinity of Granite creek aud are among the most extensive snd most active mining operators in the Territory. They keep nearly 70 men employed, principally on placer diggings. A few weeks sgo they purchased a magnificent mining property on Canyon creek, comprising rich gravel diggings and qusrtz, for which they paid $20,000. They havs a heavy interest in most of the placer claims about Grsnite creek which they have owned and worked for the past four years, and many of which they sre now working on shares. They give employment to a large nnmber of Chinamen, and since our lsst visit here we find that the Celestials have built np qnite a little village almost in the hesrt of Granite Creek, and nnmber probably more than 100 of the population of thst burg. The Danskins (two brothers being engsged in the bnsiness here) do a heavy business at their store aud carry a larger stock of goods than auy other housa in tha Basin. They hava done a fine business the past season and will continue operations on quite a large scale the coming winter. They are solid, reliable men, intimately identified with tha businese interests of the Bssin, and from the perseverance and energy they have displayed in conducting their business they have shown themselves fully antitled to the success they are meeting with.

Tarnish on Electro-plate Goods may ba ramoved by immersing the article from ona to fifteen minntee, or nntil tha tarnish ie removed, but no longar, in the following solution: Rsin water two gallons, cyanuret potash half ponnd; dissolve and pnt into a stone jng or jar, and cloeely cork. After immersing, the articla mnst be tskan out and thoronghly rineed in two or three waters; then dried with a soft linen oloth, or, if frosted or ohased work, with fina clean sawdust. Tarnishad jewelry may be speedily rsstored by thie process; but make sura work of removing tha alkali, otherwisa it will corroda tha goods.

The Connelly Mine.

Within the past few weeks a number of important changes have taken place in and about the Connelly mine, on Prospect mountain, and those who have not been in that vicinity of late would be surprised to note the many improvements now completed and under way. The Connelly is one of a series of mines owned by the British mill and mining company and every indication points to its soon becoming a valuable property. Mr. John Potter, Superintendent of the company's affairs here has been indefatigable in straightening out the mixed condition of affairs which confronted him on his arrival, and the energetic, business-like manner in which he has accomplished the task shows him to be the right man in the right place and one of whom the home company can well be proud.

Some time since the company purchased the hoisting works of the Page and Pannca mine of Pioche, which at a later date were shipped here. The machinery, as good as new, has been placed in proper position over the shaft of the Connelly, and well housed in, and on Saturday last steam was gotten up and the shrill echo of the whistle sounded for the first time. The machinery was found to be in admirable working order; but a few slight changes are needed, when it will be in perfect order, and during the present week operations will be commenced in good earnest. The shaft is now down a depth of over one hundred feet and Superintendent Potter has his entire winter's work planned. The shaft is to be continued to a depth of 250 or 300 feet when drifts will be run both ways and the usual cross-cutting carried on. Fifteen men working in two shifts are now employed at the mine and will be during the winter, after which the number will be increased. Several veins of ore have been tapped during the prospecting work, carrying a fine quality of ore, enough being in sight to insure a successful run of the company's mill at Pinto next spring, which Mr. Potter intends starting up at that time. The air shaft at the mine, which a former superintendent had filled up, is being cleaned out, which, when finished, will greatly benefit the miners and accelerate operations. Aleck McKenzie, a miner of great experience and one of the original locators of the Connelly, is the foreman of the mine, and to whom great credit is due for the present favorable condition of the property. We hope Mr. Potter's most sanguine hopes may be realized and the British mill and mining company occupy a position among our prominent and successful companies, which it would have done long ago but for the incapacity of those who, at an earlier date, had charge of the affairs of the company.—*Eureka Sentinel.*

Virginia and Gold Hill Water Company.

The Gold Hill *News* says: Captain Overton, of the Virginia and Gold Hill water company, reports 35 men working on the long tunnel to tap Marlette lake. The tunnel will be 4,000 feet when finished. It is now over two-thirds done. Considerable water is running out, probably 120 miners' inches. The progress has been hindered of late by the encountering of a vein of sand and broken rock. This vein was seven feet in thickness only, yet it took about two weeks of hard work to get through it. The broken rock prevents spiling from being driven in to stop the flow of sand, which made it necessary to bulkhead the tunnel to keep it out. Five or six similar veins have been cut before and caused similar delays.

The four-foot dam, which was formerly thrown across the outlet of the lake, has been raised 10 feet higher, thereby doubling the surface of the lake, as it previously existed, and making it five times as large as at low water. This has increased the amount of water immensely, so that now there is enough in the lake to supply this city and vicinity for a year, and the great accumulation of the rains of the fall and snows of winter will swell the amount still more. Connection will be completed with this lake as early as May next and before any scarcity can be possibly felt from the dry season.

The estimated cost of the tunnel above mentioned was $65,000. The work will cost over $150,000. When we stop to consider the importance of the supply of water which the company are furnishing the city and vicinity, and that but for it this whole section, if inhabited at all, could sustain but a very few people and fewer mining and milling interests, the real blessings which are daily distributed in the shape of the purest, best water in the world, become more apparent, and we appreciate more highly the great work which the company have accomplished and are still accomplishing for our good as well as their own profit.

A Supplementary Exhibition.—A dispatch from Washington says: An organization is being perfected by which facilities will be afforded exhibitors, both foreign and American, to continue the exhibition of their goods in the main exhibition building after the close of the Centennial exhibition, that building having been purchased from the Centennial Board of Finance for the purpose of creating a permanent exhibition. The exhibite will comprise the following classes: Mining, manufactures, education and science, art, machinery, agriculture and horticulture. The space will not be charged for; but the unpacking and rearrangement of exhibits, and the transportation, etc., of new exhibits must be done at the expenee of the exhibitors.

Useful Information.

What We Find in Coal.

Professor Wm. F. Roberts says: The coal itself, even where it is most abundant, constitutes but an insignificant portion of the whole thickness of the carboniferous strata of the ancient coal formation. Most of the coal seams rest upon an under clay, containing stigmaria, the fossil rootlets of the plant called sigillaria. Professor Goppert examined the coal fields of Germany and stated that he detected in beds of pure coal the remains of plants of every family, then known to occur, fossil in the coal. Many seams, he remarks, are rich in sigillaria, lepidodendra, and stigmaria, the latter in such abundance as to appear to form the bulk of the coal. In some places almost all the plants were calamites, in others ferns. In a cut for a railway in Lancashire, England, in the distance of 100 feet, six fossil trees were discovered, standing in vertical position to the dip of the strata, which was 15 degrees south. The roots were imbedded in an argillaceous shale underlying a seam of coal about eight inches thick. Beneath the coal seam and around the base of the trees more than a bushel of fossil cones, supposed to be the fruit of the lepidodendron, were gathered. In the carboniferous strata of Coalbrook Dale, and in other coal fields, these fossil cones are met with, some of which are five inches long. One of the trees found in the cut measured 15¼ feet at the base and seven and one-half feet at 11 feet, its discovered hight. In the Newcastle, Bristol, and other coal fields, these vertical stems are called by the miners coal pipes. These cylindrical casts of fossil trees now forming solid sandstone, after the coal is mined from underneath sometimes slide suddenly down and cause fatal accidents. The cliffs, known as South Joggins, on the coast of Nova Scotia, afford admirable sections of the coal bearing strata, containing fossils of the forests of the carboniferous period. Large trunks of trees are seen standing at right angles to the dip of the sandstone strata, showing that they were, before this strata was deposited, standing in an upright position; now they incline at an angle of 150 degrees from the vertical line The vertical hight of these cliffs is from 150 to 200 feet. At low tide a fine horizontal section of the strata is exposed to view on the beach. Lyell and Dawson, in 1852, made a detailed examination of one portion of the strata, 1,400 feet thick, where the coal seams are most frequent, and found evidence of root bearing soils at 68 different levels, clearly showing 68 fossil forests, ranged one above the other, in this coal field in the above mentioned thickness of stratu.

Comparative Cost of Illumination.

A number of experiments, says the *Iron Age*, have been made lately in London, to test the comparative cost of illumination with the various materials used for that purpose. Below is the result, the first colnmn containing a description of the materials tested; the second, the price of the material in London, reckoning 24 cents to the shilling; the third column shows the duration of the light furnished for one cent, the light being reduced to equal one sperm candle. With the exception of the last named material, common gas, the prices do not vary sufficiently from those which prevail here to effect the value of the comparison. London gas is reputedly of inferior illuminating power, so that the economy of its use can scarcely be so much greater than ours, as its cheapness would seem to indicate.

		h.	m.
Standard sperm candles, per lb	$0.48	1	7
Best wax candle, lb	.48	1	6
Sperm oil in moderator, per gal	2.28	1	12
Belmont sperm candle, per lb	.30	1	27
Stella, or Burmese wax, per lb	.30	1	37
Petroline candle, per lb	.36	2	15
Composite candle, No. 1, per lb	.22	2	5
" " No. 3, "	.16	2	45
Common dip candles, per lb	.12	2	52
Almond oil, in moderator, per gal	2.22	3	..
Colza, per gal	1.20	4	37
Paraffin oil, in lamp, per gal	.72	9	35
Common gas, per 1,000 it	.90	26	..

The price of gas being about three times as great in most American cities as in London, no such marked advantage as appears in the table can accrue from its use on the score of cost. Still, it must rank among the most economical of artificial illuminations—at least three or four times as economical as common candles for a given amount of light.

Amber.—Reboux states that at the eocene epoch the bed of the Baltic sea was occupied by an immense forest, which spread over nearly the whole northern continent. Dredging carried on at a depth of 6.4 feet below the sea bottom has brought to light thereby two species of conifers, a poplar, a chestnut, and various other trees. From the conifers, the author thinks, ran the resin which, through being buried in the earth, has become changed into amber. The largest quantity of the gum appears to have been derived from the *Pinus succinus*. More than 200 specimens of objects have been found imbedded in the gum, including insects, reptiles, plants, leaves, grains, shells, fruit, etc. The density of natural amber varies from 1.09 to 1.11. Its analysis, according to Schrotter, is: Carbon, 78.82; hydrogen, 10.23; oxygen, 10.90.

Notes on Furniture Cleaning.

Furniture Cream.—1. Yellow wax, 4 ozs.; yellow soap, 2 ozs.; water, 50 ozs.; boil, with constant stirring, and add boiled oil and oil of turpentine, each 5 ozs. 2. Soft water, 1 gallon; soap, 4 ozs.; white wax, in shavings, 1 lb. Boil together and add 2 ozs. of pearlash. To be diluted with water, laid on with a paint brush, and polished off with a hard brush or cloth. 3. Wax, 3 ozs.; pearlash, 2 ozs.; water, 6 ozs. Heat together and add 4 ozs. of boiled oil and 5 ozs. of spirits of turpentine.

White Furniture Cream.—Raw linseed oil, 6 ozs.; white wine vinegar, 3 ozs.; methylated spirit, 3 ozs.; butter of antimony, ½ oz.; mix the linseed oil with the vinegar by degrees, and shake well so as to prevent separation; add the spirit and antimony and mix thoroughly.

Cleaning and Polishing Mahogany.—Take 1 pint of the furniture oil, mix it with ½ pint of spirits of turpentine and ½ pint of vinegar; wet a woolen rag with the liquid and rub the wood the way of the grain, then polish with a piece of flannel and soft cloth.

To Renovate Wicker Tables.—Paint them over with Brunswick black; it is used for work and fancy baskets, is not expensive, and can be procured at the grocer's.

Removing Varnish from Wood.—A strong application of ordinary spirits of camphor will remove almost any kind of polish or varnish. Give the spirit time to evaporate before repolishing, or it will injure the new polish. Another.—The plan I adopt to remove varnish from wood is to make a strong solution of soda, soap and water, and keep the place constantly wet while I go on scraping. This softens the varnish, and I afterwards rub down with paper previous to revarnishing.

To Restore Soiled Steel Engravings.—Lay the engraving on a plate of glass a few inches larger than the picture, then pour distilled water over the same to the hight of a line and let it soak for a few hours; then pour off the water and renew the process several times, after which allow the water to drip off well and pour Eau de Javeille upon the picture and allow the same to work upon it for not more than one-quarter of an hour. After this rinse the picture off again with distilled water, and repeat the treatment with Eau de Javeille according to desire. Now rinse the picture with a thin solution of hyposulphite of soda and then an abundance of fresh water, after which set the glass and picture upright on a sheet of blotting paper and allow the water to drip off until the picture is dry. Of course great care must be taken if the process of bleaching is to be a complete success.

Immigration.—During the year ending June 30th, 1876, there arrived in the United States an army of 169,986 immigrants from almost every country in Europe, though chiefly from England, Ireland and Germany. The number for previous years was as follows: 1872, 404,806; 1873, 459,803; 1874, 313 339; 1875, 227,498. The dropping off to 169,986 for the last year is not encouraging in comparison, and yet even that number is about 20,000 more than the whole population of the State of Delaware, and means an important addition to our productive power.

To remove ink marks from paper without affecting the smoothness and gloss of the surface, it will be found sufficient in most cases to moisten the inked surface first with a solution of cyanide of potassium and then of oxalic acid. A camel's hair brush may be used to apply the two liquids, being dipped alternately in each until the marks have disappeared.

Quick Time.—The Allan Royal mail steamer *Polynesian*, which lately arrived at Liverpool from Quebec with the Canadian mails in 7 days and 16 hours, brought passengers who had come, via Quebec, from San Francisco, and landed them in Liverpool on the 16th day from their leaving San Francisco; this is probably the smartest run on record.

Good Health.

Value of "Good Health."

Editors Press:—Will you not give us the price of *Hall's Journal of Health*, and whether we can obtain it in San Francisco? We would like to have your opinion on Prof. O. S. Fowler, as an author and physician; will you give it to us?

We read with great interest your "Good Health" column every time, and we cannot be too thankful for having at least one paper which will teach us how to enjoy life, for we cannot enjoy it unless we obey the laws of nature. Yes, such is the greatest enjoyment of life; and every disobedience is punished sooner or later, whether it is done by ignorance, idleness, or wilfulness, as "Philmore" truly says. We farmers as a class know very little about the laws of health, and but for our pure air and good exercise, God only knows what would become of us. The sufferings are only too great and long. We know all about the food that is required in quality and quantity to make our horses strong and active, to make our cows give plenty and rich milk, to make our hogs fat, to make our chickens lay plenty of eggs, but what is required for our own dear selves we are entirely ignorant of. We know nothing about the function of the stomach; if it gets out of order we resort to Quack's medicine, and if we have to call in an honest physician at last, he tells us, "your stomach has got more sense than your head." We do not know what to make of it. We hear sermons by the learned Rev. Strutton, or able Betts, or plucky Dillion, delivered from the text, "the ways of the transgressor are strange," but they are of very little good, because the wise will hardly need them and the rest do not understand. I tell you, Mr. Editor, your "Good Health" column is worth the subscription price to every farmer, and we can do no better than to pray for more space. N.

Santa Clara, Nov. 8th.

Hall's Journal of Health costs $2 per year, and can be best obtained by sending directly to the publishers, at No. 137 Eighth street, New York City.

The value of Prof. Fowler's phrenological work depends upon the belief of the one who makes the estimate. It is a matter of opinion which we cannot decide. His other writings contain much that is true and a great deal that is debatable. We believe him honest and a worker of much good in his way.—Eds Press.]

Food and Health.

At a recent meeting of the American Public Health Association, Prof. Austin Smith, of New York, gave a discourse on "Food in its Relations to Personal and Public Health." He treated the subject in a popular, rather than a strictly scientific way, and endeavored to correct certain popular errors. In the first place, he stated that there is no uniformity in the requirements of alimentation, that there is no average to be applied to individuals; and that while observation and experience will afford a measure of quantity and the selection of kinds of food for considerable bodies of men, there is no means of determining individual cases, excepting by the natural instincts of hunger, appetite and taste, and by personal experience. He spoke chiefly of the instincts, considering personal experience of importance principally as a regulator of the instincts. Hunger was pronounced abnormal, and appetite the normal condition which determines at what time and how much we shall eat. Appetite might lead us to eat too much; and then experience came in as a regulator. Appetite was not an infallible guide, but the best, nevertheless; and in this connection Dr. Flint criticised in a quietly caustic way the old notion of rising from the table before the appetite is appeased, and of eating only at regular intervals, no matter how strong the appetite may be. The instinct of taste, gustation, the speaker said, was abused even worse than appetite—shamefully abused. Appetite told us when and how much to eat; taste what to eat. Here the doctor alluded to the prevalence of poor cooking, and made a complimentary observation on William E. Baker's proposed donation toward founding a college of cookery. His remarks on the subject of dyspepsia were rather singular. He said it was a great mistake to suppose that the chief end of man was to observe the process of digestion, and the sole inference to be drawn from this part of his discourse was that dyspepsia is frequently due to the imagination. He also ridiculed, in a polite way, the notions of people that certain articles of food, wholesome to others, are injurious to or do not agree with them.

Gymnastic Exercise.

Persons who are ambitious of becoming muscular will do well to study the result of an official inquiry which, according to the *Medical Examiner*, has lately been instituted at a military gymnastic school in France. The inquiry, which extended over a period of six months, showed: 1. That the muscular force is increased on the average 15 to 17 per cent. and occasionally from 25 to 30 per cent. the force having a tendency to become equal on both sides of the body. 2. That the capacity of the chest is increased one-sixth at the lowest. 3. That the weight of the individual is increased from six to seven per cent., and occasionally from 10 to 15 per cent, while the bulk of the body is diminished, thus showing that the profit is confined to the muscular system. The increase of muscular force was generally confined to the first three months of the course. During the last moiety a serious diminution usually occurred; and here the dynamometer gave positive indication of the necessity of moderating or suspending the exercise. The truth is, gymnastic exercises, like all other things, require to be taken in moderation, and if indulged in to excess do infinitely more harm than good. In the meantime, there is one simple method of taking exercise which, notwithstanding its advantages, is for some unaccountable reason wholly neglected by vast numbers of persons who are constantly complaining of the ill effects on their constitution of what they term "sedentary pursuits"—namely, walking.

Asthma Relieved by Belladonna Leaves.—Dr. C. E. Reeves, in the Melbourne *Med. Record*, speaks very highly of the speedy relief obtained by smoking belladonna leavee in spasmodic asthma. He finds about two and one-half grains smoked in a pipe is suffioient to give immediate relief.

MINING AND SCIENTIFIC PRESS.

W. B. EWEB.....SENIOR EDITOR.

DEWEY & CO., Publishers.

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THE ORIGINAL ARTICLES in this paper are mostly set in solid type, giving in our columns one-third more reading than is contained in ordinary leaded matter.

ADDRESS all letters to the firm, and not to individual members, or others, who may at any time be absent from our office.

Our latest forms go to press on Thursday evening.

San Francisco:
Saturday Morning, Nov. 18, 1876.

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FREE BADGE OVER THE SACRAMENTO.—The citizens of Red Bluff, on Tuesday last, celebrated the completion of the bridge across the Sacramento river at that point. It was built by the Tehama company at a cost of $35,000, the California bridge company being the contractors. The exercises were extensive and impressive, consisting of a procession, driving the last spike, reading of the order of the Board of Supervisors, accepting the bridge contract, and an oration by Hon. E. J. Lewis. The citizens presented Supervisor French, and the Superintendent of Construction Higgins, each with an elegant and costly gold watch. Superintendent Brady was the recipient of a set of diamond shirt studs, and Superintendent Powell of an ivory carpenter's rule and a pair of amethyst sleeve buttons. The bridge is now open to the public.

GEMS AND PRECIOUS STONES.—The series of articles on this subject, by Henry G. Hanks, which have been running for some time in the PRESS, is concluded in this issue. The very valuable and well-arranged table on page 340 concludes the subject. Mr. Hauka has spent considerable time and labor in writing the articles, which we are sure have been appreciated.

NEWFOUNDLAND advices report several shipwrecks with loss of crews. A brig drifted into Crow harbor in Fortune bay, with four of the crew dead and lashed to the rigging.

The "Eyes" of a Mine.

It is a common practice among English miners to pass rich deposits in a mine and leave them undisturbed to fall back upon whenever the general average of the yield threatens to fall below a dividend paying point. These known rich spots are called the "eyes" of a mine, and are seldom removed when first discovered, unless, indeed, the mine is worked on a stock jobbing basis. The custom in this country is very different. Our miners generally pick out the "eyes" of a mine as soon as they get within reach of them, and then leave the mine to darkness and abandonment. The records of California and Nevada show a good many mines with their "eyes" picked out, which, with proper management, might have been made remunerative.

It requires considerable determination to pass a rich spot in a mine and go on delving into the earth after other ore, and few are able to resist the temptation. Moreover, it is not always necessary to do so. If a mine is yielding well and richer ore is struck, as a general thing that richer ore comes out first. There are circumstances, however, when this is not always judicious. For instance, if the underground works are in such a shape that but few men can work, the most of the labor should be directed to opening up the mine for more room, before the richer ore is removed. When a mine is owned by a few persons, all taking an active part in its development, they can, if the mine is paying, afford to pass a rich spot temporarily; but when a large corporation owns it, disputes would naturally ensue should rich ore be passed and prospecting work be continued. Again, in most cases ready money is needed to carry on operations, and the first good ore found is expected to meet the expenses, so the sooner it is found the better.

It sometimes happens, however, that in the anxiety to get at a rich spot great damage is done to the future working of the mine. An instance in the writer's recollection will illustrate this. After a little 40-foot shaft had been sunk in a certain mine in this State, a drift was run in on the ledge, the ore improving as the drift advanced. The superintendent thought then that instead of working there he had better sink another shaft further along, so as to strike the rich spot. This he did, and a few feet down disclosed very good rock. Then, instead of going to work properly he began to run a wide surface cut between the two shafts so as to get the rich ore out with little expense. This work was kept up for considerable time, the mine paying very well. The cut kept getting deeper and deeper, and pretty soon they found they were working at great disadvantage. After awhile there was a big cave, and a lot of surface water came in and work was suspended for the winter. In the spring they were compelled to go to a great expense to get the mine in any sort of condition to work, and then had to go to work on their shaft again. The operations previously carried on were found to be a great hindrance. This was a case of mistaken judgment for which the superintendent was properly blamed; but he contended that he wanted to get the richest ore out first and as quickly as he could, leaving the future to take care of itself.

Exhausted Nature.

[Written for the PRESS by JOHN L. BOONE.]

One would judge, from a superficial glance at the progress made during the last century, that it would not take many more centuries of invention and discovery, especially if they are as prolific as the last, to exhaust the laboratory of nature of its hidden facts and leave nothing further to be sought or desired; but we must remember that a fact discovered develops a number of other facts, each of which is as fruitful as its parent, so that we establish a geometrical progression which is in reality endless. Following this rule, therefore, we shall only be more enlightened as to the depth of our darkness a dozen centuries hence than we are now. We have so far only skimmed the surface, only discovered rudimentary facts; we have exposed the croppings, but it remains for us to follow up the veins in their various dips, spurs and angles, during which progress we are sure to find many scientific bonanzas. The one matter of electricity, although it has already been utilized to the great benefit of mankind, and to-day forms one of the necessary elements of commercial relations—and a very convenient element of civilization—is only understood in its general nature. There is no question but that electricity possesses elements, capabilities and powers yet to be discovered that will cast all of its present uses and advantages far in the shade. The steam engine is a mighty power, docile as an infant when properly managed and capable of exerting immense power when properly applied, but we require a still more powerful engine; facts convince us that somewhere in nature there is a more powerful force, and one capable of being controlled and utilized as easily as the steam force. It may be that we have already unearthed the agent which will develop into this future Samson,

Whether this be so or not, one thing we may depend on, and that is that whatever the initial power or force may be, it must go through all the stages of gradual development before it can actually exist in a useful form. The history of all our important mechanical inventions establishes this fact. No man can so far advance beyond the capabilities of others, either as the result of education, research or discovery, as to be able to produce, at a single stroke, an entirely novel, complete and perfect machine, based upon newly discovered principles.

Take, for instance, the sewing machine, as a familiar example. We can trace it back through the hands of hundreds of inventors and skillful workmen, each of whom added his mite of improvement before it became a perfect machine. So with the telegraph, so with the steam engine, so with all important inventions. The investigators of such matters aid one another to the final result. We must have the germ before we can produce the consequence. No one man of his own powers discovers even the germ; like the monkeys who cross the stream by one of their number suspending himself by his tail from an overhanging limb, while others suspend themselves from him until a line of sufficient length is formed to enable them to swing across and bridge the stream; it is the last monkey of the string that first reaches the opposite bank. So it is that one discovery enables another person to reach a little further, and by a similar effort develop another fact or discovery. And, strange as it may appear, it is seldom that nature has endowed a single person with the faculty of reaching beyond his own discovery in any one line of invention; either the effort required to make the discovery exhausts the enthusiasm of the individual, or the mind is disqualified for further research; possibly ambition is satisfied, and, like the fox in the race with the turtle, lies down to sleep, while another searcher after hidden truths passes on to the next discovery. If the Keeley motor had proven itself to be all that was claimed for it, it would have stood alone as an exception to the rule we have just stated. Keeley would then have assumed a position in the field of invention which has as yet not been awarded to any other individual. We would simply regard him as superhuman. But his failure is only another evidence of the universality of the rule we have stated.

Nature will not be exhausted until humanity and the inventive spirit are exhausted. Supply capable brains and nature will supply capable fuel for them to consume. Every patent for an invention issued by our government is a trail that leads to others. No matter whether it is profitable or not; no matter whether it ever assumes any other form than the mere publication of the description contained in the specification, nevertheless it is useful. It is either a finger-board pointing out the way to others, or a skull and cross bones warning others from continuing in the same course.

The Election.

The week brings no solution of the presidential issue. The country has watched from morning to morning for indications of the final result, but it is still within the realm of controversy. The issue is closer than has been known in the history of the country, and the length of time required to canvass the result enables us to realize the length of waiting which our ancestors endured before the days of railroads and telegraphs. The final result now depends upon the official canvass in three of the Southern States, and it may be another week at least before the choice of the people can be announced. The events are exciting and the charges of fraud are exchanged from side to side in different parts of the country. As yet good order prevails everywhere, and thus we trust it may prevail until the result is declared by a fair count.

Another note of the week is the reclending of the Eastern horizon, where Turks and Russians lie waiting the conclusion of the armistice which has been agreed upon. The rumors are quite redolent of war, when the stated peace is over.

BULLION SHIPMENTS.—Since our last issue shipments of bullion from prominent mines have been as follows: Northern Belle, November 7th, $12,006.26; Comanche, 7th, $7,620.92; California, 9th, $105,638.74—total to date, $156,782.74; Con. Virginia, 9th, $185,723 83—total for October, $1,335,989.71; Tybo, November 3d, $13,439.87—total to date, $75,195.70; Manhattan, 10th, $11,770; Grand Prize, 8th, one bar bullion; Justice, 8th, $55,000; Northern Belle, 9th. $12,017.25; Ophir, 9th, $11,036.96—total for October, $277,117.11; Leopard, total for October, $69,763.00; Grand Prize, November 9th, one bar bullion, and 10th, one bar; Modoc, 10th, 500 bars; total for November, $33,500; 13th, first shipment in November, $7,934; Manhattan, 10th, $11,774 04, total for week, $24,139.43; California, 13th, $87,388.56; total to date, $244,171.30; Con. Virginia, 13th, $92,768.16; Manhattan, 14th, $12,389; Tybo, 8th, $9,046 97, first shipment for November account; Grand Prize, 13th, two bars of bullion. Northern Belle, Nov. 12th, $18,000.98; California, Nov. 14th, $108,160.80; total to date, $352,322.10; Con. Virginia, Nov. 14th, $23,319.20; total to date, $119,087.36; Modoc Con., Nov. 12th, 300 bars; total for month to date, $37,800; Grand Prize, Nov. 14th, $2,378.72.

ON Tuesday, at eight o'clock, 1,700 kegs of Santa Cruz powder were exploded by electricity in the Enterprise mine at Smartsville. It was witnessed by a large number of people, and was a grand success.

Rivers and Deep Canyons.

The wearing away of the earth by the action of streams is familiar to all; but the vastness of this influence in modifying the surface of the earth is rarely appreciated, except by the professed geologist. In passing across the continent, from the Atlantic to the Pacific, the regularly increased evidence of this action is noticeable at almost every stage of progress. It is not, however, until the traveler has passed the crest of the Rocky mountains, that he beholds the most extraordinary phenomena of this description. Very deep canyons are comparatively rare east of those mountains, while they become the almost invariable rule to the west of them. Two of the most remarkable instances of this character are, perhaps, the Black Rock canyon, on the route from the Great Bend of the Humboldt to Goose lake and Oregon, and the still more famous canyon of the Colorado. This latter is rightly considered the most remarkable depression, or rather excavation, of the kind in the world. It has never been properly understood or appreciated, until the appearance of Powell's report on the subject, published lately by the Government. The land of this region is an elevated plateau, and for many miles the Colorado flows through it, in a narrow channel, 6,000 feet below the plateau!

Throughout the entire western flank of the Sierra Nevada, the principal rivers, in the upper portion of their course, have generally cut their way down from 2,000 to 4,000 feet in depth, with banks upon either side rising at an angle of from 35 deg. to 45 deg. with the plane of the river. It has been supposed by many that these channels were formed before the rocks had become so much indurated as to prevent any very serious obstacle to their being worn away. But such could not have been the case, as we find that before the present river courses had an existence, there was another system of rivers, running at almost right angles with the present water courses. In excavating into the beds of these ancient rivers, as the miners are now doing in thousands of places, we find most unmistakable evidences that even they flowed over the country after the country had become fully as much indurated as it now is. The upper branches of the American river have, in some places, worn their way 3,000 feet below the beds of these ancient streams. In almost every part of our mountains this characteristic is manifest, even to the most casual observer, although it is difficult to imagine the forces and time required to have accomplished such results.

The Cost of Mining and Smelting.

For the benefit and guidance of those interested in mines producing smelting ore, we give some complete and authentic figures on the subject, furnished to the Inyo *Independent* by Mr. W. Belshaw, of the Union Consolidated mining company, Cerro Gordo, Inyo county, Cal. These figures are taken from practical work and results, and are therefore of more than ordinary interest. The statement covers a period extending from February 1st to October 1st, 1876:

Total cost of mining and reduction, including interest on capital.....		$198,625 84
viz:		
Mining expenses.....	$154,966 61	
Furnace "	137,822 36	
Interest "	5,736 87	
Cost of mining 9,950 tons ore.....		$54,968 61
viz:		
Labor.....	$37,695 55	
Water.....	1,871 79	
Hauling ore.....	5,143 83	
Powder and fuse.....	585 10	
Candles.....	340 00	
Wood.....	1,508 50	
Blacksmithing.....	937 46	
Timbers and lagging.....	1,505 22	
Freights and sundries.....	2,379 36	
Superintendence.....	2,500 00	
Carbonates and oxides (soft ores).....		tons, 8,220
Estimated cost per ton for mining.....		$4 43
Sulphuret or galena ores.....		tons, 812
Estimated cost per ton for mining.....		$10 00
Silver bearing quartz ores bought and mined, tons, 1,118		
Estimated cost per ton.....		$11 00
Average assay of 8,220 tons.....		20 per cent. lead.
Average assay of 612 tons.....		70 per cent. lead

WAGES AT MINE:

Foremen and engineers, per day.....	$5 00
Ordinary labor, per day.....	4 00

Mining Superintendent, J. L. Porter.

Cost of reduction of 9,950 tons of ore.....		$137,822 36
viz:		
Coal, 1,950⅔ ton at $38 per ton...	$74,405 28	
Labor.....	31,339 87	
Wood.....	4,037 12	
Water.....	3,367 21	
Blacksmithing.....	458 29	
Freights.....	2,456 64	
Superintendence.....	4,999 86	
Paid men accidentally injured.....	474 35	
House expenses.....	3,235 56	
San Francisco office expenses.....	714 75	
Stable expenses.....	761 38	
Cerro Gordo office, legal, taxes, surveying and sundry expenses.	1,650 00	
Tools, oils and repairs.....	4,892 25	
Cost per ton of ores, reduction.....		$13 85
Cost per ton of ores, mining.....		5 53
Cost per ton of ores, interest.....		58
Total per ton for mining and reduction.....		$19 96

WAGES AT FURNACE:

Engineers and chargers, per day.....	$5 00
Ordinary labor, per day.....	4 00

Superintendent of furnace, Hugh Morrison; Assistant Superintendent, Wm. E. Goodrum.

Total running time of furnaces, 331 days; tons of lead produced, 1,325—or 64 per cent. of lead assay; 90 per cent. of silver values saved. Yours respectfully,

M. W. BELSHAW, Sup't Union Con. M. Co.

The Close of the Centennial.

The great exposition is formally closed, although there is yet opportunity for those who desire to behold it in its dissolving grandeur. The exercises at the closing were as marked as those at the beginning, and the affair was well assigned to history. The telegraph brought the following outline of the ceremonies of the closing day, November 10th: Great numbers of people were in attendance at the Centennial grounds, to witness the formal closing of the exposition. Shortly before 2 o'clock President Grant, escorted by Governor Hawley, ascended to the platform, followed by the Centennial Commissioners, the Board of Finance, Foreign Commissioners and invited guests. After the excitement of the multitude, occasioned by the presence of General Grant, had subsided, the orchestra, under the direction of Theodore Thomas, performed Wagner's Inauguration March, composed for the opening exercises on the 10th of May last. At its conclusion, Rev. Jos. A. Reiss offered up a prayer. The chorus, accompanied by the orchestra, then sang a choral, entitled, "Fugue," by S. Bach, after which an address was delivered by Hon. D. J. Morrell, United States Centennial Commissioner from Pennsylvania and chairman of the ex-Commission. The orchestra then rendered selections, after which Hon. John Welsh, President of the Centennial Board of Finance, delivered an address. After Beethoven's Fifth Symphony had been rendered, Director-General Goshorn addressed the audience at length. Handel's Hallelujah Chorus was next given by the orchestra and chorus, and Hon. Jas. R. Hawley, President of the United States Centennial Commission, delivered an address reviewing the history of the exposition. The audience joined in singing "America;" after which President Grant declared the international exposition of 1876 closed. The Doxology was sung by the chorus and audience, accompanied by the orchestra, and the formal ceremonies were concluded.

With the close of the Centennial exposition, Fairmount park becomes again the particular pleasure ground of Philadelphia, enriched by the scenes in which the world took part. Our illustration on this page reflects this idea and is a fitting scene with which to close our Centennial reports. There have been arrangements made by which the city of Philadelphia will retain some of the exhibition buildings to grace her pleasure-ground. The main building has been purchased by a stock company, and will be preserved for a permanent exhibition. The Art Gallery was constructed with a view to its remaining, and some other structures will doubtless battle with time until it conquers and removes them.

VIEW FROM BELMONT MANSION, FAIRMOUNT PARK.

The exposition has been a success far greater than was anticipated. The total number of visitors was more than eight millions and the money receipts will exceed the expenditures by one and a half million dollars, it is estimated. This money will either go to recompense the government for its endowment, as there is a clause in the appropriation bill to this effect, or will be divided among the holders of Centennial stock.

Now that the great event is over, it is fitting to dismiss it with a few notes of the good it has accomplished. Every one who has visited the Centennial, says the *Iron Age*, has gone away with larger and more liberal ideas, and a knowledge which will bear fruit for years to come. Vast multitudes whose lives were bounded by narrow limits, and who knew and thought of little beyond the commonplace happenings of their daily experience, have been drawn from home and brought into contact with the activities of a world of which they had but vague ideas at most. Without fully realizing it, they have imbibed a vast amount of useful knowledge which will not be forgotten. However general may have been their survey of the exhibition, they have learned something which can be applied at once in their daily occupations. Beside this, they have had stimulated that pride of American citizenship and love of country which will inspire them to a more hearty loyalty and a more active desire to promote to the fullest extent the welfare of our common country.

As an educator for the producing classes of the country, the Centennial has been of incalculable benefit. The millions of farmers, manufacturers and mechanics who have wandered through the aisles of the various buildings, picking up ideas and examining the products of other nations and other sections of the country, have not gone away empty handed. What they have learned will appear in ways perhaps, never to be directly traced to the education they have gained at the Centennial, but which must be placed in the scale as a fair offset to the expended millions.

In the extension and development of our export trade, we shall probably feel the benefits of the Centennial to an extent not now appreciated. The testimony which foreign visitors have borne to the variety and excellence of our machinery, our manufactures and our resources, will attract general attention to us and make the extension of our export trade an easy matter. We do not know how great the attendance from abroad has been, but it has been largely composed of representative men who have access to the public ear at all times. With but few and unimportant exceptions, they have borne generous testimony to the excellence of American productions, and the correspondents of foreign journals have, almost without exception, done us full and impartial justice. The fact that we are entitled to recognition as occupying a front rank among producing nations has been forced upon the attention of all the civilized nations of the globe, and nothing more is needed to prepare the way for such an extension of our export trade in manufactures as we may find safe and profitable.

However considered, the Centennial will result in benefits so great, so far reaching and so permanent, that the few millions which it has cost cannot be considered as of any importance in comparison with it. As an exhibition, it has fairly exceeded the largest promises of its projectors. It is something which, as a nation, we have a right to be proud of; something which we can remember with satisfaction, and of which the next generation will cherish mementoes. It is too near to be seen to advantage, or fully appreciated. A year or two hence we will understand it better, and probably have better reasons than now appears to feel satisfied with the results of our Centennial.

A DISPATCH from Calcutta to the *Times*, referring to the heavy cyclone in India, says: It is reported that 20,000 persons perished in the cyclone of Oct. 31st, and some estimates place the loss of lives as high as 40,000. In the town of Burrishol, capital of the Bakergunge district, 3,000 houses were leveled with the earth. Letters from survivors report that a great wave nine feet deep swept over the large island of Dakhin Shahbazpore. The whole of Eastern Bengal appeared to suffer severely from the cyclone. Calcutta narrowly escaped. Reports of the famine from Bombay are worse. A water famine is feared in some districts.

SUTRO TUNNEL.—There are 204 miners' inches of water flowing from the Sutro tunnel. This at the mouth has a temperature of 58 degrees, but at the header it is 87 degrees. The tunnel is now in 14,915 feet, the header being in porphyry. The temperature of air at the mouth of the tunnel is 79 degrees and at the header it is 88 degrees.

Transportation Inquiry.

It will be remembered that the Legislature last winter created a board of transportation commissioners, to investigate the subject of railway management in this State. The measure was in some sense a result of the agitation of the subject of freights and fares, which was caused by the introduction of the "Archer bill." There seemed to be a need that a fuller knowledge should be had of the matters concerning the building and present operation of our railroads, before the subject could be intelligently legislated about. The board of commissioners, through their secretary, Walter M. Phillips, have issued a circular calling upon the people to bring before them statements and suggestions which will aid in the prosecution of their work. From a copy which we have received we extract the following: "Among the principal objects proposed by the Legislature in creating the board of transportation commissioners is the compilation of facts and statistics connected with the building and operation of railroads in this State, and also the investigation of their management, especially as it affects the interests of their patrons and the public generally. It is believed that an impartial investigation of this subject will result in substantial advantage to all concerned, and to this end this board desires to receive information and suggestions and statements from all who are interested. As your position has probably led you to give more than usual attention to the subject, there may be matters to which, in your opinion, the attention of the board should be called, in which event it is requested that you will communicate them to this board in writing."

We commend this matter to our readers as worthy their thought and attention. There are hardships connected with the management of the railways of this State which those who suffer them can best describe and protest against. It is generally believed that these corporations are demanding more than their share of the productive profits of our producers, and considering the bounty which the roads have received they should not draw so heavily upon their patrons for the service they render. Now an opportunity is given by the Legislature to those who have evidence which gives grounds to these beliefs to present it before the commission and have it figure in their reports. As we understand their circular announcement, they are ready for suggestions as well as affidavits, and will follow out any direction of inquiry which seems to need the pursuit. It will be well both for individuals and communities which deem themselves the objects of discrimination or unjust charge, to act together in advancing the investigation of the commission. The office of the commission is at Sacramento, where all communications may be addressed.

THE developments in Hunter district, 45 miles north of Ward, are excellent, on the Vulcan lode, and it is stated that three furnaces will be built there next spring.

THE Ætna mine, Napa county, which was sold at sheriff's sale, brought $6,000. C. Hartson was the purchaser.

Workshop Surroundings.

A little disposition on the part of owners, in respect to the comfort of those who look to them for employment, will create a tie of interest that will be reciprocal, and each will feel that the other is necessary for his support, and that they cannot well succeed if separated. As a rule, employers pay too little attention to cheerful surroundings for their employees, in any branch of business. There are exceptions of course, and it is well to note that where these exceptions occur, a more prosperous general appearance is manifest.

There are but few workshops that may be said to be attractive in their surroundings. The majority of them are dark, crowded, dreary places, where a stated stint of labor is performed according to a pre-arranged agreement, for which a stipulated price is paid. Beyond this there is but little in the majority of our workshops, and were it not for the daily call of want there would be no incentive to labor. We have seen workshops that were dark and damp, destroying the health and buoyancy of the spirits of the operatives, when a small sum, perhaps, would add not only warmth and light, but fill the place with pleasant surroundings. The surroundings of the place of labor have more influence upon the operative than many are aware of. Give a mechanic clumsy tools to work with, a rough dirty bench to work upon, imperfect light, scarcely elbow room and but little care exercised if he have proper ventilation and warmth, and he will become careless, his work partaking of the surroundings in which he is placed. He will think more of getting his wages at a certain time than of the completion of his work. A few years of this experience will spoil almost any workman, no matter how good he may be.

But give him, on the contrary, good tools to work with and a nice place in which to perform his labor, and he will insensibly take more pains with it than in a bad and ill arranged apartment. In a pleasant room, he will, of his own accord, keep his tools and work in order, and more cheerfully perform the task assigned him. A kind of magnetic influence of the surroundings will infuse itself into the operative, and his work will partake of that nature and go from him stamped with the impress of the influence thus created.

There is no reason why the place of business should not be surrounded with pleasant influences as well as the home. Most of a man's active life is passed in his place of business, and why it is kept so severely unattractive is a mystery to many. The shop is certainly the mine from which he draws his wealth, and might he not spare a small sum to make it attractive to others and himself also?

This carelessness on the part of employers is by no means confined to them in workshops alone. It is apparent in almost every branch of industry. The workmen are too often looked upon as mere machines, who require no other incentive to labor than wages promptly paid. Wages are, of course, the prime incentive to labor, but other things must be taken into consideration when good work is expected. There must be harmony between employer and employed or the employer does not get as much for his money as he otherwise would. Looking at it from a mere financial standpoint, it would be infinitely better for employers to pay more attention to the comfort of employees than is usually the case. It makes the greatest difference possible, whether a whole business runs smoothly or not; and to make it run smoothly in all departments the employees must be satisfied that their employers look to their comfort as well as the result of their labor.

THE big cable was put on the rolls at the Combination shaft, this week. This is the largest cable ever brought to the Comstock, its total length being 2,900 feet, and its weight 12 tons. It measures 7 inches in width and five-eighths of an inch in thickness. It will easily handle 60 tons.

FRANCIS D. MOULTON has withdrawn his suit against Henry Ward Beecher.

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No. 224 Sansome Street San Francisco Cal

ISSUED OCT. 1st, 1876.

Testing and Working Silver Ores.

The above is the title of an illustrated work of 114 pages, for miners and prospectors hy Chas. H. Aaron, which has just heen issued by Dewey & Co. Mr. Aaron has managed to give many nseful hints and suggestions, free from all technicalities, and in auch a style as to be easily comprehended. It is written for tha miner, with no chemical symhols or metallurgical technicalities to confuse those who are not chemists or metallurgists. The following summary of the contents of the work will give an idea of its scope:

Under the heading of the first chapter, "Testing Cres for Silver," we find paragraphs on ore formation, test for silver, with heat and water, acid or hlow pipe. In speaking of testing for a process, the extent and richness of ore is considered, smelting ores, selecting and working sample, appliances for testing, roasting, etc. Under the head of "Working Cres" the author describes Aaron's process, has something to say of snperheated steam, preparation of dichlorida of copper and protochloride of copper, use of copper and iron, quantity of chemicals, carbonate of lime, chloride ores, amalgam, Patchen's process, etc. He also describes the methods of working roasted ores, treatment of base metals, stirring, heat of furnace, want of sulphur, etc. Under the head of "Leaching Processes" are the titles, Smelting, Mexican process, Kroencke's process, Chilean process, etc. Under "Pulverizing Machines" are described the arastra and its construction and operation, stamp batteries, screens, Crocker's trip-hammer battery, Paul's pulverizing barrel, Kendall's battery, Noice's pulverizer, a cheap rock hreaker, etc.

In speaking of amalgamators the anthor describes a cheap amalgamator, grinding the ore, directions for making a harrel, preventing mechanical wear, nse of qnicksilver, copper in hars, Freiherg barrel, cheap harrel, trough, harrel on rollers, Aaron's amalgamator, separator, etc.

He describes an improved retort, roasting fnrnace, furnace tools and furnace huilding. Among tha miscellaneons mention may he found Aaron's leaching apparatus, with two or three different arrangements a sm all mill, sampling tailings and settling tanks, dichloride of copper, etc. Mr. Aaron is a practical miner, of long working experience on this coast.

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SUTTER CREEK, February 26th, 1875.
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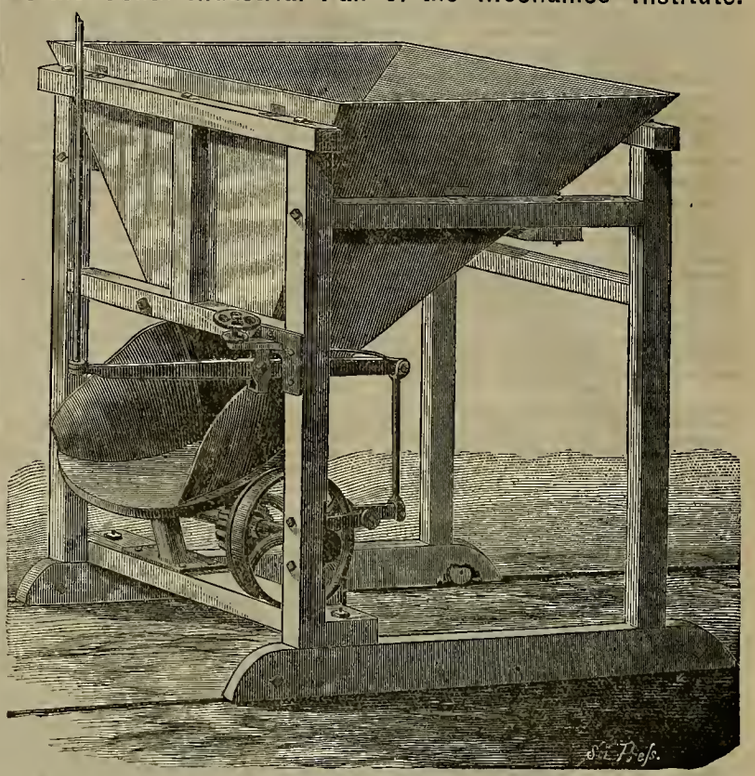

It may be considered as now fully demonstrated, by careful and long-continued experimentation, that tha plan upon which a perfect ore feeder must be constructed is that of the *carrier*, and not that of the shaking table. Uniform and accurate feeding is not possible npon the latter plan. The ore must he evenly carried, upon a steadily advancing plane, or table, to the line of discharge, and there simply *dropped* Spasmodic or jerky contrivances will not answer the pnrpose.

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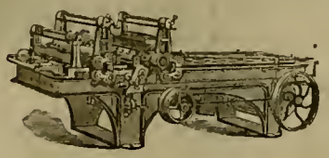

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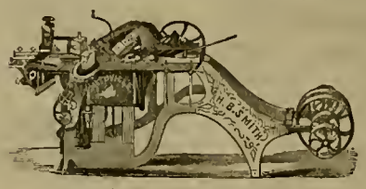

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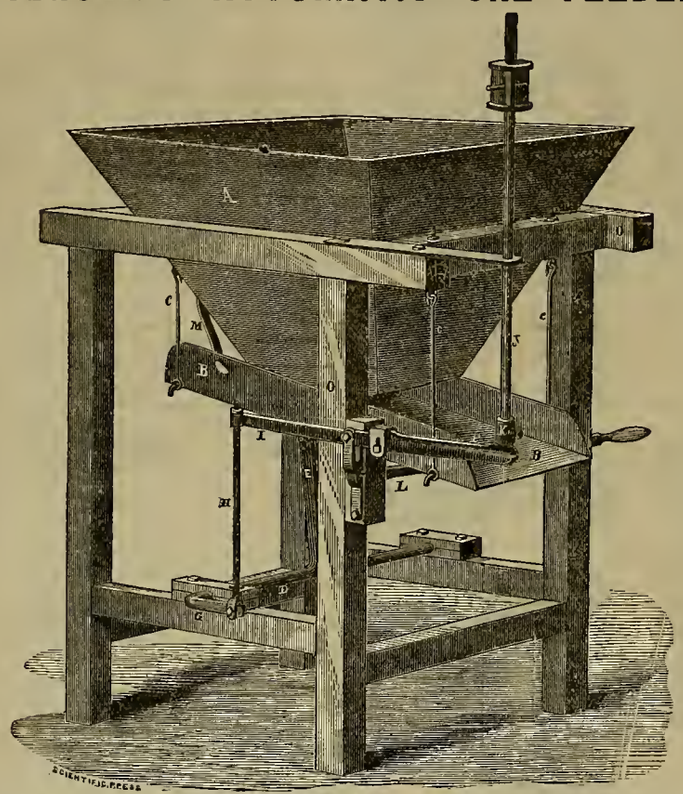
TULLOCH'S AUTOMATIC ORE FEEDER.



The TULLOCH AUTOMATIC ORE FEEDERS have been practically tested during the last year and a half in 40 mills, of from five to 80 stamps each, and have, in every case, given perfect satisfaction. The Tulloch machine is so constructed that the drop of the stamp feeds the ore in just such quantities as the stamps require. Each drop regulates the supply required for the next drop, whether it be more or less, and this is the true principle of an automatic feeder. The tray moves longitudinally, and a stationary scraper forces the material forward at each backward movement of the tray, thus insuring the perfect feeding of all classes of ore, whether it be dry or wet.

We append a few extracts from the many testimonials which we have received from mill men and practical mining men, of the effectiveness and positive action of the Tulloch Feeder. We do not depend solely upon these testimonials, as we are aware that testimonials are easily secured for almost any machine, but the high character of the parties certifying to those herewith given, will establish their value and genuineness:

Mr. Jas. G. Fair has 28 in use; says: I regard them superior to any Feeder with which I am acquainted; I consider no mill perfect without them. Mr. E. R. Burke, Sumner mine, Kern county, has 16: They never get tired; no man living can feed a battery as well; they save us in labor alone $48 a day. Mr. Green, of the Phœnix mill (12), Amador, writes: The first machine we had is working away; is as good as ever; have not spent a dime on it; in use 14 months; you need fear no competition on wet ores. Mr. W. H. Armstrong, of Consolidated Virginia mill: We are running 60 stamps with your Feeders; they give unbounded satisfaction; they have not cost the company one dollar since starting up. Mr. H. C. Bidwell, Supt. Green Mountain and Gold Stripe companies, Plumas county, writes: From the start they have done splendidly; no trouble whatever; requiring but little attention; a boy can manage them; the saving in both labor and castings is fully one half over the old style of feeding by hand. Mr. Preston writes: I have four of your Automatic Self Feeders, and my mill men each and all say they are the best they have ever used. They are an improvement on all I have ever seen, being simple in construction, and good for either wet or dry crushing; refer to over 40 mills using them; they are guaranteed to give perfect satisfaction. Send for circulars.

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I am prepared to build small engines from two to 15 H. P., at short notice and on reasonable terms. Also, all kinds of Jeweler's Tools, Rolls, Presses, Dies, Shears, etc. Old rolls ground and warranted true.

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GEMS AND PRECIOUS STONES.

TABLE FOR DETERMINATION.

Compiled for the "Mining and Scientific Press," by Henry G. Hanks.

[CONCLUDED.]

| | PHYSICAL PROPERTIES. | | | | | | | CHEMICAL COMPOSITION. | | | | | | |

(Continued from Page 333.)

still in ledge material of a favorable character.

NIAGARA.—Sinking the main incline is making good progress, the bottom still in very hard blasting rock.

BEST & BELCHER.—The damages by the water have all been repaired and work resumed in both the east cross-cut and the face of the north drift in the Consolidated Virginia ground.

MINT.—Sinking the shaft is making splendid progress. It is now down 1,308 feet, the bottom in good blasting rock.

ALTA.—The water has been drained and the sinking resumed with all possible energy.

SOUTH PARK.—Prospects excellent, the ore streaks showing wider and assaying better as further advancement is made.

ELY DISTRICT.

BULLIONVILLE FURNACE.—Pioche *Record*, Nov. 5: The new furnace recently erected at Bullionville started up yesterday morning. Should its workings prove satisfactory it will be a permanent institution. The indications are very favorable. The Nevada mine, formerly known as the Huhn & Hunt, has now about 400 tons of ore on the dump. About 100 tons have been hauled to the furnace, which is of 20-ton capacity. The parties owning this mine intend to prospect it thoroughly, and from present appearances will ultimately develop a very large body of ore.

Colorado.

BULLION.—Colorado *Mining Review*, Nov. 4: The Judd & Crosby works have shipped for the week ending Nov. 3d, $7,808.

BURLEIGH TUNNEL.—The lessees are now extracting large amounts of ore which mills 27 ounces silver and 60 to 65 per cent. lead. With a strong vein and their facilities for mining, this grade of mineral returns a handsome profit for all concerned.

ELM CITY.—This vein has heretofore been worked entirely on the west side of the Silver Plume tunnel, though considerable work has been done on the eastern side. Last week this was accomplished, and a solid body of ore, 1,000 to 1,800 ounces in value, was discovered, much to the satisfaction of the owners.

MATHEWS & COMPANY'S CONCENTRATING WORKS.—The machinery in this mill is in position, the bins and orshouse crowded with ore, and the managers fully expected to begin concentrating last week. Some difficulty, however, has been found in the action of the sizing-machine, which, it is hoped, will shortly be remedied, and the mill started up immediately.

DIAMOND TUNNEL.—We learn from J. A. Fisher, superintendent, that this tunnel has cut two more veins during the week, making five distinct and separate ore veins intersected within a distance of 44 feet. The progress of the tunnel for the month of October was 45 feet.

BALTIMORE TUNNEL.—John Tomay, Esq., informs us that he has leased the Baltimore tunnel lode, 50 feet from the mouth of the tunnel, to parties who agree to develop the property in a miner-like manner.

STEVENS.—Sixteen men are now employed on the tramway between the tunnel and the wagon road. The snows and stormy weather of the last two weeks have retarded the work considerably, but Mr. Hanson is pushing it forward vigorously, and will soon have it completed.

Idaho.

SALE OF MINING PROPERTY.—Idaho *Statesman*, Nov. 11: Mr. Otto Grant called on us last Saturday on his way East. He has lately sold his half interest in the Young & Grant mining claims on the Payette—formerly the "Warriner claims." J. P. Mann and Albert Church are the purchasers; consideration, $4,000 cash down. These claims were purchased by George Young and Otto Grant a year ago for $6,000 cash. They have taken out $5,000 tha present season, and they are good pay for a reasonable lifetime. Mr. Grant will go and see tha Black hills country, and then visit his old home in Davenport, Iowa, and return to the Black hills or this country in the spring. He has been in this Territory about ten years, and is an enterprising and worthy citizen.

Oregon.

GALICE CREEK MINING ITEMS,—Oregon *Sentinel*, Nov. 8. From a gentleman just from Galice creek we learn the following concerning the mines in that section:

Tha English company are now working the Reed diggings with a hydraulic, and have about completed their new ditch, two miles and a half long, and will probably turn in the water on Thos. claims this week. Both of these claims pay well and the company owning them will doubtless get large returns this winter.

Ankeny & Co., owners of the Courtney gravel claims, have run a bedrock tunnel in their claims over 100 feet. They are also constructing a new ditch, and have just received an eleven-inch hydraulic pipe for working their diggings.

Work on the Sugar Pine quartz ledge, owned by Green Bros., is being pushed forward. They are engaged in running a tunnel 175 feet in length to strike the ledge, and should it develop well they will put in machinery for working the same next season.

Work on the Yank ledge has been suspended for over a month.

The Centennial mining company, a gravel mining company near the Yank lead, on the north side of Rogue river, have recently constructed a ditch for working their claims, which will carry about 1,000 or 1,200 inches of water. They have just ordered 1,000 feet of 15-inch hydraulic pipe and an 11-inch giant nozzle. It is evident that this company means business.

August Emile is now working a rich gravel claim. It is reported that with an imperfect apparatus and small force he receives a clear profit of over $100 a week.

Montana.

CONCENTRATING WORKS AT GLENDALE.—Butte *Miner*, Nov. 7: At Glendala, Dahler & Armstrong's sampling and concentrating works and water jacket furnace are running. The furnace has only run about six weeks during the entire season, but in this time disposed of about 700 tons of ore. A scarcity of miners early in the season prevented mine owners from furnishing a running supply. The furnace, when in blast, turns from three to five tons of crude bullion every 24 hours, and consumes from 700 to 1,000 bushels of charcoal in the same time. The company is now putting up copper reduction works, to be completed in part this fall, and by July next expect to be turning out ingot copper and handle all ores above 12 per cent. Works will also be added that will enable the company to handle any of the silver or copper ores of this or any other country. The company has about 100 tons of crude copper which the new works will enable them to refine at an expense of only $25 per ton. The same quantity heretofore shipped to New York and refined cost $100 per ton, so the works will soon pay for themselves. Two charcoal kilns, substantially built of stone, enable the company to turn out 4,000 bushels of coal every ten days. Fourteen men are employed on the works, teamsters, choppers and others to be added.

MINES AND MINING IN AND AROUND TRAPPER.—The Franklin mine, owned by Gillig, Low & Keppler, is being worked, and will be during the winter. They have sold 50 tons of smelting ore this season that ran from $125 to $150 in silver and 45 per cent. lead, and now have 400 tons of milling ore on the dump. The main shaft is down 65 feet, and the lead is ten feet wide. The Cleopatra, owned by Pease, Taylor & Co., is a six-foot lode, with a shaft down 90 feet. The ore is carbonate of lead, contains 44 per cent. lead and carries one ounce of silver to each per cent. There are about 500 tons of ore on the dump. The Oneida and Bannack Chief, owned by Keppler, Hopkins & Taylor, is a large vein of copper and iron containing rich boulders of ore, 34 sacks of which were shipped and yielded 568 ounces of silver and 18.10 ounces of gold, and 50 per cent. copper. But little work has been done on the lods. The True Fissure, owned by Meade, Larwill, Bassette & Co., has a shaft down 120 feet. Forty tons worked by Larwill & Stapleton, at the Argenta smelter, with satisfactory results, and 40 tons were shipped to 'Frisco. The Elm Orlu, owned by Driscoll, Low & Ford, rich ore carrying a good per cent. of lead and from 160 to 230 ounces silver. The tunnel and main level is 500 feet in length. Its greatest depth is 135 feet, at which point the lode changes from a southern to a northern dip and shows a splendid four-foot vein—all shipping ore. One hundred and sixty tons of ore were shippped to Salt Lake this season. Twelve men are employed, and work will be carried on all winter.

Utah.

STAR DISTRICT.—Cor. Salt Lake *Tribune*, Nov. 11: The mining interests in the foothills of Star district are now looking up. The Vicksburg, owned by Donaldson & Cook, bids fair to become a bonanza. A large body of ore was exposed in this mine last week, which on being assayed went 70 ounces in silver and 78 per cent. lead—tip top smelting ore. Work is being pushed ahead on this mine with as many men as can work to advantage. The Minnesota is also being worked and looks well. This has a large body of low grade ore which gets better every day. This mine is owned by Liddle, Bro. & Cook. There are also quite a number of other claims in the foothills, and near this two big mines which look well. It is the intention of the owners to commence work soon. The smelter of Latey & Williams, at the river, is now ready to take this ores. The copper mines at Beaver Lake district are being worked. Messrs. Leonard & Lyons, I understand, have a fine body of copper ore in one of their mines which will assay 20 per cent. in copper. Major Holts is also working his claims in this district, and has already shipped into Shauntie a small quantity of very high grade ore. The great calcining ovens at 'Frisco are now running and doing good work. Look out for large shipments of bullion soon from the Horn Silver mine.

General News Items.

RUSSIA'S warlike preparations have created a feeling of alarm in Europe, and the prospects of peace are not so bright.

THE joint congressional committee to investigate the Chinese question is still in session in this city.

THE Rev. R. F. Parshall has sued the committee of the First Baptist church of Oakland for $100,000 damages for an alleged slander.

CARDINAL SIMEONI, recently papal nuncio at Madrid, has been appointed to succeed the late Cardinal Antonelli as secretary of state to the Pope.

THE general condition of the republic of Liberia is improving. Their products in coffee, sugar, etc., and their exports are steadily increasing.

GOVERNOR IAWIN has designated Thursday, November 30th, as a day of public thanksgiving, that being also the day fixed upon by the President.

THREE boys were drowned on Saturday last at Harbor View while bathing. One was the son of Mr Kent, janitor at Faulkner, Bell & Co.'s, and the other two were sons of Joseph G. Brackett.

JUDGE WESTBROOK has decided to grant the motion of the defendant, in the case of Monlton vs. Beecher, to change the venue to a northern county, and Delaware will be selected unless good reason for not doing so is given.

ALEXANDER DURBIN, JR., the young man who killed his father in the mountains eight or ten miles above Healdsburg on the 31st of October, after a full hearing was discharged, on the ground that the killing was in necessary self-defense.

OFFICERS of many of the banks in New York are complaining of the great difficulty in obtaining silver from the sub-treasury. A large coin broker on Wall street stated that one-half per cent. would be readily given for American silver, while he would charge one per cent. to purchasers. Of the sub-treasurer it was learned that he had no orders from Washington to issue additional silver.

Pacific Coast Railroad Notes.

All the trestles between Auburn and Dutch Flat, on the line of the Central Pacific, with the exception of the one near Cape Horn, have been filled in, and at places where the line of the road has been changed men are at work ling the rails, preparatory to changing the road bed.

The Amador *Ledger* of the 11th says: A correspondent at Ione telegraphs that the last spike of the Ione railroad was driven on Thursday at noon. It will be cheering news to most of our readers to know that the work is so far completed. We are not prepared to say whether the work of ballasting will have to be finished before passengers or freight pass over it. There seems to be a difference of opinion on that point. We understand, however, that general freight has already passed over the line at least as far as Buckeye. At any rate there is reason to hope that the road will very soon be open for regular passenger and freight traffic.

The first locomotive for the Sonoma Valley prismoidal railway has just been completed at the Pacific iron foundry in this city.

The official earnings of the Union Pacific railway for August are $1,363,175.85; same month last year, $1,015,458.73. For September the earnings were $1,305,985.99; same month last year, $1,155,941.36. Net earnings for August, $926,158.16; an increase of $362,920.52. Net earnings for September, $774,969.59; incrense, $104,207.92.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING NOVEMBER 7TH, 1876.

COPY HOLDERS.—Harrison H. Hendrix, San Jose, Cal.

GOLD SEPARATORS.—Thomas W. Irvin, Eureka, Cal.

HYDRAULIC PROPULSION VESSELS.—Columbus A. Leaman and John A. Heckart, Pentz Ranch, Cal.

RE-ISSUES.

ICE MACHINES.—David Smith, S. F.

——The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

METALS.

[WHOLESALE.

THURSDAY, M., Nov. 16, 1876.

American Pig Iron, ₩ ton	32 00	@	—
Scotch Pig Iron, ₩ ton	31 50	@	32 00
White Pig, ₩ ton	40 00	@	50 00
Oregon Pig, ₩ ton	31 50	@	32 50
Refined Bar	—	@	4¼
Soiler, No. 1 to 4	—	@	5¾
Plate, No. 5 to 9	—	@	5¾
Sheet. No. 10 to 14	—	@	5¾
Sheet, No. 16 to 20	5¾	@	—
Sheet, No. 22 to 24	6	@	—
Sheet, No. 26 to 28	6¾	@	—
Horse Shoes, per keg	7 00	@	8 50
Nail Rod	10	@	—
Norway Iron	8½	@	9½
Rolled Iron	—	@	8
Other Irons for Blacksmiths. Miners, etc.	—	@	4¼
UPPER.—			
Copper Tin'd	37	@	40
Sheathing, ₩ lb	24	@	40
Sheathing, Yellow	21	@	22½
Sheathing, Old Yellow	14	@	11
Composition Nails	21	@	—
Composition Bolts	24	@	—
STEEL.—Englieh Cast, ₩ lb	20	@	25
Anderson & Woods' ordinary sizes	—	@	15
Drill	—	@	16¾
Fist Bar	16	@	20
Plow Steel	8	@	9
TIN PLATES.—			
10x14 I O Charcoal	11 00	@	—
10x14 I X Charcoal	13 00	@	—
Roofing Plate I O Charcoal	10 00	@	10 50
Banca Tin	—	21	@ —
Australian	—	25	@ —
ZINC.—By the Cask	—	@	11
Zinc, Sheet 2x3 ft, No 7 to 10 ₩ lb	—	@	11
do do 7x3 ft, No 11 to 14	—	@	11½
do do 8x4 ft, No 8 to 10	—	@	12½
do do 8x4 ft, No 11 to 10	—	@	12
NAILS Assorted sizes	3 60	@	3 75
QUICKSILVER, per lb	—	@	50 —

LEATHER.

[WHOLESALE.]

WEDNESDAY M., Nov. 15, 1876.

ole Leather, heavy ₩ lb			25@28
do do light ₩ lb			29@32
Jodot, 8 Kil., per doz	48 00	@	50 00
Jodot, 11 to 13 Kil., per doz	68 00	@	79 00
Jodot 14 to 19 Kil., per doz	82 00	@	94 00
Jodot, second choice, 11 to 16 Kil. ₩ doz	57 00	@	74 00
Cornelian, 12 to 16 Ko	57 00	@	67 00
Cornellian Females, 12 to 13	63 00	@	67 00
Cornellian Females, 14 to 16 Kil	71 00	@	76 50
Simon Ullmo Females, 12 to 13, Kil	58 00	@	62 00
Simon Ullmo Females, 14 to 15, Kil	66 00	@	70 00
Simon Ullmo Females, 16 to 17, Kil	72 00	@	74 00
Simon, 18 Kil., ₩ doz	61 00	@	63 00
Simon, 20 Kil. ₩ doz	65 00	@	67 00
Sim. 24 Kil. ₩ doz	72 00	@	74 00
Robert Calf, 7 and 9 Kil	35 00	@	40 00
French Kips, ₩ lb	1 00	@	1 15
California Kip, ₩ doz	40 00	@	50
French Sheep, all colors, ₩ doz	8 00	@	15 00
Eastern Calf for Backs, ₩ lb	1 00	@	1 25
Sheep Roans for Topping, all colors, ₩ doz	9 00	@	13 00
Sheep Roans for Linings, ₩ doz	5 50	@	10 50
California Russett Sheep Linings	1 75	@	4 50
Boot Jodot Calf Boot Legs, ₩ pair	5 00	@	5 25
Good French Calf Boot Legs, ₩ pair	4 00	@	4 75
French Calf Boot Legs, ₩ pair	4 00	@	—
Harness Leather, ₩ lb		24	@ 28½
Fair Bridle Leather, ₩ doz	48	00	@ 72 —
Skirting Leather, ₩ lb		33	@ 37½
Wax Leather, ₩ doz	40	00	@ 50 00
Calf Leather, ₩ foot		17	@ —
Wax Side Leather ₩ foot		17	@ —

LUMBER.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE —Retail Price.	
Rough, ₩ M	$18 00	Rough, ₩ M	22 50
Rough refuse, ₩ M	14 00	Fencing, ₩ M	22 50
Rough clear, ₩ M	30 00	Flooring and Step, ₩ M	32 50
Rough clear refuse, ₩ M	20 00	Flooring, narrow, ₩ M	35 00
Rustic, ₩ M	32 50	Flooring, 2d quality, M	25
Rustic, refuse, ₩ M	22 50	Laths, ₩ M	3 50
Surfaced, ₩ M	30 00	Furring, ₩ lineal ft	—¾
Surfaced refuse, ₩ M	20 00	**REDWOOD Retail.**	
Flooring, ₩ M	28 00	Rough, ₩ M	22 50
Flooring, refuse, ₩ M	18 00	Rough refuse, ₩ M	18 00
Beaded flooring, ₩ M	30 00	Rough Pickets, ₩ M	18 00
Beaded floor, refuse, M	20 00	Rough Pickets, 6 ft, M	20
Half-inch Siding, M	20 00	Fancy Pickets, ₩ M	30
Half-inch siding, ref. M	16 00	Siding, ₩ M	25 00
Half-inch, Surfaced, M	25 00	Surfaced and Long Beaded	37 50
Half-inch Sort, ref	20 00	Flooring	35 00
Half-inch Battens, M	20 50	Do do refuse, ₩ M	25 00
Pickets, rough, ₩ M	1 00	Half-inch surfaced, M	32 50
Pickets, rough, p'ntd	13 00	Rustic, No. 1, ₩ M	40 00
Pickets, fancy, p'ntd	26 00	Battens, whnoal foot	—¾
Shingles, ₩ M	3 50	Shingles, ₩ M	3c

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, NOV. 15, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 91 to 91½. Silver 53½@54.

GOLD in N. Y., 109¾.

GOLD BARS, 880 to 890. SILVER BARS, 12320 per cent. discount.

EXCHANGE on N. Y., 50@55-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, 5 per cent. discount.

LONDON — Consols, 93½; Bonds, 102¾

OBICHALVER in S. F., by the flask, per lb, 16@57½c.

GOOD PRINTING INK.—We prefer Chas. Enen Johnson's printing inks, having used them on this paper for the past four years. H. S. Crocker & Co., printers, stationers, blank book and paper dealers, are Johnson's S. F. agents.—DEWEY & Co., Publishers.

THE MINING AND SCIENTIFIC PRESS is the leading journal of America. New processes and mechanical inventions are illustrated and discussed in its weekly issues. It is a 16-page sheet, handsomely printed, for $4 per year. Dewey & Co., publishers, San Francisco. —[Mt. Lincoln News, Alma, Colorado.

SEWING MACHINES.—We have a first-class machine we wish to dispose of on favorable terms. Apply at this office.

KNIGHT'S American Mechanical Dictionary is a book for all persons who make, buy, sell, use, or want to know anything about tools for machines, or are curious as to the history and development of mechanic art. It is a descriptive word-book of tools, instruments, machines, obemical and mechanical processes; civil, mechanical, railway, hydraulic and military engineering; a history of inventions; general technological vocabulary; and digest of mechanical appliances in science and the industrial and fine arts, etc. For circulars or price address or apply to A. Roman & Co., wholesale and retail booksellers, 11 Montgomery street, San Francisco.

Appreciative.

DEWEY & Co., San Francisco—

Gentlemen:—My patents for the Eclipse Baling Press and for my Improved Excavator have both come safely to hand. They are entirely satisfactory in all respects, and in my judgment, fully and clearly cover all the points to which I am entitled. I thank you esrnestly and sincerely for the care and dispatch you have used in both cases, but wish to acknowledge my especial obligations for the patient persistence with which you pushed my claims on the excavator, in the face of the various adverse decisions of the examiner. When you advised me to appeal on a certain claim, I had grave doubts of the advisability of the proceeding, but the result justified your judgment, and I was as much surprised as gratified when I received notice from you that the examiner had receded from his position in the matter, and that the money that I had advanced to prosecute the appeal was not needed, but awaited my order. I will add also that I had some misgivings as to the cost of patents obtained through your agency when compared with Eastern solicitors, but am glad to acknowledge that my cases have been as cheaply prosecuted by you as by parties East, to say nothing of the advantage of personal conference as to claims and the saving in point of time. I have two more models nearly ready for you. Yours respectfully,

JACOB PRICE.

HOW TO STOP YOUR PAPER.—If a subscriber wishes to stop his paper, do not direct the postmaster to return your paper. That will not stop it. Do not write upon it and return it yourself. That lays you liable to a fine. There are three ways to stop it: 1st. When you subscribe, state that you wish the paper to stop at the expiration of the time paid for. 2d. If you did not so expressly order, send a postal card, to reach us any time before the expiration. 3d. If you have neglected these two simple methods, and the time to which you have paid is past, send a letter enclosing pay for each paper issued since your subscription expired, at the rate of eight cents a copy or 33½ cents a month. If your paper does not stop promptly thereupon, you may be assured your letter has been miscarried; and, to test the fact, send a "postal" at once, that measures may be instituted for finding it or recovering the money.—*N. Y. Independent.*

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Office Cascade Blue Gravel Mining Company.

NOTICE.—A meeting of the stockholders of the Cascade Blue Gravel Mining Company will be held at the office of the company, 311 California street, rooms 3 and 4, second floor, San Francisco, Cal., on Monday, November 20th, 1876, at two o'clock P. M., for the purpose of disposing of the company's stock, and authorizing the sale of the entire property of the company, with any other business that may come before said company. R. F. KNOX, President,

J. M. BUFFINGTON, Secretary.

San Francisco, Oct. 13th, 1876.

Cerro Bonito Quicksilver Mining Company.

Location of principal place of business, San Francisco, Cal. Location of works, Cerro Bonito mining district, Fresno county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 13th day of November, 1876, an assessment (No. 1) of four dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, 418 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 18th day of December 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the eighth (8th) day of January, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Secretary.

Office, Room No. 2, 418 California St., San Francisco, Cal

Eagle Quicksilver Mining Co.—Location of works, Santa Barbara county, Cal. Principal place of business, San Francisco, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 30th day of September, 1876, an assessment (No. 9) of two hundred and fifty ($250) dollars per share was levied upon all the shares of said company, payable immediately, in gold coin of the United States, to the Secretary, at his office, rooms 5 & 6, No. 302 Montgomery street, San Francisco, Cal.

Any shares upon which said assessment shall remain unpaid on Wednesday, the 29th day of November, 1876, shall be deemed delinquent, and will be duly advertised on Saturday, the second day of December, 1876, for sale at public auction, and unless payment shall be made before, will be sold on Monday, the fourth day of December, 1876, as provided by the articles of agreement of said company, to pay the delinquent assessment, together with cost of advertising and expense of sale. By order of Board of Trustees. WM. H. WATSON, Secretary.

Mariposa Land and Mining Company of California.

Location of principal place of business, San Francisco, Cal. Location of works, Mariposa county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the ninth day of November, 1876, an assessment, No. 8, of one dollar per share was levied upon the capital stock of the corporation, payable immediately, in United States currency, to the Secretary, at the office of the Company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office, No. 9 Nassau street, New York, N. Y.

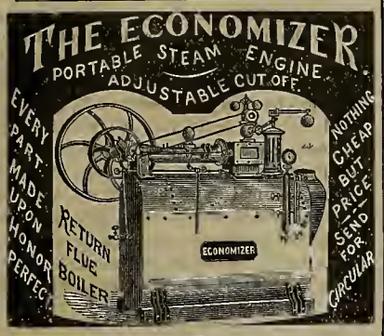
Any stock upon which this assessment shall remain unpaid on the 11th day of December, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the eighth day of January, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

By order of the Board of Directors.

LEANDER LEAVITT, Secretary.

Office, Room No. 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal.

Machinery.



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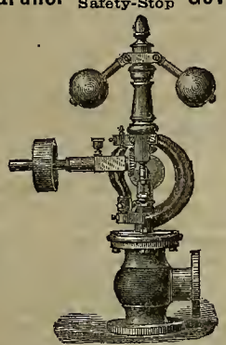

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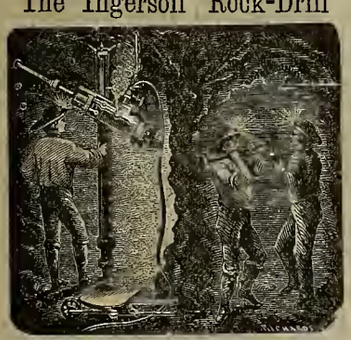

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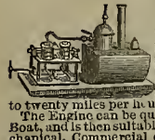

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Cost of Roasting and Chloridizing by this Process:

Two cords of wood at $6	$12.00
Two firemen at $4	8.00
1500 lbs of salt at 1½c.	22.50
Wear of shoes and power	1.50
Cost for 15 tons	$44 00
Cost for one ton	2.93½

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The furnace is now working successfully at the Pos Consolidated Co.'s mines, in the Pesvine District. For further information, apply to

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PICKERING ENGINE GOVERNOR.

Vallejo Foundry, October 17th, 1876.

MESSRS. NEYLAN & YOUNG, San Francisco,

Agents "Pickering Governors."

Gents:—The 10 two-inch Improved Speed Adjusting Governors I bought of you this year for my Patent Straw Burning Threshing Engines give splendid satisfaction. They far surpass for regularity of speed any Governor that I have ever seen, and I have seen all of the best kinds; I have seen the main belt fly off the pulley several times this season while threshing, and the engineer did not discover it, so perfectly was the speed maintained, until he was told of it; this I consider something wonderful; I consider the Governor absolutely perfect, so far as speed is concerned. I bought, and put on to one of my engines a Shive Governor, to see which was the best and after one season's trial I have no hesitation in saying they are as far superior to the Shive, or any other Governor that I have seen or used, as the Shive Governor is to the old Butterfly Valve Governor. I wish you would send me the lowest price that you can furnish 25 Governors for next season's engines.

Yours, respectfully, I. L. HEALD.

LOOK

The Great Western Scroll Saw Co.'s New and Improved $5 00 Foot and Steam Power Scroll and Bracket Saw is the best one yet invented. With it men and boys are making from $3 to $10 per day. We will send you a Machine, six Saws, 15 Patterns and two feet of prepared wood on receipt of $5. Address,

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Machinery and Castings of all kinds.

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Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
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LOCATION OF WORKS:

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Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Teppets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

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JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary

24v17-qy

FULTON

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MANUFACTURERS OF

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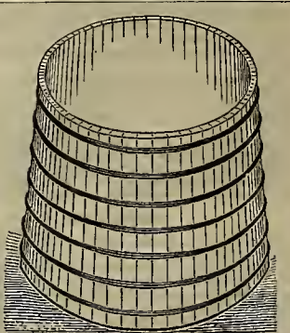

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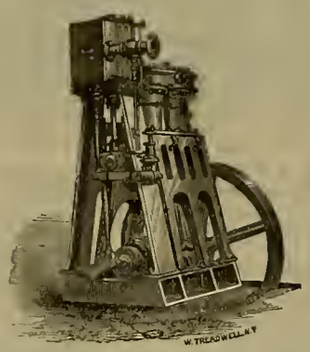

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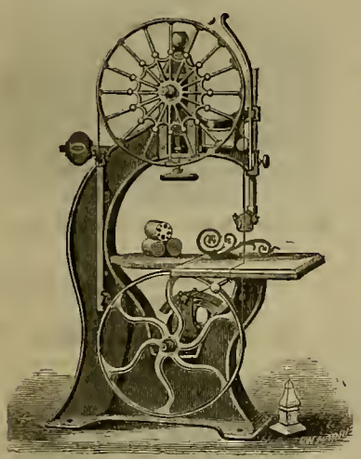

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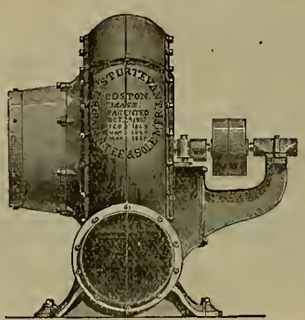

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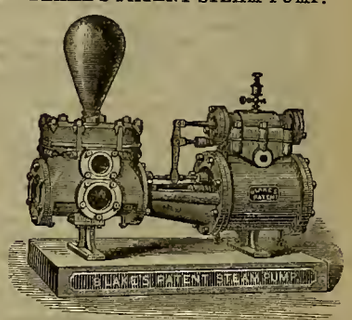

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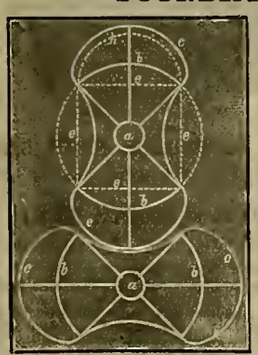

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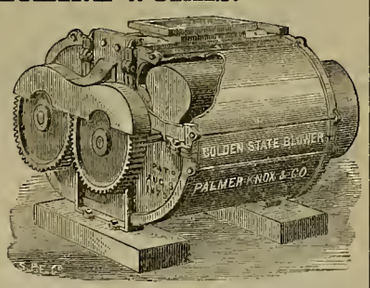

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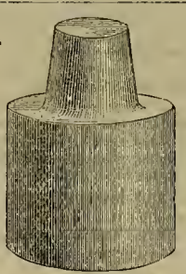

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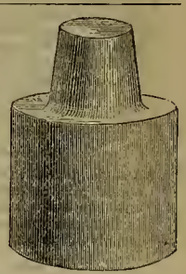

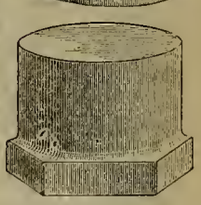

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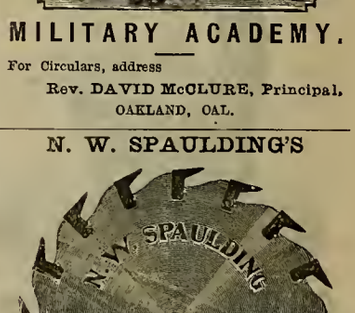

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SAN FRANCISCO, SATURDAY, NOVEMBER 25, 1876.

VOLUME XXXIII. Number 22.

Asbestos and its Industrial Uses.

Asbestos is a mineral fiber composed of silicate of magnesia, silicate of lime, protoxide of iron and manganese. Mineralogically the name is given to the fibrous varieties of tremolite, actinolite and other varieties of hornblende, excepting such as contain alumina, and also to the correspondiag mineral pyroxene. It exists in vast quantities in the United States, in various parts of Great Britain, Hungary, Italy, Corsica, and the Tyrol. To various kinds of asbestos have been applied the names "mountain leather," "mountain cork," "amianthus," and "chrysotile," and certain other minerals having characteristics resembling those of asbestos are described as asbestoid, asbestiform, and as lamellar-fibrous. Without entering into any description of these species (for we have to deal only with asbestos proper in considering its industrial applications), we may at once note the chief characteristics upon which the value of the mineral depends. And these are, first, its indestructibility by fire and its insolubility (except for a few varieties) in acids; secondly, its peculiar fibrous quality.

The material is obtained from the mines in forms ranging from bundles of soft silky fibers to hard blocks. The blocks may be broken up and separated into fibers, which, like those naturally obtained in that state, are extremely flexible, admit of great extension in the direction of their length without cracking, are greasy to the touch and very strong. The fiber obtained in New York and Vermont varies in length from two to 40 inches, and resembles unbleached flax when found near the surface, but when taken at a greater depth it is pure white. Upon the length, flexibility, and strength of the fiber the value of the asbestos depends. The engraving, Fig. 5, (shown as also Figs. 3 and 4, on page 353) is drawn from an exceptionally fine piece, and exhibits the fibrous structure very perfectly. The fragment is 43¼ inches long, 7½ inches thick, and 21 inches wide, and weighs 114 pounds.

It is a curious circumstance that although the valuable qualities of asbestos have been known since time immemorial, it is only during very recent years that the mineral has been extensively used. Its employment among the ancients was confined to the manufacture of an incombustible cloth in which the bodies of the dead were cremated, and of napkins which were cleansed by throwing them in the fire. We find record of its employment as lampwick and for fireproof gloves and clothes for metal workers and firemen. Not very long ago we learned of its entering into a peculiar quality of wall paper made in Rome, Italy. With these few exceptions—and in no case has any of them risen to the level of even a minor industry—asbestos has occupied the position of a mineralogical curiosity, a product reasonably certain some day to find its place in human economy, but nevertheless one which inventors seemed systematically to overlook.

The *Scientific American*, from which these facts are taken, says it is to Mr. H. W. Johns, of New York city, that the credit of first using asbestos for industrial purposes on a large scale is due. Some years ago that gentleman invented a cement in which one of the ingredients was asbestos. Asbestos, however, despite its abundance, was then exceedingly difficult to obtain. It could be purchased only in small quantity at a high price, and certainly offered no very promising prospects of an adequate supply should a large demand for the cement be realized. Nothing daunted by this scarcity, the inventor advertised his cement widely, and the result of his advertisements was not merely an augmented sale of his invention, but an avalanche of letters from all quarters of the globe, in which the writers mentioned deposits of asbestos in their vicinity and offered supplies. Thus, ere very long, Mr. Johns became possessed of abundant facilities for obtaining any quantity of the mineral, and was free to proceed with the experimenting which led to the other and more important utilizations which we are about to describe.

In a little volume which has been compiled from patent office records, we find over 300 patents for roofing compositions, and probably this number is much below the total of this class of inventions. In all these compounds, there is a general sameness, due perhaps to the presence of gas tar and various conglomerations of gravel, resin, paper, felt, cement, and chemicals in the large majority. From all these, the asbestos roofing differs: not merely through its containing asbestos, but through its composition independent of that material. From Fig. 3, which is a section of the asbestos roofing, its construction will be understood. *F* is a layer of asbestos-coated felt; *A A* are layers of acid and waterproof composition into which asbestos enters. *C* is a canvas, and *M* a manila lining. These materials are compressed to a sheet resembling leather, about one-tenth inch in thickness, and produced in continuous rolls about 40 inches wide, each roll containing 200 square feet. The weight is 50 pounds per 100 square feet, or about one-tenth that of gravel roofing. The manner of applying the rolls to the roof is shown in Fig. 1, the operation consisting in merely tacking the fabric to the boards. This is done with equal facility on either flat or steep roofs. The last process is to go over the laid roofing with a prepared coating of suitable color. This is made of asbestos in a flocculent state, mingled with silica paint body and other ingredients. It is applied with a brush, and forms an elastic waterproof felting. For large and important city edifices, an asbestos concrete may be applied by means of a trowel and in lieu of the above coating. The advantages claimed for the roofing are that it forms a water and air tight smooth surface, which is a good non-conductor of heat, and is practically a resistant of fire; also that it is adapted to all climates, and is unexcelled in durability and cheapness by tin, slate, or shingles, of the qualities ordinarily used.

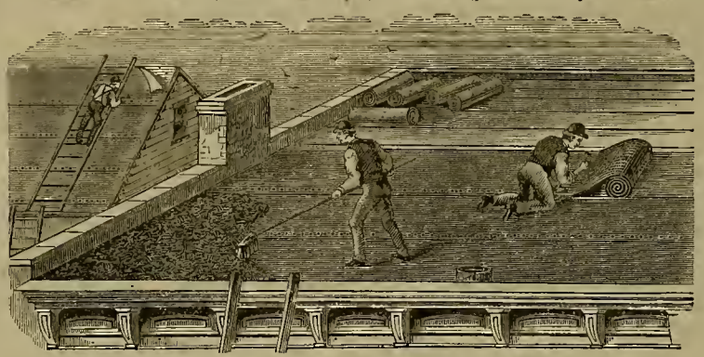

Fig. 1. LAYING DOWN ASBESTOS ROOFING.

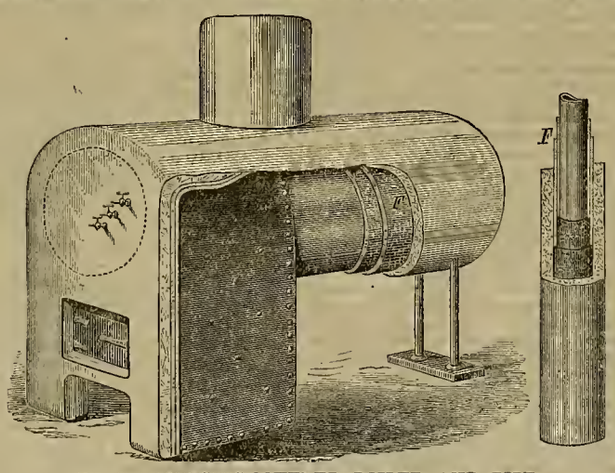

Fig. 2. ASBESTOS-COVERED BOILER AND PIPE.

The second application of asbestos to which attention may be directed is as a covering for steam boilers and pipes. For this purpose it is prepared in various ways. A cement felting, composed of asbestos and a cementing compound, may be used like mortar and applied directly to the pipes, forming an excellent fireproof non-conductor of heat. It is improved, however, as a covering by the addition of an asbestos lining felt, which is a strong sheathing, to one side of which is attached a layer of flocked asbestos. This is applied, say in two turns, directly around the pipe, and the cement laid on outside. Each layer of asbestos thus forms a sort of air chamber, which adds greatly to the insulating capabilities of the cover. At the same time the felt admits of the expansion of the pipe and also serves to protect hair felts, when the same are placed over it, from charring and other injurious effects of heat. An asbestos lined hair felt is likewise manufactured, which is especially suitable for covering marine and locomotive boilers. The mode of applying the insulating material will readily be understood from Fig. 2, which shows both a boiler and a portion of a steam pipe, covered, *F* being the felting. We are informed that the materials are very easily and cheaply applied, that the pipes so covered are smaller and neater than is usually the case, and that there is no danger of the envelope cracking through the expansion of the pipes. These feltings were subjected to severe tests at the New York navy yard in 1874, which they successfully withstood, showing the highest degree of efficiency as non-conductors of heat.

Asbestos steam packing offers in itself utilizations as important in some respects as any other here mentioned. Ordinary packing in engines is obliged to contend with an elevated temperature, moisture and friction, all agents tending towards its destruction. From the testimony of those who have used asbestos prepared as below described, it appears wholly indifferent at all times to temperature and moisture, while its self-lubricating qualities protect it greatly against wear due to friction. The mode in which the packing is made is shown in Fig. 4. The long flexible fibers of the asbestos are securely covered by a thin braid, forming ropes from three-eighths to two inches in diameter, which are put up in coils of 50 pounds each. It is especially suited for use in cases where the effect of high pressure steam is to be met. We are informed that it has been employed without removal on an ocean steamer which sailed over 90,000 miles, and in another case on a locomotive which ran over 50,000 miles, in both instances showing but slight effects of wear, and necessitating no stoppages.

As a paint body, some varieties of asbestos, through its capability of being reduced into almost impalpable powder, has been found excellently adapted. It is exceedingly tenacious, and so renders the pigments not liable to chalk, crack, or scale, while it possesses superior covering qualities. Less coloring matter is required in the manufacture of these paints than in any other, and they are prepared and sold by Mr. Johns ready for immediate application by the brush. The ingredients are simply the best linseed oil and colors, with the asbestos body; and the paints are not offered as strictly fireproof, although it is believed that they will resist fire after drying much better than ordinary paint. They are made in all shades, and are especially well suited for outside work, such as railroad cars and bridges, walls, fences, etc.

Lack of space prevents our describing, in detail similar to the above, the many other productions into which asbestos enters. Of the more important of these we may mention asbestos cements (fire, acid, and water proof) for linings and fillings for iron columns, floors, and for slate and other roofs, for cementing steam and other joints, fire clay retorts, etc. A fireproof coating is also made for wooden structures and shingle roofs and for surfaces not exposed to the weather, which are liable to ignition. This is applied with a brush, and may be subsequently coated with asbestos paint. Asbestos board is made from pure asbestos in flexible sheets of various sizes and thicknesses, forming a valuable covering for locomotive boilers, and for flat packing, gaskets, etc., and as a protection for all surfaces exposed to fire. Asbestos paper is used for lining cloth, fire-screens, etc., and for filtering acids. Asbestos thread may be woven into fabrics, and an asbestos lubricator is manufactured, designed for heavy machinery, wagon axles, etc.

All these varied applications are the result of continued experimenting and investigation on the part of the inventor, a labor which has lasted since 1867, and which is still in progress. That they are of a high degree of value and utility may perhaps best be judged by the rapid increase which has been felt in the demand for asbestos products, and by the excellent results which actual employment has demonstrated them capable of yielding. Any further information will be cheerfully given by Thompson & Upson, exclusive wholesale dealers for the Pacific coast for *H. W. Johns'* patent asbestos material, No. 5 First street, San Francisco.

COPPER.—From James Lewis & Sons' Liverpool, copper report of November 1st, we take the following concerning prices of copper: On Sept. 30th, Chile bars were quoted at £72 10s, but a few days after the market improved considerably and an advance of £3 to £4 was obtained. It has since been tolerably steady at a further advance, with a large business, as about 9,000 tons of bare have changed hands during the month at from £72 10s to £77, according to brand and position. Latest quotations are: bars £76 10s to £77 for good ordinary brands; £78 to £78 10s for special brands, and £15 to £16 for ore and regulus. Chile exports for year to October 16th, are 44,488 tons fine. Stocks of West Coast produce are equal to 14,649 tons fine against 14,107 on the 1st of October.

THE water after it leaves the condenser of the Consolidated Virginia pan-mill engine ranges in temperature from 120 to 130 degrees. With this heat it flows out into the reservoir, where it is spread out to cool, and is then returned to the condenser and used over and over again. It makes a circuit of several hundred feet ere it gets back to its work.

Lead has advanced in Liverpool to £21 10s to £21 15s for good ordinary brands, and £21 to £21 5s per ton for Spanish soft silver.

Antimony is worth in Liverpool £54 to £55 per ton for French Star Regulus.

CORRESPONDENCE.

More of the Quartz Mines of Madison County, Montana.

[From our own Correspondent.]

After leaving Virginia City, the mines near Sheridan, Iron Rod and Silver Star were visited and examined with a great deal of interest.

A Remarkable Fact.

It is a matter worthy of record in these days of heavy assessments, that with the single exception of one or two claims that had had no ore worked, or had not cleaned up, every mine at these points to which attention was called was self-supporting or paying fair wages, and in some instances yielding handsome dividends.

Tha Broadgauge,

Mill Creek mining district, and situated at Brandon City, the property of Mssrs. Zinn & Cisler, was discovered four or five years ago while sluicing in placer diggings. At the greatest depth attained it is by no means well defined, but shows a width from wall to wall of 100 feet, with veins of gold-bearing quartz from two or more feet thick, running parallel, with some chambers of ore widening to 25 feet, paying near the surface from $7 to $30 per ton, and at present depth, about 90 feet, averaging about $8 per ton. There is a 20-stamp mill in connection with the property, rnn by water power, the wheel underground, so that no interruption occurs in winter. The quartz is easily mined and crushed, 30 tons on an average being worked per day, and the whole cost for mining, hauling and milling not exceeding $2.50 per ton, which gives a net profit of something upwards of $5 per ton.

This is one of the paying mines of the county, all expenses for development and for the erection of mill having been paid from the products of the mine. A tunnel is now being driven to strike the ledge at about 400 feet from the surface, which will probably lay bare a better defined lode.

Some work was done 10 years ago on

The Branham,

Owned by Mr. Cisler, the ore paying from $40 to $60 per ton. The Sam Hauser, owned and worked by the same, has a crevice from two to three feet, and a very narrow vein of quartz that runs in places as high as $2,000 psr ton in gold; in the widest part, where it is only eight inches, it works about $100; present depth, 30 feet. Another ledge, one-quarter of a mile from the mill, on which but little work has been done, shows ore which is now being extracted that will probably work $50 per ton. The Last Chsnce, situated near the Broadgauge, and owned by Messrs. Frank & Smith, has been recently opened at several points, exposing an apparently well defined vein from eight to twelve inches. No ore had been worked; bnt what was on the dump was valued by the owners at $20 in gold.

From what has been said above, if it pays only $10, it can he made profitable to work.

The Geo. Pfohl Lode,

At the head of Bivin's gulch, eight miles from Laurin, the property of Messrs. Shoals & Spencer, has been opened by shaft to a depth of 20 feet. The vein is from 12 to 15 inches, the quartz believed to average at least $100 per ton, as $100 per month is pounded out in a hand mortar during the evenings. Worked by mill or arastra it might be made to yield handsomely.

In Wisconsin district, eight miles northeast of Sheridan, there is a very promising and well defined lode on which locations have been made to the extent in the aggregate of 8,000 feet. The first location is known as the

Company Lode,

Consisting of 2,200 feet, belonging to Messrs, Noble, Fitch, Baker, Inglis and others of the vicinity, and on which a considerable amount of work has been done, principally by Mr. Noble, with good resulla as the sequel will show, a segregation having been made some time ago in the property.

The Claim of Mr. D. B. Noble,

Consisting of 366⅔ feet on the original location, is located high up on the mountain side, where the snow, when visited, was at least a foot dsep, although none was to he seen at the time in the valley, five miles below. It is well situated for being tapped and drained to almost any desired depth hy tunneling. A shaft had been sunk 100 feet and a tunnel had reached the lode near the same point about 320 feet in length, reaching a depth of 200 feet from the surface, botb of which disclose a width of lode from wall to wall of about six fest, and good bodies of quartz. Granite forms one wall and a species of trap rock the other. No attempt has thus far been made to work the ore for silver, although rnnning below water level in the proportion of $2 in silver to $1 of gold. The whole of the quartz found in the ledge has been extracted, averaging in gold about $20 per ton. If properly assorted, some of it would have worked $1,000 or more. Something upwards of $25,000 have been taken out at this point, paying all expenses for opsning and for arastra, six-stamp mill and other improvements, bssides a living in the msantime, with a nios margin of about $12,000 left in the way of net profits; all of which may be sst down as another fact worthy of notice, particularly in view of the grsat disadvantages undsr which the whole was accomplished.

The Philtips,

First extension east, 625 feet of which is also owned hy Mr. Noble, is well opened and has yielded about 600 tons, averaging $16 each, making in the aggregate about 9,600. Mr. Fitch on the Company lode has taken out probably as much as $3,000. In the same locality, but on a different ledge, Messrs. McCaffrsy & Fishback have taken out several thousand dollars from

The Cliff Lode,

The quartz running in gold from $10 to $45 per ton, althongh hsaring decided marka of heing rich in silver also. It is opened hy two tunnels along the veiu of 150 feet each; crevice, from one to four teet. When visited, some very rich ore was coming from the mine. On the opposite side of the canyon Capt. Means was reported as having made a recent discovery of exceedingly rich gold quartz, which he had christened the Plymouth Rock, running about $200 per ton.

The Iron Rod Mine.

Situated at a place of the same name, the property of Messrs. Dahler, Largey & Co., of Virginia City, is one of the oldest and best developed of the district. The deepest shaft is 400 feet, and a tunnel has been run striking the ledge and following it 600 feet in the direotion of the main shaft, hut attaining greater depth by about 50 feet, with the view, I presnme, of draining the mine, as it is not at present worked on the lower level in consequenoe of striking a large body of water. Trap is found on the hanging wall and granite on the foot, the usual formatiou of Silver Star district. The pay vein varies from ten inches to four feet, and consists of a rather high grade gold quartz that averages, in their mill, $50 per ton. The general impression is, that it pays them well. The mill is run hy water power, and consists of 12 stamps, with six more to be added. They are now putting up a boiler for the purpose of using steam when found necessary.

The Hudson, at the same place, owned by Messrs. Dahler & Largey, was opened a year ago hy a shaft, disclosing a vein nesr the surface of six feet in width, widening to 37 feet at the depth of 50 feet—surface ore paying $7 per ton, hut, as greater depth was reached, rising to an average of $20, or upwards. Another shaft has since been sunk 500 feet from the former, to the depth of 70 feet, where the vein is six feet thick, and showing richer quartz than any hitherto discovered.

The same gentlemen are also working the Broadway, which contains a large body of low grade ore. What it pays or how much was not learned, but it is altogether probable that they find it profitable, as they are not the class of men, I shonld jndge, to continue long iu a losing speculation.

There are several other mines that have been worked here to a greater or less extent among the number worthy of mention is the

Golden Clipper,

With ore running about $75 per ton, and spoken of as one of the best mines of the district. Yon will probably recollect that in some correspondence from El Dorsdo county, Cal., last summer, a statement was made by a miner of considerable experience that where a break occnrred in a ledge, he invariably drifted to the left, and has always succeeded in finding it. On inquiry at Austin, Nevada, his experience was confirmed for that locality. But here an instance was found where they drifted to the right, which proves that it is owing to local causes, or something of the kind, as there are no exceptions to a general law of nature.

The Aurora Mine,

Silver Star district, and the property of Mr. O. A. Herneman, is opened hy three shafts and two tunnels. The greatest depth at present, 70 feet. One of the tunnels now being run along tbe ledge will attain a depth from surface of 800 to 900 feet. At one point it is from seven to eight feet in width. The whole of the quartz is extracted and worked without assorting, yielding an average of $50 per ton, and some taken from the foot wall paid as high as $100 in gold. Hanging wall a hard black trap and the foot wall is gneiss. In connection with the property is a six stamp mill, hut for want of proper facilities for saving the silver, no attempt has been made (further than laying aside the tailings tor future reduction,) to work it for this metal, though giving assays from $250 to $1,200 per ton. The silver ore oonsists of chloride, black sulphurets, stetefeldtite, carbonate of lead, and probahly some other varieties. A clean-up of 250 ounces had just been made—not the only one likely, as the mine is regarded in the neighborhood as one of the most profitable in the district.

Dr. Everts Mine,

At Silver Star, and owned by Messrs. Mayer & Wilson, shaft 130 feet deep, and a tunnel along the ledge, which varies from one inch to four feet in width, is now about 600 feet in length. All the quartz worked and unassorted averages from $28 to $31 per ton in gold. The rock is reduced in arastras, and is paying them handsome profits.

The Governor Hayes,

Owned by Mr. James Slaven, a four foot lode with at present one foot of quartz. It is a late discovery, with shaft only 20 feet. It prospects about $50 psr ton. Was tssting some in an arastra, but had not cleaned up.

The future of Governor Hayss, (it is now Novsmber 3d,) will be detsrmined long before this article can go to press.

The Wingard,

Belonging to Messrs. Fullhart & Siegchrist; greatest depth from surface, hy tunnel, from 125 to 150 feet; works from $60 to $100 in gold; lying between the trap and gneiss. About $3,000 taken out in the past few months. The mine is paying them well. A. C. K.

Silver Star, Nov., 1876.

Mines in Amador County.

EDITORS PRESS:—As I promised you, I will give you a sketch of mines and mining in Amador county. If you remember aright I wrote for your journal some three years ago a series of letters entitled "Mines and Mining of Plumas and Sierra counties." If I mistake not, there has never been a question raised as to the reliability of those letters from your "special correspondent." As I said then, and reiterate now, "our capitalists do not study their own interests." There is no richer field for speculation than in Amador county. Her fields of golden ore lie unharvested for want of capital. Men of means can be seeu hurrying along California street investing every dollar they can command in the silver mines of Nevada, an adjoining State, when they have fortunes iu gold lying at their own doors. I will cite you to a few instanoes wherein men have prospered by investing in mines nearer home than Nevada. Alvinza Hayward a few years since was what we might term a poor man. If I am rightly informed, he obtained possession of what now is known as the

Phœnix Mine,

In the pleasant little town of Plymouth, situated about three miles north of Drytown. When Mr. Hayward purohased this mine it cost him but a little more than $10,000. What is it worth to-day? With a 100-stsmp mill—which it has—it could not be bought for

Five Million Dollars.

Mr. Hayward had brains enough to secure the "golden calf" instead of the silver one when he found it lying at his door. The first word one hears on the street is this: "Is it on the stock board?" Of course it is not, for it is not incorporated. The Gopher mine was purchased by capitalists in San Francisco. This mine was purchased for the small sum of $10,000. To-day its valne, with its 40-stamp mill now in course of erection, is $800,000.

The Alpine mill, for some unexplained reason to your correspondent, has closed down. The Oneida, I believe, haa also closed down. What the objects of the owners are is best known to themselves, but I know for a certainty it ia not for want of rich ore.

I now come to the Potosi, Marylaud and Dan Worley mines. The Potosi company sunk a shaft to the depth of 265 feet, had an overshot wheel 50 feet in diameter, a three and one-half mile ditch with the water right to Dry creek, and a 15-stamp mill with ore that would average $100 per ton; snd with all these advantages the company closed dowo, and their mill and mine passed into the hands of a Mr. Miller for taxes, yet its real owners are the Hinksons, who allowed the sheriff to sell for taxes in order to get full possession of the mine. Unlike the

Dog in the Manger,

They are willing for some one else to go on and work the mine who has more capital than they have, all of tbem being poor men. From the surface down the ledge will average seven feet in thickness, and some of the ore will crush as high as $1,500 per ton; and still this mine—one of California's golden treasures—lies dormant for want of capital to pour its hidden wealth into the public treasury. MAXIMILIAN.

The Planet Vulcan.

A Month's Observation Required.

EDITORS PRESS:—Notwithstanding the very great uncertainty regarding the period of Vulcan's evolutiou, yet observations appear to have been directed more to special dates than continuously for at least the probable period of its revolutions, even to the extent of 42 days, rather than 20, 21 or 28 days, which have been variously assigned. A little reflection will, I think, show the necessity for this, to be sure of not missing the planet in some favorable part of the orbit, not necessarily in transit. We should have continued observations for 42 or even say 45 days, because 42 days has been the latest period assigned, and would also cover either of the shorter periods in case either were approximately correct. It is, of course, to be regretted that these observations have not been made long since, and in California especially, during our dry seasons. Without such continued observations, the chance of detecting it is very greatly diminished by the lapse of so many years since the supposed observation o March 26th, 1859; hnt still no astronomer should be discouraged if he has the leisure to make suoh observation, or could arrange with others to divide up the time, night and day, in different parts of the world. Supposing each observer only took half an hour at a time, within a range of 15 dsgrsss, say, from the sun. Such observations have very little reference to any reasonable expsctation of seeing a transit, as the earth and plsnet probably would only be relstively favorables, as Professor Hind wrote in 1860, "between Maroh 25th and April 10th, or September 28th and October 12th in that and every year," but he regardsd that there was great probability of its being detected when apparently remotest from the sun. The period thus assigned was under 20 days for the planet's revolution, making 18 periods and five or six days over annually of our years. This of course would give entirely different results eaoh year, and we should also have to add the earth's motion during the same period, so that in fact, with every completed revolution, the planet would really have exceeded it.

Then again, of course if the period was estimated over 20 days, even up to 42 days, it is manifest, without figuring it out with a table, that even a few hours, or a day only, would give entirely different dates for successive Octobers or Novembers, or any month that might be chosen for observation, and hence complete observations would require, say a whole month, and snpposing that was faithfully observed, the weather permitting, and yet nothing detected, the observation should be pursued to the longer period of 42 days. Our weather is, of course, now too changeable to admit of snch continued observation, but there may be southern olimates favorable; or our own again in the next dry season. Bnt success might attend observations whenever weather permitted, rf it so happened that the time was acoidentally favorable. The real point in the matter now is, that the uncertainty of the period has thrown it out of all oalculation in the lapse of so many years.

I trust, therefore, that some concerted action will be taken by astronomers covering the longest probable period, say 42 days of observation, where the season is favorable, that the question of an intra-Mercurial planet may be determined positively, one way or the other. I cannot at all concur with the very limited observation that astronomers of late seem to have oontented themselves with, which really afforded next to no chance of discovering the planst, and still less if the observations were solely directed to the possibility of transit, instead of within the range of the probable orbit; perhaps before sunrise our achromatic telescope of three inches apertnre, with proper rockwork adjustment and ordinary good stand, would be ample for snch purpose, although the planet probably is not larger than about half the size of Mercury. Professor Davidson's recent letter detailing his special observations for a limited time, induced me to throw out this suggestion of continuona observation being the only certainty we can obtain. A. F. G.

Mining Between Liberty and Lowell Hills.

A large belt of mining ground is located between Bear river and Steep hollow, joining the Raymond claim on the south and Swamp Angel on the north, and is a continuation ot the Blue lead, rnnning direct north from this place to Omega, Blue Tent, etc., and embraces 412 acres of mioing ground. Althongh no direct mention has been made of these mines heretofore, the owners have nevertheless been keeping pace, according to their means, with the balance of the mines in this district. The rimrock raisss higb on both sides of the chanuel, and being of a hard natnre, together with the long distance tnnnels have to run to tap the bottom of the channel, makes it an expensive and slow process for the present owners, the majority of whom have to rely on outside labor to keep up expenses or assessments on their share of tbe mine.

The following is a list of the olaims, commencing at the Swamp Angel and running south:

East New York, containing 80 acres; length of tunnel required through bedrock, 1,200 feet, 150 feet of this being now completed.

Wild Cat; this mine embraces 90 acres, requires 1,500 feet of tunnel, completed 360 feet.

Wilkinson company have 20 acres; length of tunnel required 1,000 feet, now completed 550 feet.

Lsvev company; this company joins the Raymond claim and contains 122 acres, required 460 feet of bedrock tunnel, 260 feet of which is now completed.

Owing to the richness of this ground it will sesm a mystery to some how it is that capitalists have not gobbled it up before this time. The thing is that the working olass of miners now owning good claims have made up tbeir minds to settle in this country, having something substantial to rely on. The idea of selling out for a trifle and returning Esst for a home is gstting played out among the laboring olass.—*Dutch Flat Forum.*

PAVED WITH SILVER.—A *News* reporter yesterday took a handful of the gravel thrown up on Main street in laying the new water pipes and had it assayed hy Ross, the well known assayer. The result was, gold $2.25; silver, $3.75; total, $6 per ton. This sample was snatched at random from the long pile of debris thrown up from the trench at the side of the street, opposite the *News* office. Main street being macadamized with low grade silver ore from the waste dumps of the mines, this assay is no matter of snrprise. Better assays than that could easily he obtained from the middle of the street.—*Gold Hill News.*

SCIENTIFIC PROGRESS.

A Geological Congress.

The geologists from Europe and Amsrica, who were present at the international exhibition at Philadelphia In 1876, fonnd there important collections of geological maps and sections, with rocks and organic remains from various regions of North and South America, as well as from many countries of Europe, and they have become deeply impressed with the great advantages to be gained hy their comparative study.

Another opportunity for comparative study will occur at ths international exhibition to be held at Paris in 1878, and it is proposed to invite to that end governmental geological surveys, learned societies and private individuals throughout the world, to send to Paris such collections as will make the geological department of that exhibition as complete as possible.

In order to take advantage of the collections which may thus be brought together, it is, moreover, proposed to convene an international geological congress, to be held at Paris at some time during the exhibition of 1878, and to make that congress an occasion for settling many disputed problems in geology. In accordance with this plan it is proposed that the geological department of ths international exhibition of 1878 shall embrace:

1. Collection of crystalline rocks, both crystalline schists and massive or eruptive rocks, including the so-called contact-formations and the results of the local alteration of uncrystalline sediments hy erruptive masses. In this connection are to be desired all examples of organic remains found in crystalline rocks, including eozoon and related forms. These collections shall moreover comprehend all rare and unusual rocks of special lithological, mineralogical and chemical interest, examples of ore deposits and of veinstones of all kinds with their incasing rocks. As far as possible these collections should be limited to specimens of a size convenient for examination, and be accompanied with sections prepared for microscopic study. In the arrangements of all these materials regard should be had to their natural associations rather than to theoretical notions or artificial classifications, so that they may be studied not only petrographically but geognostically.

2. Collections illustrating the fauna and the flora of the paleozoic and more recent periods, particularly of such horizons as present a more critical interest to paleontologists from the first appearance or the disappearance of important groups of organic forms. It has appeared to the committee named below that the organic remains of the Cambrian, Taconic, or so-called Primordial strata merit especial attention in this connection.

These various collections should be explained as fully as possible by labels, catalogues, monographs and maps.

3. Collections of geological maps, and also of sections and models, especially such as serve to illustrate the laws of mountain structure. In the geological maps regard should be had to various questions which deserve the special consideration of the Congress, such as the scales best adapted for different purposes, the colors and symbols to be used, and the proper mode of representing superficial deposits conjointly with the underlying formations. A discussion of these will prepare the way for improved general geological maps of the continents.

In pursuance of the above plan the American association for the advancement of science, during its annual meeting at Buffalo, under the presidence of Prof. William B. Rodgers, unanimously adopted resolutions favoring the plan, and ordering a circular issued calling upon all geologists to contribute to the end desired. All those interested in this project are invited to communicate with any one of the following members of the committee: Prof. T. H. Huxley, London, England; Dr. Otto Torell, Stockholm, Sweden; Dr. E. H. Von Baumhauer, Haarlem, Holland; Dr. T. Sterry Hunt, Boston, Mass., U. S. A.

Forests and Climate.—*Iron* says that important aid towards the settlement of a somewhat vexed question, having important economic and scientific bearings, is being rendered by the conservators of Indian forests. In Berar, in the center of the peninsula, there are upwards of 4,000 square miles of woodland, of which 660 miles are reserved by the government for State purposes. Not long ago, however, the whole was at the mercy of the natives, as by far the larger portion is still, and the wood was recklessly destroyed, while perhaps still greater destruction was effected by the frequent conflagrations, occasioned by carelessness on the part of charcoal burners and the prosecutors of the other native industries connected with the forest. Besides taking the 600 acres of reserve under their peculiar care, the authorities have exercised a rigid surveillance over the free forest for the purpose of suppressing the fires. The result has been that throughout the entire region natural reproduction is making steady progress; and the change in the features of the country thus occasioned is inducing remarkable climatic changes. There is a markedly increased rain-fall, which has modified the formerly extreme heat of the hot season, while in the cold season frosts are becoming common in open tracts. Although, as regards the reserve, water is much more plentiful than it was a few years ago, it is well worth observing, for its bearing upon the floods in southern France and elsewhere in Europe, that the sudden rise of the rivers which used to occur regularly after the rainy season, has, since 1871, occurred later and with less severity year by year. The cattle thrive better, and are less liable to disease than heretofore; but there is one drawback, that the reserve is becoming more unhealthy, from an increase of fever and dysentery, a natural result of dense and extensive forests in a tropical country.

Notes from the French Academy.

At the late meeting of the French Academy of Sciences the following topics were presented:

On Weather Insurance—A tornado recently occurred near Orleans, France, destroying some $40,000 worth of property, and doing great damage to crops. M. Faye suggests that weather insurance companies, guaranteeing losses in such cases, would be useful institutions.

On Vitreous Rocks.—All types of vitreous rocks are related in their elementary composition to groups of crystalline rocks. It would appear at first sight that they might be scoriæ of the latter and might be reproduced by fusion or vitrification of the latter. Experiments in this direction have, however, failed to realize such a result, because natural vitreous rocks are hydrated, and often contain volatile matter. On the other hand, it appears that the crystalline rocks may, in many cases, be regarded as the result of devitrification of vitreous rocks; and recent expsriments made at the potteries of St. Gobain, and Choisy-le-Roi, by Professor Fremy, tend to establish the fact. The vitreous rocks were first melted in order to eliminate the volatile matter, and then submitted to a high temperature for eight days. Obsidian and retinite thus treated have yielded substances which show that if the treatment were sufficiently prolonged, trachyte and porphyry might thus be artificially produced.

On Examination of the Sea Bottom from Balloons.—By M. Moret.—The author and the aeronaut Dnrnof recently made an ascension at Cherbourg, to the hight of 5,440 feet, and noted that at that elevation the bottom of the sea was visible even to the minutest details, although the water was over 250 feet in depth. The submarine rocks and currents were so clearly discernible that a map of the bottom could readily be plotted. It is suggested that this use of balloons would be of great value in marine surveying, as affording accurate plans of shoals, reefs, etc.

On a New Method of Detecting Artificial Coloration in Wines.—By M. Lsmattina.—In order to recognize artificial coloring in wine, the simplest process is to mix 3½ fluid ounces of wine with half an ounce of peroxide of manganese, coarsely pulverized, and to shake the mixture for ten or fifteen minutes, afterwards filtering through a double filter. If the wine is pure, it passes colorless; if colored artificially it keeps its color. When pure peroxide of manganese is employed, this process is applicable to all coloring substances artificially introduced, even fuchsin. When, however, the wine after filtration appears yellowish, it is because the oxide employed contains iron. In such cases it is necessary to use alcohol, acetic acid and ammonia in order to determine the presence of fuchsin.

Theory of Luminous Flames.—Dr. Karl Heumann considers the circumstances that a gas flame does not actually touch the edge of the burner, nor a candle flame the summit of the wick, and that a flame never comes in close contact with a cold body, is due to the fact that heat is conducted away by the solid body. The flame gases are cooled for a certain distance below their ignition point, and the flame is consequently extinguished within this region. The distance between a gas flame and the burner is considerably increased if the inflammable gas or vapor streame out under a high pressure, or ie mixed with e large amount of some non-inflammable gas. This phenomenon is due not merely to the cooling action of the gaseous stream and of the external air, but to the fact that the speed of the issuing gas stream close to the burner ie greater than the speed of the propagation of ignition. When other influences are not essential, the flame begiue in that section of the issuing gas current where its speed equals the speed of the propagation of ignition. Hence this speed of propagation for different gases and vapors may he experimentally ascertained. In case of solide and liquids of a combustible nature the same speed may also be readily found by experiment, and the results may he regarded as relative numerical expressions of the dengerous character of the combustibles in question.—*Liebig's Annalen der Chemie.*

The Phonetic Telegraph.—Prof. Bell's phonetic telegraph, lately mentioned in this column, is, from all accounts, a very wonderful thing. We have seen no minute description of its mechanism; but the results of its use are established beyond peradventure. Long conversations have been held between the Professor and other persons who were several miles away, and it is said that the audible sounds were transmitted through as much as 1,000 miles of connecting wire. There can be little doubt that telegrams will soon be transmitted in this way.

MECHANICAL PROGRESS.

Improvement in Tube Making.

Several improvements in the manufacture of iron and steel tubes have recently been proposed. The nature and novelty of the improvements invented by Mr. R. A. Malcolm, of Glasgow, as reported hy the London *Mining Journal*, consist in the arrangement of two horizontal rollers carried in bush-bearings in side standards, and geared hy wheels on one end of their shafts, so as to revolve at the same rate, having a bevilled flange or rim on the reverse ends of each, and having the other plain or cylindrical end made so that it can pass in through a hole in the side frames, either clear or as in bush-bearing, so that these rollers could each be traversed longitudinally in reverse directions, and set with their flanges to any desired width to suit the plate to be gripped and drawn in and be scarfed hy the bevilled edges when that is desired, so that these rollers would draw the plate in always in the center of the machine through a hollow conical mandril or bore placed close up to the back of the rollers with its under inner surface lying nearly horizontal or tangential to the upper surface of the upper roller, the front end of this mandril which receives the plate from the rollers being curved nearly to the shape of the two rollers. The novelty of the second part of the improvements consists in the arrangement of a pair of horizontal and vertical geared rollers, with nearly semicircular grooves in them, working opposite or with their peripheries on each other at the same speed for drawing the tube ont of the furnace, and welding the joints with an internal mandril passing through and between both pairs of rollers, over which the joint is welded and the tube accurately shaped into the cylindrical or tubular form, and with its long retaining stem carried forward and fixed in the usual holding or retaining block in front of the whole length of the tube to be delivered on to it, and which is disengaged from its retaining block and re-engaged after the withdrawal of each tube; and for the clean and perfect forming of tubes in the welding rollers, the first pair of rollers is made slightly oval in the direction of the joint formed by the two semicircular grooves in the rollers, the second pair being more nearly spherical or slightly elliptical in the direction of their joints at right angles to the former, removes all scalss, and the streaks usually formed by the joints at the grooves of the rollers when made in the usual manner, thus delivering a perfectly round and much smoother tube than hitherto. The nature and novelty of the third part of the improvements consist in cutting the welded tubes into lengths, after being welded thus, hy a thin revolving steel disc, with or without teeth, secured between two large collars on a short portable screw spindle, much in the same manner as that of circular saws, working on centers passed through the two side standards of a strong frame with stey-rods above, the centers being screwed and secured on each side of the standards by jamb nuts, and with turning heads on them outside, so as to accurately adjust the centers for the spindles of the disc, cutter, or saw, to revolve steedily, much as the centers of lathes and boring machines, the spindle of the saw being driven by a pinion on it from a large wheel gearing thereinto on an adjacent driving shaft carried on the end of the same, or on a separate frame; also that the saw works steadily although driven at a very high speed. The tubes are quickly and easily cut cold or nearly so by griping them in a pair of broad tongs for the purpose, with long handles and a fulcrum spindle through them in or near their joints which are inserted in open hearings in the top of a standard sufficiently close to and under the breast of the cutter or saw, that the person in using the handles of the tongs operates them as a powerful lever to prese the tube up and forward against the cutter with a turning action, which speedily severs the tube, at the same time squaring and cutting the ends to their proper lengths; or they may be pressed against the disc by means of a screw.

Wooden Steam Boilers.

It is worth while to stop a moment in our progress toward boiler making by machinery, which was recently described in this column, and look at the boiler making at the beginning of the century. An account of wooden steam boilers is given in a "History of the Steam Engine in America," in the *Journal of the Franklin Institute* for October, 1876. These wooden boilers were used in 1800 for the first engines of the Schuylkill water works at Philadelphia, and are described as follows:

The boilers were rectangular chests, made of white pine planks 5 inches thick; they were 9 feet square inside at the ends, and 14 feet long in the clear; braced upon the sides, top and bottom with oak scantlings 10 inches square, the whole securely bolted together by 1¼ inch rods passing through the planks. Inside of this chest was placed an iron fire-box 12 feet 6 inches long, 6 feet wide and 1 foot 10 inches deep, with vertical flues, 6 of 15 inches diameter and 2 of 12 inches diameter; through these the water circulated, the fire acting around them and passing up into an oval flue situated just above the fire-box, carried from the back of the boiler to near the front, and returned again to the back, where it entered the chimney. This fire-box and flues appear to have been at first made entirely of cast iron; then a wrought iron fire-box was made, the flues still being of cast iron; this not being satisfactory on account of the unequal contraction and expansion of the two metals causing leakage eventually wrought iron flues were also put in.

Great advantage was at the time supposed to be gained hy the non-conducting powers of the wood, and also by the vertical flues in the fire-box.

These boilers were used for about two years, but, as might have been expected, it was found very difficult to keep them perfectly steam-tight. Cast iron boilers were accordingly substituted for them in December, 1801, and these remained in use until new water works were built at Fairmount in 1815; and cast iron boilers were used there until 1822, when steam power was given up for water power.

French and American Mechanics.—Mr. L. Simonin, the French mining engineer, writing in the *Revue des Deux Mondes*, of Paris, has, under date of October 15th, given an article to that review entirely devoted to the Centennial exhibition, which he has studied during several months. We translate therefrom a concluding passage, showing a Frenchman's opinion of our progress in the mechanic arts: "The United States stand about on a par with France and the remaining countries in carriage manufacture, that of furniture and glass and porcelain ware. In other branches they have excelled us, and all this despite high wages. We have been, so to say, their teachers, as Italy taught us during the "renaissence" period, and not unlikely they will one day excel their masters, as we subsequently beat the Italians. Venice, Milan and Florence taught us the manufacture of glass, silk and velvet, and we soon excelled them. Are we to have a similar experience at the hands of the Americans? Can we close our eyes to the fact that in the construction of machinery they are already becoming our superiors? Has not their best machinist, Corliss, shipped his steam engines to Europe, especially to the famous spinnery "La Lys" of Ghent? By the thousand the agricultural machines have to he counted which the Americans have furnished to the old world. We find their style of locomotives, and particularly of passenger cars, everywhere introduced. The latter are justly popular for comfort, especially at night, and are in use in England, Switzerland, Germany and Italy, and even ou our French railroads. All over Canada and in Spanish America they have supersseded those formerly used.

Rope Gearing.—Mr. James Durie (Manchester) presented a paper at a recent meeting of English mechanical engineers, on "Rope Gearing for the Transmission of Large Power in Mills and Factories," in which he remarked that the best means of transmitting power from the prime mover to the various machines in a factory had long been a matter of importance to the engineer and manufacturer. The facility of taking small powers off drums to machines by means of belts, and the absence of noise and vibration, led to the adoption in the United States of America of broad leather belts for the transmission of large power from the prime mover to the shafting in factories; and the success which had followed the adoption of these large belts there had led to their being adopted by many users of power in his country. The plan of transmitting large powers by means of round ropes working on grooved wheels had been largely adopted as a substitute for toothed gearing. Rope gearing had been applied to the jute spinning and weaving factory of Messrs. A. and J. Nicholl, at Dundee, as also to the Samunggur jute factory, Calcutta, and the Sealdah mills in the same city, in each case giving great satisfaction. The great advantage of rope gearing was the entire freedom from any risk of a breakdown; when a rope showed symptoms of giving way—and ropes always gave symptoms of weakness long before they broke—the weak rope could be removed and another put in its place at any meal hour or evening. The cost of the maintainence of ropes for transmitting 400-horse power had been found to be $100 per annum, or about $25 per 100-horse power per annum.

The Belgian Cable Towing System.—Says the Springfield, Massachusetts, *Republican:* It is rather remarkable that the prize of $100,000 offered by the State of New York for the application of steam to canals, has utterly failed to bring out a practical device, while the Belgian cable towing system, which was specially excluded from competition for the prize, is in successful operation on the canal. The State awarded $50,000 to the Baxter system, but the company which undertook to introduce that system has become bankrupt, and its effects have been sold under the hammer. The failure was inevitable, from the fact that it costs more to apply the system to a canal barge than it would to build a new boat, thus doubling the first cost of the craft. On the other hand, the Belgian cable towing system has been in successful operation between Middleport and Buffalo, 42 miles, for several weeks. Since the middle of June, two tow boats have towed 250 barges with their cargoes, averaging 200 tons of coal each, against a strong current, without injury to the canal and with satisfaction to the boatmen. On the 9th of July, seven boats, with 1,500 tons of coal, were towed against a three mile current from Tonawanda to Buffalo at three times the speed of double the usual animal power. One boat consumes a ton of coal in 24 hours, and can be operated at an expense of $25 for that time.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to Nov. 2.		1 W'k to Nov. 9.		1 W'k to Nov. 16.		1 W'k to Nov. 23.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adame Hill..	....	....	....	....	....	....	....	....
Advance.....	46	44	45	41	41	30½	36	30
Alpha.....	2¾	2	2¾	....	....	....	2¾	2½
Alta.....	....	....	....	....	....	....	....	....
Amer'n Flag.	....	....	....	....	....	....	....	....
Amer'n Flat.	....	....	....	....	750	....	....	....
Andes.....	2½	2	2	1⅝	2	1⅜	2	1½
Alps.....	50c	....	....	....	....	....	50c	....
Amazon.....	....	....	....	....	....	....	....	....
Balt'm'e Con	2	1⅜	3	1¾	2½	2	4	2
Belcher.....	18¼	16	17	16	15⅞	13¾	14¾	13¾
Belmont.....	....	....	....	....	2½	2½	3¼	2¾
Best & Bel...	49	44¾	48	42½	43	41¾	47	40
Buckeye.....	....	....	....	....	....	....	....	....
Bullion.....	36	34	38	31½	35	28	33½	30
Caledonia....	11⅜	9¼	9¾	9	8⅝	10⅜	8	....
California...	57½	56	57½	54¾	55¾	50	54¾	46
Challenge...	3	....	3	....	....	....	3	2
Chollar-P'tsi	19	76	76	72½	72½	67	77	66
Confidence....	....	....	15	14	13¾	12	13	11¾
Con Imperial	3.85	3.51½	3.62	3 50	3.45	2¼	2¾	2.60
Con Virginia	54½	50	52	49¼	49⅝	43¾	51	42½
Crown Point.	11½	9⅞	10½	9¾	10	8¾	10	7¾
Cosm Con....	40c	25c	50c	35c	35c	20c	25c	22½c
Daney.....	....	....	....	....	....	....	....	....
Dayton.....	5	....	4½	4	3½	2¾	3	....
Eclipse.....	....	....	....	....	....	....	....	....
Empire (Id).	....	....	....	....	....	....	....	....
Eureka(G V)	....	....	....	....	....	....	....	....
Eureka Con..	13	12¾	13¼	11¾	12	11¼	11	10½
Exchequer...	15¾	14¾	14¾	14	13¾	11¾	14	11¾
Empress.....	....	....	....	....	....	....	....	....
Gila.....	70c	65c	65c	....	60c	55c	75c	60c
Globe Con....	....	....	....	....	....	....	10c	....
Golden Char.	1	75c	1¼	1½	1¼	....	....	....
Gould & Cur.	15¾	13¾	15	13	13¼	12¼	14	10¾
Hale & Nor..	8½	7¾	7¾	7¾	8	6¾	7⅞	6
Ida Ellmore..	....	....	....	....	....	....	....	....
Jefferson....	25c	....	....	....	....	....	....	....
Julia.....	7¼	6¾	....	6¾	6¾	5	6½	5¼
Justice.....	24½	23	24½	21¾	22½	2¼	27	22¾
Jackson.....	4½	....	4½	4	3½	....	....	....
K K Con.....	3	2¾	3	2¾	....	....	....	....
Kentuck.....	13¾	10½	14¼	11½	13½	10½	11¾	10
Knickerb'k'r	....	....	....	....	....	....	....	....
Kentucky Con	2¼	1¾	1¾	1¾	1¾	....	1¾	1¾
Lady Bryan..	75c	50c	70c	65c	65c	60c	55c	50c
Lady Wash....	....	....	2½	2¼	1¾	2½	1½	1½
Leo.....	....	....	....	....	....	....	....	....
Leopard.....	7	6¾	7	6	7	6¾	6¾	5
Leviathan....	....	....	70c	65c	70c	65c	1	70c
Mahogany.....	....	....	....	....	....	....	....	....
Mansfield....	15c	....	30c	25c	....	....	25c	....
Meadow V'y..	5c	....	50c	....	....	....	....	....
Mexican.....	29¾	26¾	28	25½	25	22¾	26¾	21¾
Michigan.....	....	....	....	....	....	....	....	....
Mint.....	....	....	13	12¾c	25c	15c	....	....
Mouitor-Bel.	....	....	....	....	....	....	....	....
Newark.....	....	....	....	....	....	....	....	....
New York....	1	95c	....	....	1	62½c	75c	62½c
Niagara.....	14c	12c	....	....	....	....	....	....
Northn Belle	29½	24¾	30½	26¾	32	28¼	32	27
New Coso....	2½	2⅜	3¼	2⅜	2¾	2¼	2¾	2¼
Occidental...	....	....	....	....	....	....	....	2½
Ophir.....	51½	49¼	51½	47¾	48¾	41¾	46	41
Or Gold Hill.	....	....	....	....	....	....	....	....
Overman.....	84½	80	83	78½	78	73	85	72½
Pacific.....	30c	25c	28c	....	....	....	....	....
Phil Sheridan	2¾	2½	2½	....	2½	2	....	....
Pioche.....	....	....	....	....	....	....	....	....
Poormau.....	15c	10c	10c	....	10c	....	80	5c
Prospect.....	1¼	60c	1¾	1	1½	1	1¾	1¼
Prussian.....	....	....	....	....	....	....	....	....
Ray & Ely....	3½	....	5	....	....	....	3½	3
Rock Island..	1	....	1¼	1	90c	....	1	75c
Rye Patch.....	....	....	....	....	....	....	....	....
Savage.....	14	....	13¾	11½	12	10½	12	9
Seg Belcher..	70	....	....	71	68	65	....	....
Sierra Nev'da	12½	12	12	11½	11½	10½	11¾	10
Silver Hill...	9	....	10	8¾	9	7¾	9½	7¾
Sth Chariot..	50	11	82½	50c	62½c	....	77½c	....
Succor.....	52c	....	40c	....	50c	....	....	....
Union Con....	13¾	12	12¾	12	12	10¾	12¼	10½
Utah.....	18	16	17½	16¾	16	13	16	14
Wells-Fargo.	....	....	....	....	10c	....	10o	5c
Woodville....	2¼	1¾	1¾	1	1½	1	1¾	1
Yel'w Jacket	23¾	20¾	22½	18¾	16½	14¾	18¾	13¾

Sales at S. F. Stock Exchange.

FRIDAY, A. M., Nov. 17.

495 Alpha.....30@30⅝
1045 Best & Bel.....40½@40
470 Belcher.....13¾@13⅝
135 Bullion.....30
620 Baltimore Con.....
455 Caledonia.....35@36
20 Confidence.....11
735 Crown Point.....8⅞
3125 Con Imperial...2.6 @2.5
2730 California.....46@47
100 Chollar.....6
3220 Con Virginia ..43½@43¾
425 Exchequer.....11¾@11
1000 Globe.....10c
330 Gould & Curry....12@11
1370 Hale & Nor.....6@6⅝
530 Justice.....22¾@23
580 Julia.....5½@5¾
165 Kentuck.....
480 Lady Bryan.....50c
2060 Mexican.....21¾ @ 21¾
1216 Ophir.....41@41½
265 Overman.....3@12
370 Savage.....
1595 Sierra Nevada....10¾ @10
170 S Hill.....17
10 Utah.....13
1365 Union.....10½@11¾
465 Yellow Jacket....14@13¾

AFTERNOON SESSION.

75 Alpha.....31@31½
100 Alta.....
135 Andes.....15¾@15¾
4 0 Belmont.....3
80 Belcher.....15⅝@14
480 Best & Belcher..41½@41⅝
1690 California.....47¾@47
650 Cons Coso.....2½@2¼c
2740 Con Virginia...43¾@43¾
2210 Con Imperial...2.60@2.5
50 Caledonia.....
20 Crown Point.....8¾
190 G la .....
590 Gould & Curry....10¾@11
100 Gen Thomas.....15c
440 Hale & Nor.....6½@7
320 Hussey.....20@20½
165 Julia.....5¾@6
515 Justice.....22¾
160 Kossuth.....1
940 Leopard.....5¾@5¾
300 Leviathan.....6½@50c
300 Modoc.....5¾
30 Mansfield.....23c
90 Manhattan.....11½@11¾
680 Mexican.....22¾@22½
395 Northern Belle.....27@28
50 New Coso.....2½
750 Ophir.....42½@42¾
50 Overman.....73
515 Prospect.....1½@1¾
360 Poorman.....8c
720 Ray & Ely.....3
1325 South Chariot.....37½
575 Savage.....9¾@9⅝
400 Trojan.....60@5nc
363 Union.....11⅞@11½
20 Utah.....13
150 Woodville.....1
190 Wells Fargo.....10c
300 Yellow Jacket....11½@14

SATURDAY, A. M., Nov. 18.

150 Andes.....13¾@13⅞
125 Alpha.....32
100 Alta.....2¾
1080 Best & Belcher...12¾@13
180 Belcher.....14¾@14¾
20 Baltimore Con.....2½
180 Bullion.....30
120 Caledonia.....8¾@8¾
1340 California.....48@48½
510 Crown Point.....8¾@8⅝
50 Chollar.....68@67
200 Coemopolitan.....30c
3220 Con Virginia...44¾@44½
2545 Con Imperial...2.80@2.5
25 Dayton.....3
15 Exchequer.....12¾
150 Eureka Con.....10¾@11
170 Gould & Curry.11¾@11¾
1000 Globe.....10c
300 Gila.....15c
860 Hale & Nor.....7@7⅛
100 Hussey.....25c
195 Julia.....5¾
310 Justice.....22⅞@23
30 Lady Bryan.....50c
10 Lady Wash.....2½
60 Leopard.....5¾@5¾
800 Mexican.....22½@22⅝
70 New York.....62½c
25 Northern Belle.28¾@ 8⅝
120 Ophir.....42⅝@43
85 Overman.....83
00 Silver Hill.....8
835 Savage.....9¼@9½
495 Sierra Nevada.10¾@10⅝
40 Utah.....14

MONDAY, A. M., Nov. 20.

365 Alpha.....32@32¾
50 Bullion.....30½@31
225 Baltimore Con...2½@2¾
50 Belcher.....14¾@14½
480 Best & Belcher.43¾@43⅝
480 California.....49¾@50⅜
180 C Point.....8@8¾
5795 Con Virginia...45¾@46⅜
535 Con Imperial...2.82½ @2.8
135 Chollar.....9⅝@9⅝
40 Confidence.....13
920 Caledonia.....9@9¼
540 Exchequer.....14¾@14¾
540 Gould & Curry..11¾@11⅝
780 Hale & Nor.....7¾ o 7
1450 Justice.....23¾@24
490 Julia.....5⅞@6
30 Kentuck.....10½
1420 Monumental.....2@3c
1690 Ophir.....43⅜@43
1395 Overman.....@19
860 Sierra Nevada...11¾@11
2210 Savage.....10¾@10
80 Silver Hill.....7¾@8
615 Justice.....12
15 Utah.....13
495 Yellow Jacket....14¾@15

AFTERNOON SESSION.

300 Alta.....2½@2¾
275 Andes.....1⅞@1⅝
50 Belcher.....14½
505 Best & Belcher.44¾@44¾
925 Belmont.....3 @3¼
830 California.....50⅜@50⅝
1630 Con Virginia...45@45⅜
200 Coso Con.....25c@22½c
1465 Con Imperial...2.85@2.90
50 Dayton.....3
60 Exchequer.....13¾@14
600 Gila.....9¾@9⅝
410 Gen Thomas.....1⅞@1⅝
150 Hale & Nor.....7@7⅛
350 Hussey.....30@31½c
1070 Justice.....24¾@24
795 Julia.....6@5⅞
250 Kossuth.....1⅝
1035 Leopard.....5½@6½
5 Lady Wash.....1½
200 Leviathan.....70c
760 Mexican.....23¾@23¾
390 Modoc.....5¾@6
140 Manhattan.....15@14⅞
100 New Coso.....2½
250 New York.....65@70c
550 North Con Va.....1¾
440 N Belle.....30@32
585 Ophir.....42⅝@43½
560 Prospect.....1½@1¾
300 Poorman.....8c
5 Ray & Ely.....3½
475 Savage.....10@9¾
100 Trojan.....65@
140 Wells-Fargo.....5c
250 Woodville.....1
475 Yellow Jacket....15@15½

TUESDAY, A. M., Nov. 21.

205 Alpha.....32¾@33
510 Alta.....2½
400 Best & Belcher...14¼@14
185 Belcher.....14½
50 Bullion.....31½
1645 Baltimore Con...2¾@3⅛
2655 California.....51⅞ @51½
1050 Caledonia.....9½@10
2215 Con Virginia.....50@49¾
460 Crown Point.....8¾@8¾
2430 Con Imperial...2.93@
45 Chollar.....10@10½
15 Confidence.....12½@12
50 Challenge.....
50 Dayton.....3
165 Exchequer.....12¾@12½
355 Gould & Curry.....11¾
565 Hale & Nor.....7¼@7⅜
1025 Justice.....24¾ 24¾
535 Julia.....6
235 Kentuck.....11@11⅜
360 Lady Bryan.....50c
300 Lady Wash.....1½
700 Mexican.....22¼@22
140 New York.....62½c
455 Overman.....83@83⅝
515 Ophir.....43@42¾
550 Rock Island.....1@75c
150 Savage.....9¾@10⅜
880 Sierra Nevada.11¾@10¾
210 Silver Hill.....8
480 Union.....12@12½
5 Utah.....18
195 Woodville.....1¾@1
915 Yellow Jacket..15½@15½

AFTERNOON SESSION.

160 Alpha.....33@34
475 Andes.....1⅞@1⅝
50 Alps.....50c
50 Belmont.....2½
390 Belcher.....14¾@15
235 Best & Belcher..46@47¼
10 Chollar.....70
150 Coso Con.....2½c
400 Caledonia.....9¾@9½
1065 Con Virginia...49¾@49¾
1590 Con Imperial.....3@2.85
100 Cosmopolitan.....20c
100 Caledonia.....8¾
1150 Crown Point.....8¾
50 Leviathan.....0c
265 Mexican.....23¾@23¾
385 Manhattan.....15½@15
480 Modoc.....8@8½
10 Eureka Con.....17
50 Gould & Curry..12¾@12¾
200 Gila.....70c
260 Gen Thomas.....1¾@1⅝
630 Hale & Norcross.....7¾
240 Hussey.....35c
1320 Justice.....24¼@24⅝
110 Julia.....6
1150 Leopard.....5

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE.

THE I X L MILL.—Alpina *Miner*, Nov. 18: This mill is rapidly approaching completion. The building is mostly enclosed, the boilers have been set, and the engine will be up next week. The pans, separators, etc., are being placed in position, and the entire work is being pushed by Mr. Arnot, the contractor, who desires to take every advantage of the present fine weather. It is Mr. Arnot's intention to have the mill in working order by New Year's day.

AMADOR.

THE BONANZA.—Amador *Ledger*, Nov. 13: Manon and Bolding's mine at Drytown is opening up splendidly. It was thought at first that the ledge would petar out as sinking was prosecuted. All such misgivings have been falsified. The shaft is now down between 100 and 200 feet, and the ledge better than ever. There is abundance of rock in sight in every part of the mine. In the south drift the ore body shows six feet in width, and on the north side five and a half feet. The rock ranks among the richest. The ten-stamp mill is now at work, and the water supply will enable it to run steadily through the winter. Twelve men are employed in the mine and mill.

THE CROWN POINT.—This is another of the Drytown prospects which begins to loom up as one of the prominent mines of the future. It has recently been incorporated. Actual test has proved the croppings of the ledge to be gold bearing, and of paying grade, from one end to the other. The new 10-stamp mill is being pushed ahead.

THE EAST KEYSTONE.—This is the name given to a claim lately located at Amador City, close to the famous Keystone mine. The principal owners are gentlemen in Sutter Creek and Amador. A shaft is now down about 15 feet, the quartz at the bottom showing three feet in width. The rock prospects from $8 to $10 per ton.

MECHANICS' MINE.—This mine, situated about one mile east of Sutter Creek, has been located for many years, and rock ranging as high as $22 per ton has been taken out. For some cause to us unknown, work was abandoned, and the property has been idle for a long time. Operations were resumed about a month ago. A building has been erected over the shaft and steam power hoisting works have been fitted up. So far operations have been confined to the drainage of the shaft. One hundred feet or more of water yet remains to be taken out.

BUTTE.

GOLD.—Oroville *Mercury*, Nov. 17: On Wednesday night Joseph N. Vera brought down from the Hendricks claim in Morris ravine a beautiful bar of gold to be sent to the mint. It weighed 372 ounces and brought $18.50 per ounce. Total value, $6,882. They have just begun to clean up and this is the first fruits. There is more to follow very soon.

CALAVERAS.

LAMPHEAR MINE.—Calaveras *Chronicle*, Nov. 18: Sinking the main shaft in the Lamphear continues. A depth of 165 feet is already reached, and at the rate of progress now being made the shaft will be down so that the 200 ft levels can be run in a short time. A clean-up at the mill was lately made.

GWIN.—Intelligence from the Gwin mine is that operations are progressing favorably in every respect. The 1200 ft south level is in 50 feet, the ledge showing wide and a fair quality of rock. All the batteries are employed on ore taken from the 1100-ft stopes.

MOUNT TMOLUS.—The new boiler for the engine at the Mount Tmolus is in position and the mill running. There is something like 200 tons of ore on the dumps. Levels are run at depths of 40 and 80 feet and stopes opened. There is an abundance of good ore in sight and it can he got ont fast enough to keep the mill constantly employed.

UPPER COUNTRY MINING NOTES.—Rock of extraordinary richness has been struck in the shaft of the Champion mine at West Point, at 240 feet; ledge 18 inches thick. Everything looks encouragingly at the Josephine. The Mina Rica has out a large quantity of rock but cannot crush for lack of water to run the mill. Rain is anxiously looked for. Shenakre, Hadler & Steger are about to open a hydraulic upon an extensive scale at Big Flat, near West Point. Michael Schmidt is also preparing to commence hydraulicing at Camp Flores.

EL DORADO.

THE DEFIANCE.—El Dorado *Republican*, Nov. 16: This is the name of a mine at Garden Valley, of which Capt. Tuck is Superintendent. A new ten stamp mill has recently been completed upon it, and two clean-ups have already been made which proved most satisfactory. The ledge is an immense one of what is usually termed low grade ore, but equally diffused with gold, and can he worked at a good profit.

ANOTHER BONANZA. — Astonishingly rich developments have recently been made in the Mansfield mine, in Kelsey township, a short distance from the St. Lawrence. This company has been at work quietly and persistently for about three years, and in that time have run over 1,000 feet of tunnel and sunk a shaft 220 feet deep, a large portion of which work has been done in rock as hard as adament, making progress necessarily very slow. Up to the present time about $40,000 has been expended, and at leogth success has crowned their efforts. For some time they have been following a large ledge of medium grade ore for the purpose of determining its extent before erecting a mill. Recently a cross-cut was made in an opposite direction for the purpose of thoroughly prospecting the whole ground, and after running about 40 feet a ledge was cut through about two feet in thickness, fully as rich as that now being taken out of the St. Lawrence. We have seen specimens, 40 or 50 in number, taken out by F. W. Voll himself, one of the principal owners, that are really marvelous in richness, some of the smaller ones being fully one half gold. Present developments would seem to warrant the immediate erection of a mill, but the men interested in it are careful, prudent men, and propose to know everything that is in it first, and have determined to sink down 200 feet more and cross-cut at intervals, before erecting a mill, when, if present appearances are maintained, or even if the mine continues to look half as well, a 40-stamp mill will be erected. With such perseverance as has been exhibited in this mine, in hundreds of others, El Dorado county would soon he the center of attraction in the mining interest.

EXTRA FINE QUARTZ.—*Mountain Democrat*, Nov. 10: On the counter at the Central house are two chunks of quariz which were blasted out of the main ledge on the 800-ft level of the St. Lawrence last Saturday. One of these chunks is about 10 inchee thick, 10 inches deep and 12 inches long; the other is not quite half as large. All through both chunks fine gold and gold-hearing sulphurets are thickly disseminated. We should consider $125 a reasonable estimate of the gold in the large sample. The ledge is about 4½ feet wide at the point from which these two samples were blasted. Next to the foot wall is a solid ledge varying from two and a half to three feet in width. Next to the hanging wall is a narrower strip of about 14 inches. Between these is a strip of slate about six inches thick. Doubtless this will soon run out and the two parts of the ledge will come together. The ore in the two parts of the ledge is exactly alika and equally rich. The whole constitutes one of the finest ledges ever opened in this State.

INYO.

POSTOIS FURNACE.—Coso *Mining News*, Nov. 18: We made a trip to this furnace yesterday, with the foreman, and found everything, so far as their supplies of machinery, etc., will permit, in a fair stage of forwardness. The boiler is set in the brick-work, the engine in place, the pit for foundation of furnace dug, the stone and fire-clay on the ground, and all that is wanted to perfect the furnace for work is some heavy timbers for the furnace and lumber for the building over furnace and engine. These will be to hand in a day or two, when the work will be driven ahead, and it is believed by Mr. Moran and Mr. Rawlings (who has charge of the machinery portion of the work) that they will be ready to commence smelting wi hin three weeks.

LOCAL NEWS.—Coso *Mining News*, Nov. 14: The Modoc mine at all points looks exceedingly well. Modoc village is assuming a most lively appearance, and its people feel sanguine of a bright and permanent future. There have been most successfully worked at Panamint, by Mr. Jacobs, 10,800 pounds of their milling ores, giving additional causes for rejoicing. Already $100,000 have been taken out by furnace process, thereby covering all previous expenses and leaving a small surplus in the treasury, consequently 30 days hence we can fully anticipate a handsome dividend for Modoc stock owners. Minnietta Belle mines are still looking well at all points, but are working only a few men in the mines at present, as whole attention is directed to road building to connect from Panamint valley to mill, mines and the Modoc grade, thereby linking the whole country together. Mr. Jacobs has already three wagon loads of his mill appliances on the ground, and says by January 1st he will have his mill in running order. The first load of Minnietta ore was shipped through Wells, Fargo & Co.'s express today. As soon as the mill commences operation they are confident in paying dividends right along for an indefinite period. R. C. Jacobs, of the Sunrise mill, and James Morton, of the Minnietta Belle, at Lookout, arrived in town last week, and have been very busy in perfecting arrangements for removal of the Sunrise mill from Panamint to the Minnietta grounds. Mr. Jacobs, in his mill process of working the ore without roasting, worked same up to 85 per cent. of the assay value. He is now tearing down his buildings, and has contracted for removal of them and mill to Lookout, besides having made contracts for wood and other necessary material, upon a large scale, for his winter and future supplies. With this mill at Lookout in addition to the two furnaces of the Modoc company, we may confidently look for large shipments of bullion.

NAPA.

THE IRON MINE.—St. Helena *Star*, Nov. 18: We stated lately that work was soon to be resumed on our iron mine, which has for the last two years been the hope of St. Helena in the promise of large additions to her wealth and business, should it prosper as it was hoped it might. The present operation is the taking out of a test lot of 100 tons, by Chas. H. Swain, of the Oakland smelting and refining company, which will use it, should it answer their purpose, not to make iron of, but as a "flux" in the reduction of other metals. They need it in large quantities, and, should it answer their purpose, will use, we are told, 100 tons a day, an amount large enough to require—judging from the progress of the present force—150 men in the extraction, besides a large number of teams in its transportation to the cars. We visited the mine Tuesday. It is located up the canyon, probably two miles above the White Sulphurs, and the scenery up there is wild and romantic. A rude wagon road has been made part way, to a point to which the ore is packed. At the mine, which is well up the mountain side, we found seven men at work, with A. C. Ellis as foreman. He kindly gave us all required information, and appears to understand the business well. He informs us that the ore is of the character known as "hematite." It looks well and improves as they go in. He thinks the ore the best that has ever been found on the coast, but is not yet certain as to the amount. It is soft enough to be easily scraped off with a knife. A large proportion will yield 80 per cent. of iron, and they ship none but what will go, altogether, 50 per cent. They commenced work about the first of the month. Henry McCormick has the contract for packing from the mine to the wagon road. This is done on five horses, which carry each two sacks of 100 pounds each, and make eight or nine trips a day, a removal of four to five tons. The cost of packing is $3 a ton; hauling, $1.50. Total, $4.50 to the cars. The first car-load was shipped down Tuesday, on the receipt of which Mr. Swain will make the first test.

NEVADA.

MINING AT ALLISON RANCH.—Grass Valley *Union*, Nov. 18: The Allison Ranch Franklin mine is looking better then ever. The main shaft is down about 170 feet, and there is a magnificent ledge in the bottom of the shaft, as there is all the way down. A pan, such as is used by the miners in testing dirt, full of the ore, was washed out the other day, and gave in the neighborhood of $30 worth of free gold. That was the result without pounding up the rock. The truth is the Allison Ranch Franklin shows itself to be very rich—fully equal, if not superior, to the old mine. The first level, at 120 feet down, runs north and south with rich rock all through. In 10 or 12 days the new mill will start up, and by running night and day will make room for the ore ready to be taken out. As matters there now stand, it is not worth while to put up any more pay rock on the surface. We do not think a 20-stamp mill will be able to keep the "pay dump" sufficiently clear, and we should not be surprised if a 30 or even 40-stamp mill will be required. The Allison Ranch Franklin is looking well we should say. The Allison Ranch Ford is north of the above named mine and adjoins it. The north drift in the Franklin increases in richness as it approaches the Ford. Hence there is a general desire to get the stock of the Ford mine. There is none of the stock in market, and advertisements from responsible parties wishing to purchase stock have failed to be responded to. It is said by those who know the country there that the Ford is the coming mine of this district.

YUBA MINING COMPANY.—This company, whose property is located on the South Yuba, above Washington, have completed their mill, and it is now running under full headway. The Yuba ledge is a large one, and is worked by tunnels driven into the side of the mountain—no hoisting or pumping being required. We have no figures at hand as to the yield of the rock, but are informed that the prospects are excellent and that the Yuba promises to become a reliable dividend payer before many months. The stock of this company is principally owned in Grass Valley.

CLEAN-UP.—*Foothill Tidings*, Nov. 8: The Centennial mine, a recent prospect out on Osborn hill, had another clean-up at the Orleans mill recently. A crushing of 52 tons of rock is said to have yielded $3,355, or at the rate of $103 per ton, exclusive of sulphurets. Other mines over in that direction promise soon to take out pay rock.

PLACER.

MINING ITEMS.—Dutch Flat *Forum*, Nov. 15: Since our last the weather has continued clear, with cold nights, checking back the water in the mountains above so that the supply in our ditches has materially decreased. The Central claim continues washing day and night. The Elmore Hill claim is working off some gravel loosened by a powder blast, using water a few hours a day. The Polar Star and Southern Cross are washing. The latter is piping into a bank of exceedingly rich top gravel. The Baker claim and the sluices in the Yankee tunnel are ready for water, which will be turned on Saturday. It is not possible, however, to wash continuously for some time to come, even should the company have a full supply of water, as opening a claim, under the most favorable circumstances, is a very slow operation. The Summerset claim owners are constructing a new string of sluices to convey their tailings further down the canyon. The claim will soon be ready for washing. The Cedar Creek company's reservoir above town has been sluiced out and enlarged, so that it will now hold, at least, three times the amount it formerly did. This is an improvement of great convenience to the company, as it is the source from whence all the lower claims, such as the Yankee, Badger and Baker, are supplied. At Gold Run, the Hoskin claim has commenced washing, taking water from the ditch of the South Yuba canal company. The Cedar claim, belonging to the G. H. M. company, has nearly accomplished the work of cutting down the roof of the tunnel, and the long string of powder drifts is nearly completed. When these are finished, which will be in about ten days, they will be exploded, and the claim will then be ready for washing. The Indiana Hill claim, belonging to the Miners' Ditch, is also nearly ready for washing. What is said of the Cedar Creek above also applies to this claim, for they are in a similar situation. The superintendents of both have been busily engaged putting their claims in first-rate condition for taking out the precious metal with the least possible expense. The Gold Run and North Star claims are ready for washing.

PLUMAS.

GRAVEL.—Plumas *National*, Nov. 18: The North Fork company's men are now at work cleaning out their big ditch and putting waste gates in. Three weeks have already been consumed in that line, and it will take two weeks more to complete the work. The tunnel claims at Dutch Hill are looking finely and prospecting splendidly. Several carloads of gravel, lately washed up, paid from $60 to $100 to the car. Cumming's hill is about cleaned up for the season, and proved "way up." The company propose to drift this claim during the winter. The Sunnyside company are sending their tunnel rapidly ahead and are in first-class gravel. The air in the tunnel is very bad, and they are obliged to use the compressor, which formerly was in use at Dutch Hill, to furnish pure air to the miners. Providence Hill has been turned over to the Mongolians on a lease for one year. The terms of the lease include all the machinery, pipe, giants, etc., used by the Providence Hill company. The bedrock stripped during the last season was sold to Gee Shune & Co. for $2,000, this firm being the parties who leased the claim.

SIERRA.

PATENT.—*Mountain Messenger*, Nov. 18: The owners of the American Hill quariz mine are applying for a patent to their property. C. W. Hendel, U. S. deputy surveyor, has just finished surveying the same. Every mine must now have a United States title before capitalists will touch it.

SISKIYOU.

AGAIN PAYING.—Yreka *Union*, Nov. 18: We learn that Been & Co. have again struck the rich pay gravel in their claim in Klamath river, and are now taking out large quantities of dust daily. Kettlewood & Co.'s claim, though not paying so well, is more than paying its running expenses, and gives better prospects every day. We should not be surprised now if these claims were worked until very late in the season, in fact, until the derrick wheels were stopped by ice, as the river is not liable to raise much, we are informed, until near spring.

THE JOHNSON MINES.—From A. M. Johnson we learn that the quartz in the old Shepard & Trimble mine, which he has been opening, does not prospect as well as he expected it would. Mr. Johnson has put up extensive works at this ledge, consisting of hoisting apparatus and pumping machinery, and is determined to give it a thorough trial. He has sunk a shaft down 60 feet and then started a tunnel north and south from the bottom of the shaft. On one side the tunnel is already in some 25 feet and on the other side 15 feet. The ledge in the tunnel varies from two feet to 18 inches in width, and is all kinds of looking quartz, but does not prospect as its appearance would indicate it would. The quartz taken out on the top of the ledge pays about $24 per ton, but as depth is reached pays less. Mr. Johnson is of the opinion, however, that he has got off the pay shute, and that he will soon strike it again in one or other of his tunnels. He keeps about 17 hands at work continually. During the past month he has thoroughly repaired and overhauled his mill and expects to have it start up again on Monday, on quartz from his other mine, and will endeavor to keep it running.

TUOLUMNE.

THE CONFIDENCE.—Tuolumne *Independent*, Nov. 18: This mine has recently been considerably troubled with water in the 500-ft level, the pumps running night and day to keep it clear, and at last they had to give up working from the shaft. Work was then commenced to drive up a drift from the tunnel to tap the shaft. The tunnel being below the bottom of shaft, this was soon done, and the water drawn off. In doing this they were able to strike the old shute, which is very rich, free gold lying in the seams in big chunks, and will go $1,000 to the ton. This same shute has been struck in the 700 ft level, and undoubtedly runs to the surface. A new and rich shute has also been struck 1,000 feet from the shaft. Those who persist in saying that our quartz mines pinch out at 100 or 200 feet from the surface, are asked to explain how they reconcile their theory with the facts. In the only mines in the county where sinking has reached beyond that depth, the veins here proved larger and much richer. In the two deepest, the Confidence and Soulsby, no mines in this State make a better showing.

THE HYAPPO.—This mine, above Columbia, in the American Camp district, from which such large sums have been taken, still gives prospect of holding up its reputation. In the bottom of the shaft, which is 160 feet deep, the prospect is good. Owing to bad air and the great labor of hoisting on an incline by hand from such a depth, work in the shaft has been suspended, and a tunnel is being run from the rise on the vein, which, at the shaft, will be 400 feet below the surface. There is a shute about 80 feet from where the tunnel commences, which prospects, on the surface, $800 per ton, and which has probably been already reached in the tunnel. The rock is so very hard that only three feet could be driven in a week. The tunnel is below the water level, and the vein varies from 12 to 28 inches. At first, with two shifts, only 12 to 14 feet could be run in a week, the rock was so hard in the tunnel; but it is now getting softer.

OHIO.—*Union Democrat*, Nov. 18: The Ohio mining company has just completed a large frame structure, which entirely covers the machinery. The building is 53 feet long by 16 feet wide. The force employed in the mine has been engaged above ground lately, but as soon as things are straightened out above, they will commence sinking again.

PROSPECTS for paying $40 per ton, at least, in the Great Eastern mine, near the Ohio, are extremely good. They have a vein averaging three feet, and the rock on the dump will be milled at the Ohio mill.

THE New Albany mine, near Summersville, is, according to all accounts, doing well. They are sinking their main works, and have now attained a depth of 150 feet below their lowest level. It is said that the works will probably be sunk 100 feet deeper, giving 300 feet of a lift to stope out. The vein looks well, and a general air of prosperity surrounds the works of the mine.

AT the Soulsby mine workmen are engaged in putting in position a steam engine to take the place of the water power formerly in use, so as to give the ditch company an opportunity to clean their ditch and repair the flume.

Nevada.

ELY DISTRICT.

THE MINES.—Pioche *Record*, Nov. 12: From D. M. Tyrrell we learn that no change is taking place in the working of the Raymond & Ely and Meadow Valley mines. In both mines work is being carried on above the water level, with a fair amount of ore being extracted. The pinions and center-wheel have arrived for the Raymond & Ely, but nothing will be done with them until work on the pump of the Meadow Valley mine is started, as it has been demonstrated that the pump of the Raymond & Ely mine is insufficient to drain the water of both mines without the assistance of the pump to be erected on the Meadow Valley shaft. Very little else is doing in mining circles around Pioche except by chloriders. The furnaces at Bullionville and Highland are starting and we hope to give a good account of their runs before long. In the meantime we will have to possess ourselves with patience.

EUREKA DISTRICT.

NEW SHAFT.—Eureka *Sentinel*, Nov. 15: The Richmond mining company yesterday broke ground on Ruby hill for a new working shaft. The site of the new shaft is a point about 1,000 feet northwest of the present hoisting works of the company. It will be a three-compartment shaft, each compartment 4x4 and substantially timbered, and will be sunk a distance of 1,200 feet, at which point it is expected to tap the ore body now being worked by the company. Powerful hoisting and pumping machinery will be erected, and the shaft, when completed, will be the principal opening through which the Richmond mine will be worked.

A BUSY SCENE.—We visited yesterday afternoon the locality where work is in progress on the Richmond mine branch of the E. & P. R. R., and found everything life and activity. The place where the largest amount of work is being done is on the hill back of the K. K. furnace, at which point 70 men and 20 wagons and teams are employed. The men employed in the work are all white men, and receive white men's wages.

THE HAMBURG.—The appearance of the ore body in this mine continues to improve as further developments are made. The shaft in the bousnza is down 120 feet and the ore body has continued to enlarge from the surface to the bottom with indications of its continued improvement as greater depth is attained. There are already upwards of 100 tons of fine ore on the dump, besides a considerable quantity stowed away in the drifts. The company is working 20 men, a portion of whom are taking out ore, while the balance are running connecting and prospecting drifts. It is the intention of the company to build a couple of furnaces in the spring, and the prospects are that before that time a sufficient quantity of ore will be extracted to keep them running five or six months independent of the amount taken out after that time.

A REMARKABLE RUN.—The three large stone furnaces at the Richmond works have been running continuously for 200 days, and appearances indicate that they will last at least until Christmas before it will be necessary to close them down for repairs. The run they have already made exceeds we believe by about 50 days any ever heretofore made by any furnace in the district. They are lined with Pancake fire rock, and the extraordinary length of time which they have stood the intense heat to which they have been subjected is attributable, we presume, in a great measure to a careful selection of the rock and the workmanlike manner in which the linings were built.

GROOM DISTRICT.

SOLD OUT.—Pioche *Record*, Nov. 11: We learn from Henry Schaffer, just from Hiko, that Osborne and Baker have sold out their interests in Groom district to the English company, who were partially interested with them, and that the English company will soon start up work, Osborne and Baker to the meantime showing things along at Resting Springs district.

WARD DISTRICT.

ITEMS.—Ward *Miner*, Nov. 13: During this month the Martin White mining company have shipped 30 tons of bullion and have 15 tons on hand ready to ship.

NEW TELEGRAPH.—We are reliably informed that Mssj. Lovell will report favorably to headquarters as to the feasibility of a line to this city. The necessities for this line are obvious. There is not a town on the coast of like importance to the outside world, which cannot boast of telegraphic communication. Our city has a population of at least 800, and it seems to us that it will be a paying institution. It is proposed to tap the line at White river and bring it by way of Water canyon.

WASHOE DISTRICT.

CALIFORNIA.—Gold Hill *News*, Nov. 22: Daily yield, 450 tons of ore, keeping the mills all running up to full crushing capacities. The ore breasts on the 1500 and 1600-ft levels never looked better or yielded a finer quality of ore than at the present time. The returns from the mills indicate an increase over the bullion production of last month of about $200,000. The south drift on the 1000-ft level, running through the center of the ore vein to connect with the north winze sunk below that level, is steadily advancing two and a half feet per day, the face still in rich ore. The connecting drift between the C. & C. shaft and the ledge on the 1550-ft level has been cleaned out and repaired and the hoisting of ore commenced from that portion of the mine.

CON. VIRGINIA.—Daily yield, 400 tons of ore, that being all that the mills can crush. The ore breasts are showing splendidly, and the yield of bullion will be greater for November than it has been for the past two months. The north drift on the 1700-ft level has been cleaned out and repaired, and work again resumed in the face. This drift has penetrated nearly 400 feet into the Consolidated Virginia ground, and must before long make some very important developments in that portion of the mine. The drift is now perfectly dry, the water having apparently been drained by the C. & C. shaft. The ore breasts on the 1650-ft level have been opened and put in good condition for supplying ore through the C. & C. shaft by means of the connecting drift on the 1550-ft level. The 1400-ft station at the shaft has been retimbered and put in the best working condition. The entire mine is in the best possible condition.

JUNCTION.—The ore stopes on the 500, 700 and 800-ft levels show improvement at almost every point, some of the stopes yielding rich black sulphuret ore, second to nothing of the kind on the Comstock. Assays of average of this ore gave $12,000 and upwards per ton. Cross-cuts Nos. 1, 2 and 3, on the 800-ft level, all show a decided improvement during the week. The mine has never in the past shown as well as it does now. The ore production will be increased to over 300 tons per day by the first of December. Daily yield of ore, 260 tons.

SILVER CITY.—Work is actively resumed in this valuable old mine at the upper end of Silver City, after a rest of five or six months. Under the superintendency of Harry Brown, the old incline is being cleaned out, repaired and put in good working shape, it being the intention of the company to reopen the lower workings of the mine and go ahead with explorations at that point.

AUREOLA AND ARGENTINA.—The shaft having attained a depth of about 100 feet, with the bottom in very promising vein material, it has been deemed advisable to erect steam hoisting works forthwith. Superintendent Bennett has gone to San Francisco to make the necessary arrangements to that effect. Meanwhile, further sinking of the shaft is suspended.

IMPERIAL CON.—The south drift on the 2135-ft level from the bottom of the south winze connected with the north drift from the Yellow Jacket on Saturday. This was an object much to be desired, as it gives a greatly

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Mining Prospects in the Black Hills.

A correspondent of the New York *World* writes as follows from Deadwood City, Dakota: Yon can now get from Cheyenue to this place, in comfortsble coaches and over fair roads, in four days' time; fare $35. As the distance is over 360 miles this may be cslled fast driving. The telegraph line is now this side of Custer City, and in about 60 days it will reach Deadwood. Theu, when a man makes a surprising "clean-up," he can annouuce the fact that he has "struck it rich," to his friends way down Eaet, almost before the event has happened, for our local time is two hours slower than New York time. For several miles before we get to Deadwood the road lies down hill all the way, till at last yon reaoh a jump-off place on the old road, which has been well graded and forms an easy inclined plane, at the bottom of which teamsters pay $1 toll, and then gallop down into "Deadwood diggings."

I was surprised to see a number of well cnltivated

Ranches in the Vicinity,

With good crops, although the graeshoppers had been here in great swarme a portion of the snmmer. Those who put in potatoes are getting five and six cents per pound, and "garden truck" brings a like good price. Between Deadwood and Bear Gulch there ie a beautifnl open country, well adapted to farming and stock-raising. From 20 to 30 miles this side of Custer City, in the beautiful valleys and parks, cabins have been huilt and homestead claims taken up. Whatever the reeults of mining may be in this new country, it seems certain that, if the Indians are removed, it will gather in a good many permanent settlers, attraoted by climate, fine stock ranges and good soil. Deadwood City, which was laid out only a few months ago, has now a population of about 5,000. It has a good city government, mayor, aldermen and police, the expense of maintaining which is met hy taxing all kinds of business, the rate being made especially heavy on saloons, bawdy-houees, aud faro and other gamhliug dene, which flourish here. Building ie still active, particularly in Sonth Deadwood, where 40 or 50 honses aud stores are going up. Although winter is near at haud, and large uumbers of claim owners have shut down and goue to the "States" until spring, yet the population does uot seem to "thin out" any, as there are fresh arrivale every day. Fully one-half of the able-bodied men seem to be idle and without visible means of snpport. How they will manage to weather it through until spring seems a mystery. There are very few "tender feet" among them. They are largely old miners, who have traveled California, Montana, Idaho, Utah and Colorado all over, and have been alternately rich and poor. So it is uo new thing for them to be "dead broke." It is a oondition whioh they borrow no trouble over, and which they expeot to work out of in due time.

There are some 10 "cities" and 30 different

Miners' Camps in the Black Hills.

The principal citiee are Deadwood and Custer. The latter last year was the supply point, and contained 3,000 inhabitants. It has now dwindled down to 400. There are Hill City, Lead City, Montana, Gay City, Elizabethtown and other campe. The total popnlation now in the "hills" is thonght by the best informed to be about 10,000. How much gold has been taken out by thie swarm of prospectors it ie hard to tell. Some think it will exceed eome $750,000. But even this would he poor wages for the three months' work of 10,000 men, supposing all had given their time to miuing. While some have doubtless made their fortunee, the great mass have not "made grub," as the expreesion is. The merchants and epecnlators in the varions towns have a lively trade and big profits; so, of conrse, they are doing well, and are more than satisfied with the prospects. The freighting teams and stage lines are also making a good thing. Gold-dust circulatee freely here, and greenbacks are at a discount. Pretty much all the etores, saloons, hotels and offices have ecales, and make their harter in "dnet," reckoning it at $20 per onnce.

The average claim owner at Deadwood is enthusiastic, but is always willing to sell out. Figuree are invariably high. There are plenty of miners with hardly enongh "dnst" to pay for a "square meal," who etick out for a round $100,000 before they will part with their claim. The whirl of specnlation seems to have seized the people. The honanza daye have ocme to Deadwood. It is currently reported in camp that the Wheeler brothers, who left here three or four weeks ago, with a guard of 20 men, carried out with them over $200,000 in gold dnst, the result of a season's work. A four days' olean-up of two men is just now the talk of the camp. It realized $5,500. The Hidden Treasnre has just been eold for $25,000, Clara No. 1 for $50,000 and the Wooleey for $60,000. The Alpha, a quartz mine, brought $50,000. It is said that the Wheeler brothers, who worked claim "No. 2," thought, when they left for the States, that they had got about all there was out of the mine, and so sold it for the pittance of $3,000. The first 24 hours' work by their succeesore cleaned np $3,240. The present owner made the $3,000, which he paid for the mine, selliug peanuts in a Montana towu. Now he is one of the prospective millionaires of Deadwood.

There are some 30 claims on Deadwood aud Whitewood that are doing well. No. 3, on Deadwood, is prodncing from $500 to $600 per day; No. 4, from $800 to $1,000. Some are just making a fair day's wages. Hired help get from $4 to $5 per day.

Gulch Mines.

The mines thns far worked are almost all gulch mines, and a shovel and Chinese pnmp are all the machinery necessary in working them. But valuable quartz mines have been discovered, and the future gold yield may he to a large exteut from this source. The gnlches do not follow any of the known rnles of supply, as in Montana, Idaho and Colorado. The rnns are narrow, and often for a few feet will pan out enormonsly, while in all the balance of the way scarcely any "color" will be fonnd. A few of the deeper claims, where drifting can be done, will be worked thie winter, bnt the larger nnmber being surface claime will he frozen np.

On Bare Butte creek the

First Silver Discoveries

Have been made, and a new town called Galena laid ont. Twelve tone from one of the lodes has been sent to Denver for reduction. It is claimed to be very rich. There are over 20 well developed ledges at Galeua. There seems to he a belt of "lodes" three or four miles ahove Deadwood City in which the quartz is quite rioh. From $15 to $20 a pan has been taken ont in some places. But the lodes are not what experieuced miners wonld call "well defined." They seem to be mere blow-outs or decomposed rock, and since there are no regularly defined veins the miners have doubts about their holding out. Without donbt all the free gold in Deadwood gulch comes from thie quarter. Negro Gulch district, 40 miles from Deadwood, is very promising, bnt there is lack of water. Parties in from the Big Horn country bring discouraging news. They report no gold, and great hardehips in their prospecting tour. This ie against the general expectation, as the Big Horn has been regarded as fahulously rich, bnt very few have ventured in there owing to the Indian troubles.

Deadwood

Supports a theater. The Langrishe tronpe hold forth nightly, their plays containing a certain amount of border life phraseology and experience, just enongh to "take" among the miners and bring down the honse. "Jack," the proprietor, is familiarly known in all the larger camps of the Rocky mountain region. Years ago he held forth at Tarryall and Buckskin Joe, np under the shadow of Mount Lincoln, in camps that then swarmed with gold seekers, but which long ago came to naught, and haven't even a cabin left to mark their site. The old Montana theater at Central City, the Wigwam at Denver, and the Virginia City, Cheyenne and other theaters have witnessed the runs seaeon after season of the Langrishe troupe. Last night was benefit night, the net receipts, $75, going to the hoepital fund. There are two or three variety entertainments here aud plenty of gamblers' dens. It is said by those who eeem to know eometbing ahout it, that the miners in and about Deadwood part with about $2,000 a week for their amusements, and $4,000 at a gaming table. If there are any poor men tempted to come out here and winter, eo as to get a good chance for early spring prospecting, they had hetter count the cost. Poor "grnh" at a cabin of a hotel, with a bunk on the hard ground, costs from $10 to $15 a week. Sugar ie three ponnds for $1; bacon, 35 cents; hutter, 60 cents; grain and corn, 10 cents a pound aud hay, $100 per ton. Prices are likely to be lower in the spring, as the various outfitting points are entering into a lively competition for this trade. Cheyenne hae had the lion's share, hut Fort Pierre, on the Missouri river, is now cntting in, the freighters from the latter point having reduced the price of hauling supplies to three oents per pound, while from Cheyenne it is seven. Cheyenue people are said to he making a move to lay out a shorter route to this place, cloiming that air line is not over 285 miles, and they propose to haul in supplies and passengers oheaper than any other outfitting point. If there is a big rush to the hills next season, as seeme to be expected, there will be a good deal of etrife between the several places that are aiming to profit from the Black hille furore. Cheyenne, Fort Pierre, Sidney and Sioux City will probahly come in for the biggest deal.

An Extensive Gravel Mining Claim.

During the last year or two several notices have been published in the *National* in regard to the work and prospects of the claims located at the lower end of the Spanieh Ranch basin, and called the Golden Enterprise. Last Monday, in company with a friend, we paid a visit to the mine, and found the owner, Mr. Richard Jacks, who politely escorted us over the claim, and pointed out the iteme worthy of note. Mr. Jacks has long heen of the opinion that the Spanieh Ranch basin was rich in the precious metal, aud that by blasting a cut through the canyon below, low enough to drain the baein, a fine paying property would be developed. Aoting on this idea, he commenced operatione in 1866, and opened the cut a euort distance and pnt in a flume, whioh was taken out by the high water. Again he tried it, and the second flume was carried away. The claim was worked no farther for several years, bnt the owner was far from giving it up. Last year he again commenced operations in "dead earnest." The cut was extended and a uew flume pnt in and at a heavy cost. The finme is the most substantial structure we have ever seen. It is 10 feet wide "in the clear," with a center-piece in the middle. When water is plenty the whole flume runs full, and when the creek is low in the fall, the water is turned into one side or the other. The bed-piecee of the flume are strongly hrsced into the rock side of the cnt, and weighted down so solid thst it would seem impossible for the water to do the least damage. The finme has a grade of one and a half inches to 12 feet, hut to eee the water and boulders rushing throngh it, one would think it twice as steep as it is. The present year the cut has been extended through the rim rock by Chinese contract labor, and considerable new flume hae been added at the head of that constructed the last season. The flume ie now 696 feet in length, and eome hnndreds of feet of the cnt at the head acts as a "ground-eluice." From the rim np the creek, no very large opening has yet been made, bnt wherever the creek has cnt down aud laid it bare, a fine hody of hlue gravel is exposed, which prospects on top, at the rate of—to use a miner's phrase—from five to 20 colore to the pan, and as far down as shafts have been snuk, the gravel increases in riohness. Mr. Jacke thinks his flume low enough to "bottom" the basin, and if he is correct, we see no reason why he hae not one of the heat claims in the county, and even if he should fail in places to reach the bottom, an immense quantity of gravel will certainly be worked. On the rim rock—the only place where hedrock was exposed—the gold is much coarser than in the top gravel, and pieces weighing $6 have heen fonnd. The facilities for working the claim are firet-rate. A spleudid head of water—ample for hydranlic washing of auy extent—covers the mine with a presenre of 150 feet, and besides this the whole of Spanish creek necessarily runs through the flnme. The recent little flood proved the strength of the present snmmer's work, as the water rau eight feet deep ahove the top of the flume, and not a block or timber moved out of place, and notwithstanding that thousande of tons of ragged pieces of rock weut through which had been blasted from the cut, the dump is clear, proving that there will he no tronble from that source. We look npon the Golden Enterprise as a snccese, and the owner certainly deserves credit for the perseverance and euergy which he has displayed in battling against the obstaclee in the way of developing the riches of the basin. The coming water season will give him opportunity of further opeuing aud developing the mine, and if it does not prove one of the beet payiug claims in Plomas county, we shall be badly disappointed in our calculations.—*Plumas National.*

Montana Mining Interests.

The Butte, Montana, *Miner* says: The amount of money, hard, eolid gold and silver, that has been taken ont of the minee of this Territory, compared with that which exists to-day in them, is like a rush light compared with a calcium. This may eeem at sight to he a rather rash statement, in view of the fact that onr minee have given to the world upwards of $150,000,000 of money siuce 1864. But it is a statement which we repeat and repeat meaningly. When one takes into consideration the great ore belts of Montana, interlaced all throngh the country, that in these ore-belts there are hundreds upon hundreds of ledges, only a few of which we know anything ahout, that of thoee that are known an immenee quantity are what are called rebellious oree, known to contain large quantities of gold and silver, and which will some day prove of enormons value, for the problem of redncing them will to a dead certainty he solved in the near futnre, that all the developments npon a majority of the known ledgeé amount to but little more than what miners graphically call "coyote holes." When one takes into conoideration all these facts, the fntnre of the Territory eeeme of such Monte Chrieto-like character that the mind will hardly grasp it, and yet all of this is trne, in our opinion. The Comstock lode hae produced over $300,000,000 eince its discovery and the ores from those mines are estimated to yield on an average not over $50 per ton. How much wonld he produced were all of the mines of Montana worked, in proportion to to their value, in thie way, and with the completenese that the Cometock lode has been? One cannot face the figures which are called into existence as the logical result of thie train of thought. But what has heen, and is the diffienlty to-day? What ie the reaeon that our mines have not been developed? Simply because we have uc money to do it with. We have property worth, there can be no doubt of it, millions and hnndreds of millions of dollars, and we have to wing it with, say one-fourth of the assessed valuation on our working capital. What we need is more money. In Sau Francisco, New York and the other principal cities there is all the money we want lying comparatively idle, for certainly three, four and five per ceut, is not much to get for the use of it. Aud still they are eatisfied, and why? Simply because they have no market for it, have no way in which they can get more for its use. The sitnation may be pnt in this way: Those people have the capital, we have profitable properties wanting capital in order to be made to give np their wealth, and the problem is how shall their money and our minee be brought together.

This ie the problem to he solved—difficult in its solution, but yet there is a solntion, and it can be found. Although the labor of finding ont the answer ie great, certainly never could lahor be paid for in a more princely way than what that would be. Every plan which looks in auy way toward accomplishiug this purpose should be carefully inquired into, and if it looks as thongh it wonld be successful, should be enconraged to the utmost. Here is one thing would help to do this amazingly: Let our legislatnre at its sitting this coming winter authorize some one, thoroughly competent to do the work, moke an examination of our mines, give the geological formstions of the different districts, the number of leads, as near as possihle, in each district, the average value per ton of ores contained in those dietricts, as near as may be, whether gold, silver or copper; and the person employed to do this make a report and submit it to competent and experienced judgee for acceptance, and if it he a concise and reliable condensation of the facts set forth, have it published in pamphlet form and distributed throughout the States. By thie means, at a trifling expense, would many people come to know that there are miues of valne in Montana, hecanse a work of this kind would naturally attract more profonnd notice than any other meane that could be resorted to, having the sanction, as it would, of the local government. See that something of this nature is accomplished thie winter, you men that sit in legislative halle and use the people's money.

The Wheeler Expedition.

The Virginia *Enterprise* says: Lieutenant Symons, of the Wheeler expedition, and in command of that part of it whioh hae been operating hereabouts, together with W. H. Rideing, correspondent of the New York *Times*, who has also been taking notes of the doinge of the expedition, visited the sanotum yesterday afternoon. From them we learn fnrther particulars of the movements of the various sections of the expedition.

Lientenant Macomb's party are still eugaged in the triangulatiou of the couutry aronnd Lake Tahoe. They have occnpied Freel's peak (sometimes called Job's peak), Pyramid peak, the Twin peake nnd other etations and made their observations. These are all connected hy a net-work of triangulation with the base line of the party, nud from the data thns gained exact distances and localities are determined.

Lieutenaut Tillman and party have completed their work north and west of Reno, and are now assieting Lieutenant Macomb. Lientenant Tillman and hie party have occupied Caetle peak, north of Trnckee. The asceut of this peak ie not known ever before to have been accomplished. Only two meu made the ascent, as it was. They found the snow very deep, often reaching the hellies of the mnles, and averspiug from three to four feet. The firet man who made the ascent assisted hie companion up with a rope, and thus the obeervations were made. The top of the peak is very small, only affording standiug room for those who gained the summit.

The doinge of Lieutenant Symons aud party have been mentioned from time to time and need not be repeated. Mr. Carl is doing eome admirable work in making the topographical survey of this section. It will take a part of next enmmer to complete the work, and the map thue made will be the finest and most complete ever made on the Pacifio coast.

The party to the east are in the desert country, and have not been heard from of late.

All parties are to rendezvous in Carson early in December, where they will dishand for the season and take up the office work in Washington.

New Gravel Mining Company.

Among the numerous persons passing through thia city, we noticed thie week Mr. Smyth, formerly superintendent of the Electric mining company, who, as we have learned, has lately purchased the eo-called water right on Fall river for a San Francisco company, with the intention of working the large gravel depoeits near that river. Mr. Smyth was accompanied by several gentlemen, among them Mr. R. H. Moore, who will take charge of this company's worke as superintendent, and put immediately o large force of men at work to repair ditches and flumee and prepare, with all poseible speed, the whole in working order before the winter sets in. Several teams loaded with the uecessary snppliee for a whole season, have left here, together with a complete outfit of mining tools. The property of the Fall River mining company is situated in the northeastern part of thie connty near the Plnmas county line, betweeu the middle and south forks of the Feather river, and contains over 500 acres of gravel with a large quantity of water, splendid facilitiee for working it and a dump of several hundred feet. A good wagon road leads to within a few miles of the claims, aud will be extended to the mine as soon as practicable. An old channel, it is said, exists in the gronnd claimed by thie company, which is generally coneidered the northern extension of the Moorsville diggings. We are glad to see this new enterprise going into operation, especially as it is in a section which has been comparatively but little prospected, and wherever ravine or river mining haa beeu done, it has and is still paying well. There are others south of the Fall River company's claims whioh are getting ready for extensive work, bnt we have not been able to learn more particulars, bnt hope that we will hear soon of their complete success, by helping to swell the already large shipments of dust to thie place. There ie pleuty of room for more suoh enterprises in Butte. Who will come next?—*Oroville Mercury.*

The Bullion Tax in Nevada.

Suits have been commenced in the District Court in and for the first judicial district of Storey county, Nevada, for the recovery of the bullion tax upon the proceeds of the Consolidated Virginia and California mines for the second quarter of the current year, running from April to and including June last. These suits are brought in the name of the State of Nevada as plaintiff by R. H. Lindsay, Esq., District Attorney of Storey county.

The complaint against the California mining company alleges, among other things, that during the time above mentioned 29,120 tons of ore became, under the law, assessable, and were assessed by Thomas Gracey, assessor of Storey county, at the rate of $155 per ton, and that the company thereupon became liable to pay taxes as follows: State tax, $33,624 01; county tax, $14,944.01: railroad bond tax, $18 680.01; school tax, $5,604; making a total of $72,852.03. To this amount are added, as penalties for non-payment of the tax: First, 10 per cent., amounting to 7,285.20, and then 25 per cent., amounting to the further sum of $18,-350 23, making a total of $98,350.23, for which amount judgment is demanded.

The complaint against the Consolidated Virginia mining company alleges that, as above, 36,093 tons of ore became assessable, and were assessed at the rate of $100 per ton, and that the company thereupon became liable to pay taxes thereon as follows: State tax, $23,014.80; county tax, $10.228 80; railroad bond tax $12,-786; school tax, $3,835.80; making a total of $49,865.40. Penalties added as above, $4,986.-50 and $12,466.25; making a total of $67,318-.15, for which amount judgment is demanded.

Mining Present River Beds.

A correspondent of the *Foothill Tidings* (Nevada county) says: Since witnessing the failure of the enterprise known as the Deer Creek gravel gin, allow me to vent an idea for working such places as that in Deer creek. I present it as a suggestion, for what it is worth.

There is, no doubt, a large amount of gold lying in Deer creek at and near this point. The original bed could hardly have been half worked out, when the tailings from the mines about Nevada City began to obstruct the work. Now, my plan would be to build a substantial and durable dam at some point where there would be fall enough to keep the tailings clear. The top of the dam should be on a grade with the top of the gravel above; the object not being to back the water but to support the gravel. Now I would start a tunnel right through my dam, at the lowest point of the bedrock, cut it down as low as I could, timber it up with good, durable timber and lag it tight. Then I would lay my sluices in the tunnel—of course the sluices would have to be low grade and I would have to use a big head of water. I would commence my pit above the dam, from shore to shore, flinning the waste water over the pit and dumping it below the dam; covering the tunnel as I went with the boulders and waste dirt. In the fall I would timber my tunnel up to the face across my pit, board up the end, cover it over good with boulders and gravel and dirt, take out my waste water flume, let my pit fill up and slick over until spring. Then I would put in my waste water flume again, sluice out my tunnel, open another pit and so on to the end of the chapter.

CONCERNING PUTTY.—Glaziers' putty is made by working ordinary whiting into a paste with drying oil. Common putty becomes exceedingly hard with age, a circumstance which renders the removal of glass from sashes peculiarly difficult. Old putty may be softened by using a paste of caustic potash, easily prepared by mixing carbonate of potash or soda with equal parts of freshly burnt quicklime, which has previously been sprinkled with water, so as to cause it to fall into powder. This should be mixed with water to a paste, and spread on the putty to be softened. Where one application is not sufficient, it is repeated. In order to prevent the paste from drying too quickly, it is well to mix it with less water, adding some soft soap instead. By the application of a hot iron the putty becomes so soft that the glass can be removed by the fingers and the putty easily scraped away. All that is required is a block of iron about two and one-half inches long by one and one-half inches square, flat at the bottom, and drawn out for a handle, with a wooden end like a soldering-iron. When hot (not red hot) place this iron against the putty or flat on the glass, and pass it slowly round the sides of the square. The heat will so soften the putty that it will come away from the wood without difficulty. Some of it may be so hard as to require a second application of the hot iron, but one experiment will give sufficient instruction to meet all difficulties.—*Journal of Chemistry.*

THE CHANNEL TUNNEL.—The work of sounding for the projected channel tunnel is advancing rapidly. On the 1st of September the depth of the shaft at Sangatte reached 107 meters; on the 1st of October it had increased to 119, and on the 9th inst., to 122 meters. The boring of this shaft, which is to be sunk to a depth of 130 metera, will probably be completed towards the end of the present month. The soundings of the strait were taken some time back. The result of these operations appeared entirely to confirm the expectations of the geologers.

USEFUL INFORMATION.

The Porosity of Brick Walls.

Professor Pettenkofer has made a curious discovery, that brick walls are readily permeable by gases. A writer in the *American Architect* gives the following description of the experiment, translated from the "Records of the Royal Academy in Munich:"

Pettenkofer caused to be erected, upon a cast iron plate, a section of wall two feet high, two and-a-half feet long, and twelve inches thick (the bricks he used were twelve inches long). It was put up with bricks carefully laid in lime-mortar. After the brick-work was thoroughly seasoned, the two faces of the walls, containing five square feet each, were plastered with a floated brown finishing coat. This being well dried, the edges were pargetted with plaster of paris. Time was again given for evaporation, when the plaster of paris was overlaid with a coating of wax, oil and resin. Next metal plates, with flanges turned over the edges, were cemented to both faces of the wall, firmly clamped and screwed tight. In this manner the rims and margins of the metal plates were fitted and secured to the wall, the whole being air-tight, while there remained thin layers of air inside the margins, between the faces of the wall and the metal plates. Both metal plates had holes in their centers, one-third of an inch in diameter, and to these short tubes were soldered. If air was impelled through the tube attached to one metal plate, it had to penetrate the wall before it could be discharged through the tube of the opposite metal plate. The net area of each metal plate, facing the air-cushion between it and the wall, was three and-a-half square feet. A lighted candle was placed directly in front of the open tube on one side, and, by blowing in the open tube on the opposite side, the air would pass through the wall and extinguish the light without any trouble whatever. The current of air had, of course, much more velocity in the tubes than in the wall, since the exposed area of the wall was 2,860 times larger than the area of the tubes. Assuming that a light wind of 10 feet velocity per second had acted on the open tube, this velocity, though much diminished within the porous wall, would regain its original speed when passing through the other tube, and no doubt suffice to extinguish the light. Supposing the solid particles of bricks and mortar occupied three-fourths, and the pores one-fourth part of the exposed surface, the air would have moved 2860-4ths or 715 times slower in the wall than in the tube, and a velocity of 10 feet would have been reduced to about 14-100 of a foot. Now, our nerves being insensible to a motion in the air of one foot and over, it is clear that a motion of 70 times less speed will go on without our being aware of it.

Charcoal Instead of Lime.

A very important discovery has been made that charcoal, animal or vegetable, is a better agent than lime for the removal of the hair from hides, preparatory to tanning. An exchange assures us that the depilation of hides with charcoal appears likely to supersede altogether the usual lime process. As is well known, charcoal has the property to take up large quantities of oxygen from the atmospheric air, and the oxygen in this form seems to exert a chemical influence on the fatty substance present in the neighborhood of the glands of the hair roots. An oxidation takes place in the pores of the skin, which destroys the glands and loosens the hair. Finely powdered charcoal is mixed with sufficient water to make a thin paste, and the hides immersed for four or five days and well turned. Hides treated with charcoal require no other operation, as in the case of the lime process, and after being washed with water, they are ready for tanning. Animal or vegetable charcoal can be used in any quantity, having no deleterious property whatsoever. For each hide, six or ten pounds with the necessary quantity of water are sufficient, and the temperature to be maintained is 61 or 70 degrees Fahr. This information may be of great value to the people in the interior of the State, who occupy themselves in the tanning of that common leather, known in America as *suela*. There is always a great demand for this leather in the manufacture of saddles and accoutrements for the cattle-men and travelers, also for trunks, shoes, chair bottoms, and other articles of utility. The demand is so great that the suelas have, most of them, to be brought from Guayaquil, Payta, and other foreign places, where it seems they can be prepared more cheaply than by our native workmen. By the use of charcoal, which is much cheaper and more readily obtained than lime, the tanners will be placed on a more advantageous footing for producing the suelas at a considerably less cost than hitherto. They will then be able to sell the article at a cheaper price and yet secure quite as much profit as before. It is a matter for surprise, that so remunerative a trade as the tanning of hides into leather has not yet become a leading industry in this State. Hides can be had in great abundance for this purpose, and the bark for the conversion of hides into leather, can be obtained all along the sea-shore, and of the best quality. The mangrove or mangle plant, the bark of which is thus used, is present everywhere on the coast.—*Panama Star.*

Copper in Cast Iron.

It is well known that wrought iron containing some tenths of per cent. of copper is red-short; meanwhile in some of the best irons from Siberia was found from 0.01 to 0.03 per cent. of copper. In some specimens of steel I found 0.2 per cent. of copper; this steel was not brittle, and had been used with success for manufacturing steel axles. The presence of copper was found in several specimens of cast iron coming from blast-furnaces of the South Oural mountains. These specimens, when examined and analyzed, showed that the presence of copper in cast iron may amount to a higher percentage than in steel or iron without altering the quality of the metal. Unfortunately it is not so with wrought iron or steel. The specimen examined was much used for castings; it filled up the molds beautifully, and had a very handsome appearance; fresh cut it had a dark gray color. Under the microscope small grains of copper were easily remarked in the mass of the metal. This peculiar sample of cast iron was carefully analyzed, and the analysis gave the following average composition: Iron, 83.514 per cent.; copper, 8.123; tin, 1.252; cobalt, 0.501; silicium, 0.952; tungsten, 0.125; carbon, 3.001; manganese, 2.312. Total, 99.780.

While analyzing some iron samples for copper, I often used, in case only traces of copper could be detected, the following method: The specimen is dissolved in hydrochloric acid, and the copper and iron are precipitated by an excess of ammonia; the mixture is boiled and filtered; the blue liquor is evaporated nearly to dryness, and the resulting residue is dissolved in sulphuric acid. Into this solution a piece of magnesium ribbon is placed, which, in case of traces of copper, is quickly covered with a layer of this metal; that is easily observed under the microscope.—*Chemical News.*

PETROLEUM AS FUEL IN RUSSIA.—The demand for English coal in St. Petersburg and in the north of Russia is likely to be considerably reduced, partly in consequence of the large quantity now imported from Westphalia, and partly from the impetus likely to be given to the production of mineral oil. An American speculator, who has "struck oil" in the valley of the Volga, has taken on lease 350,000 acres of land, which he has already begun to work. He promises to sell petroleum at 30 per cent. under the price of that imported from America, and he has already shown the value of his discovery by supplying some of the steamers on the Volga. It is said that the companies which have tried heating with the new fuel are perfectly satisfied with the result of the experiment.

GOOD HEALTH.

The Value of Condiments.

By condiments we mean substances like sugar, spices, vinegar and others that are employed to impart flavor and piquancy to the staple foods. They are usually regarded as non-essential, and some writers on dietetics have gone so far as to condemn their use, unless in rare instances and in the most infinitesimal proportions. Like all good things they are liable to be abused, but when properly used they are valuable elements in our daily food. Prof. Voit, of Munich, than whom there is no higher authority on such a subject, considers that their importance has not been sufficiently recognized. It is not enough that food should contain alimentary principles in proper quantity; to render it really nutritious there must also be a supply of condiments. These have been compared to oil in a machine, which neither makes good the waste of material nor supplies motive power, yet causes it to work better; they render essential service in the processes of nutrition, though they are not of themselves able to prevent the waste of any part of the body. "A dietary deprived of condiments, a mere mixture of alimentary principles without taste or smell, is unendurable, and causes nausea and vomiting." It is not until condiments are added to aliment that it really becomes food. Extreme hunger may enable us to dispense with them, as it may compel us to devour what at other times would be disgusting, but under ordinary circumstances they are an essential part of our diet.

Condiments have an important influence upon the processes of digestion and nutrition. The mere sight or thought of a savory dish "makes the mouth water"—that is, it makes the salivary glands pour out their secretion copiously, which is an important stage in digestion, especially for certain articles of food. Experiments made upon dogs show that a similar effect is produced upon the gastric secretion, and thus the work of digestion is further promoted. The loss of the sense of taste would be not merely a loss of enjoyment, but a positive injury to the digestive system. The very smell of food may do us good, just as certain odors will restore a person who has fainted.

It does not follow because condiments are useful, that we may not have too much of them; on the contrary, their best effect depends upon their being used in moderation. The more decided the flavor of any article of food, the sooner does it pall upon the appetite. It is one of the peculiar merits of French cookery that flavors are so delicately blended; no one is specially prominent, and yet by their different combinations a wonderful variety of appetizing effects is produced. We Yankees, like the English, are apt to use condiments in a coarse, reckless way, and thus miss their finer and more exquisite effects, besides losing much of the benefit that might be derived from them. By a nicer care in their employment, the plainest and simplest diet might be made at once more delicious and more digestible.—*Journal of Chemistry.*

Burns and Scalds.

The following from Mr. Holmes' recent "Manual of Surgery" has the merit of giving much useful information in a concise form: At the time of the accident, the main indications are to exclude the air from the burned surface, to allay pain by opiates, and to give stimulants in such quantities as may be necessary. The applications which are in use for burns are too numerous to mention, and the choice of one or other of them will depend in a great measure on the depth of the burn. A mere superficial scorch is best treated by some warm solution applied on a thick rag and kept constantly moist. Common water with laudanum is perhaps as grateful as anything. Painting the surface with ink soon relieves the pain of a small superficial burn, or covering it with whitewash or some other similar substance, which will crust over it and completely exclude the air from it. Common flour thickly dredged on the part is a very good and handy application. But such crusts should not be applied over burned surfaces of the second degree, since their removal would soon become necessary, and this would drag off the epidermis. The bullæ should be pricked, the epidermis gently smoothed down, and some simple ointment put next the skin, or some oily substance which will not stick when it is necessary to change it. A very favorite application to these burns and to others of greater depth is the Carron oil, made by mixing lime water and linseed oil in equal parts, and deriving its name from its having come into extensive use at the great Carron foundry in the numerous burns occurring there. Oil of turpentine is a very good application to burns in which the surface of the skin is quite destroyed. But for the first few days I doubt whether anything is better than simply swathing the part in thick layers of cotton wool, which is prevented from sticking to the burned surface by some simple ointment (cerat. calaminæ is generally used), spread on thin soft linen or cambric, and covering the whole burned surface. When, after a few days, the discharge becomes foul, this dressing should be changed for some deodorizing or antiseptic, oily application, or the latter may be used from the first; but all the antiseptics I have yet seen used have been stimulating, and for the first few days it is desirable, I think, to avoid any local stimulation. The carbolized oil answers every indication better than any other substance I know of, but it should not be used too strong; for it may both prove too stimulating, and thus increase the discharge, and it may be absorbed, producing a black condition of the urine, and other symptoms of incipient poisoning. It is well, then, to begin with a very weak solution (about one to twelve), and if this does not correct the fetor its strength may be gradually increased, or a stronger solution of carbolic acid may be placed over the dressings.

Causes of Fever and Ague.

There has long existed a diversity of opinion in regard to the principal causes of intermittent fever. Many years ago it was generally supposed to be produced by the malaria of marshy districts, and a residence in their vicinity was considered hazardous. We will not say that the malaria from marshes has nothing to do with intermittent and other fevers; but we do not believe it is the chief cause of their development.

We are acquainted with many families that have lived for years on the very borders of marsh lands and have enjoyed perfect health all the time, while the residents of the high lands near them have suffered greatly from fevers.

We are somewhat skeptical as to the power of miasm arising from natural marshes to produce disease. Where the water of mill ponds is drawn out during the day, and a mass of vegetable matter is exposed to the heat of the sun, or where large masses of earth are thrown up from considerable depth below the surface, sickness is almost certain to prevail in the neighborhood, and often extends for miles around. Bating these causes of fever, which causes are entirely artificial, we do not believe that locality has much to do in producing them. Imprudence in dress, in diet, and in the habits of life generally, will sooner or later bring on disease; a little sooner, perhaps, in localities where the climate is not perfectly salubrious, since another element is added to those that already exist.

He who expects to enjoy immunity from illness by simply selecting a healthy place of residence without the exercise of prudence in living will be disappointed. There is no doubt that the principal cause of nearly every form of fever and of many other diseases is impure water. Second in order is the proximity to cesspools and decaying animal and vegetable matter. Third—exposure to chilly air of the evening and morning. Fourth—over exertion and insufficient sleep and rest. Fifth—want of attention to the condition of the bowels.—*Hall's Journal of Health.*

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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Saturday Morning, Nov. 25, 1876.

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NEW ADVERTISEMENTS.

Asbestos Materials, Thompson & Upson, S. F.; Gulf of California Oyster Co., Office, S. F.; The Golden Sun Gold Mining Co.—Meeting.

A BLACK hills correspondent says: The country so far developed would he good enough for about 2,000 men, but I presume there are now between 7,000 and 8,000 in the hills, and at least as many coming in and going out, principally Western men. Wages are generally $4 per day in dust; drifters get $6 and $7, but very few are employed; dust in trade goes for $20 per ounce, which assays at the mint from $17.50 to $19.92. Work is very scarce, and there are a great number of broken men here. Flour is selling from $8 to $12 per hundred, bacon 30 cents, sugar 30 cents, coffee 40 cents, and potatoes at 12½ cents per pound. The latter are raised in the Black hills.

THE suspension of the Continental life insurance company affects some 70,000 policy-holders, as well as its other creditors. Although the managers are of the opinion that the policy holders will lose nothing, we doubt very much whether the people who have been paying their annual premiums for eight or ten years will be much comforted by this assurance.

THE suit of Mrs. Kate Sullivan against the Savage mining company, in which plaintiff claimed $150,000 damages for the death of her husband, through the alleged incompetence of defendant's employees, was tried in the United States Circuit Court in Carson, Tuesday. The case was given to the jury at two P. M. In the course of the evening the jury reported that they were unable to agree and were discharged.

RETURNED.—Our senior editor, Mr. Ewer, returned from the East on Monday of this week. He comes to us again in good health and spirits, and we trust will he much benefited by the long vacation which he has enjoyed.

Mining Information Needed.

In the various reports of mining commissioners to the Governments have been described the numerous pans and batteries used for crushing, grinding, amalgamating, etc., but in them can be found no data from which miners can form any opinion as to the comparative merits of the various machines in use. No better thing could be done or a greater service rendered to the miners than for the proper officials to collect in his next report some data by which they could form an intelligent idea as to what, out of the great multitude of machinery offered to the public, would be the best, most economical and most effective, under all or any particular circumstances. As it is, the miner has nothing but the reports of interested parties, or his own usually limited experience to guide him in his choice. This condition of things, as might reasonably be expected, often results in great pecuniary loss.

We have an almost infinite variety of batteries, pans, amalgamators, concentrating machines, riffles, plates, aprons, screens, ore feeders, etc., from which to choose. A person about to build a mill, after looking around a little, guesses at some plan he has seen, and then proceeds to construct his mill. If he does not change his mind three or four times, at the suggestion of friends, before he has his mill completed, it is because he is possessed of more firmness and decision than falls to the lot of a large portion of our most intelligent miners and mill-men.

Such results are inevitable from our loose and uncertain manner of working. If private individuals can not be induced to undertake it, Government, or the States of Nevada and California, might do well to establish an experimental mill, where every new machine as it comes out might be tried at the inventor's expense (necessary power, etc., being furnished) and under the direction of intelligent and competent men, before the public should think of placing the least confidence in the invention. Among the many things which the miners wish to know and which few companies attempt to ascertain at their individual cost, is the relative efficiency of stamps of given weight; hight and frequency of drop; general mode and arrangement of a battery; whether one pan is better than another, and which; whether the yield obtained is better in one than another; whether one loses more or less quicksilver than another; relative power to drive the machines in proportion to the work done; proportional wear and tear of iron per ton of rock crushed; amount of concentration effected by one concentrator over another; relative cost of running and amount of sulphurets saved; amount of water or power required for mills of certain size with certain kinds of rock; classes of engines best adapted for certain kinds of rock, etc.

One is surprised that, after so much experience as the miners of this coast have had, there is so little reliable information to be had on the subjects referred to. The miners are entirely dependent on the newspapers for what information they do get. The newspapers have also great difficulty in obtaining this class of information, as those who possess it are rarely willing to publish any of their experience. We hope that some day an experimental mill will be maintained at the State University, or elsewhere on this coast, where such data as we have mentioned will be collected and be open to the investigation of all parties interested.

Pacific Coast Railroad Items.

Early Tuesday morning the westward bound freight train broke in the center, near Gold Run, and the two sections collided, smashing several cars and knocking one or two from the track. The delay occasioned by the occurrence rendered the Virginia City lightning express four and a half hours late.

Says the Vallejo *Chronicle* of Tuesday: The railroad company have commenced work on the bridge across Napa river, and have begun work at Union station, which is the further end of the new air line track. They expect to have the whole line finished and ready for operation by the 1st of December. Some difference will be made in running time by this cut off, the saving amounting, probably, to ten minutes.

The Dumbarton & Santa Cruz narrow-gauge railroad company will build their depot at Santa Clara on the corner of Sherman and Franklin streets. The surveyors for the continuation of this railroad from Los Gatos to Santa Cruz are at work in Scott's valley, and will be in Santa Cruz within 30 days. As surveyed there will be three tunnels, one of 600 feet, another of 1,650, and a third, 1,680. The estimated cost of the road is less than $20,000 per mile.

The Felton & San Lorenzo railroad company have filed articles of incorporation in the office of the County Clerk of Santa Cruz county. The company propose to construct and operate a narrow-gauge road from the town of Felton up and along the San Lorenzo river, a distance of 15 miles, and also along Bear creek, 7 miles, and Boulder creek, 10 miles—the entire road to be 32 miles. The corporation is to last 50 years, and the principal place of business to be at Santa Cruz. The capital stock is $500,000, divided into shares of $100 each. The Trustees are C. G. Harrison, John S. Carter and W. T. Tisdale, of this city, C. H. Gorrill, of Santa Cruz, and James P. Pierce, of Santa Clara.

Remarks on Quicksilver.

[Written for the PRESS by SAMUEL PURNELL.—No. 5.]

In 1866, from the annual report of the New Almaden mine, it was seen that 13,442 tons of ore were treated, with an average yield of 11.62 per cent. Cost of mining, assorting and smelting was $16.15 per flask, to which $7.60 was added for interest, taxes, improvements, etc., making the actual cost $23.75, or 31 cents per pound. In 1874, however, the actual cost was claimed to be not over 26 cents per pound, and it probably does not vary much from this latter figure at present.

In 1874 the superintendent of the Valley mine, working poor ores, estimated his expenses as follows: Mining, $2; smelting, $1.55; total, $3.55 per ton. These are low prices, and it is seen that some of the elements of cost are omitted. The furnaces worked 20 tons of ore daily. Yield was very low, only 200 pounds per day. The losses were evidently very great. According to the superintendent's estimate, the quicksilver produced cost 30 cents per pound. The real cost was probably double as much.

At the Great Western mine, near Calistogs, a furnace was erected in 1873 to work 12 tons a day. The cost of smelting was estimated by Mr. Luckhardt at $1.25 to $1.50 per ton. He considered a fair profit could be realized on one per cent. ore. Quicksilver was then higher in price than it is now, averaging about 98 cents per pound. These works are not at present in operation.

At all the California mercury works both workmen and vegetation are much injured by the escaping vapors.

The Condensers

Now used at New Almaden are an invention of the manager, Mr. Randol, and consist of a glass house, composed of panes of glass set in sashes. He considered them more effective than the forms used previously.

The Haehner furnace uses the old style of cooled chamber condensers; so also does the Knox & Osborne furnace.

From a statement in Volume XXX of the SCIENTIFIC PRESS it appears that the

Profits of Quicksilver Mining

And smelting in California have been very large. Taking 50 cents per pound as the usual and average price of mercury, and the cost as 26 cents per pound, the net profits for the years 1871, 1872, 1873 and 1874 were over 400 per cent. as follows:

Production in 1871,	2,438,896 lbs.,	averaging 99 cts.	℔ lb
" 1872,	2,318 409 "	" 80 "	"
" 1873,	2,087,900 "	" 93 "	"
" 1874,	2,612,781 "	" $1,37½	"

That is, the net profits for these four years alone were $7,436,304; while the extra profits over the average price of 50 cents per pound for these years were $4 765,922. Up to the close of 1875 the total production had been some 64,000,000 pounds, on which, it has been estimated, the net profits were about twenty million dollars.

In Conclusion

The author would suggest that those interested in quicksilver look closely into the facts and principles hereinbefore stated. The reasons for anticipating a material advance in the price of mercury are not obvious; while those for a still further decline can be fairly defined. Before many months the price of quicksilver will possibly be as low as 30 cents per pound, at which rate, perhaps, not one concern in the State would make a dollar working with present appliances. Something to cheapen production is even now necessary for the salvation of those establishments treating low grade ores, (and these embrace all the leading mines of the State,) else our quicksilver interests will be practically extinguished, and our market pass into the hands of European smelters. The revolving, cylindrical, oxidizing and subliming furnace is quite sure to smelt at a less cost and work with profit finer and vastly poorer ores than any of the usual furnaces. The large cooled chamber style of condenser must be abandoned, as too costly and wasteful in times of cheap mercury. Similar principles to those herein stated, namely, that of close refrigeration of the hot vapors and then subjecting them to a rotary or spiral and compressing motion till by the aggregation of the globules they become heavy enough to fall through the gaseous current, must be adopted. This lesson from nature should not fall on unwilling or indifferent ears. The laws governing the formation of the drop of rain must be the same as those for the drop of mercury. These principles, the author believes, will soon be acknowledged by all to be true, and their application to be vitally necessary. By the means indicated our quicksilver interests may be strengthened and expanded, and California may defy all competition in its production.

THE tax collected in Eureka county from the proceeds of mines for the quarter ending September 30th, as shown by the report of the county assessor, amounts to $6,720.51. Of this the Richmond company paid $4,885.16; the Eureka Consolidated, $593 80; Atlas, $836.60; Macon City, $195.50. The balance was paid by a number of companies and individuals who had small lots of ore worked during the quarter. The total amount exceeds that of the corresponding quarter for 1875 by $628.81.

Comstock Papers.

No. 9.

The Washoe Argonauts—How they Saved and How they Squandered.

Before proceeding to speak of the early developments made on the Comstock lode and of the first mills and reduction works put up for the treatment of its ores, some further, but brief, remarks may not be out of place concerning the fate and fortunes of the pioneer owners along that lode; a class of persons to whose histories the rare opportunities they enjoyed for acquiring large wealth have imparted an interest that neither their intrinsic merits nor any other incidents connected with their lives could ever have inspired. In other words, it is these fortuitous events rather than the men that awaken curiosity and prompt us to inquire what became of the individuals themselves. We naturally like to know what use men so situated made of their opportunities; suddenly and easily acquired riches producing often very unlike effects upon the human mind, as is exemplified in the story of these Washoe pioneers, some of whom made the most of their good luck, economizing and adding to their gains until they became millionaires, while others (and this was much the largest portion of them), recklessly spending their money as fast as they received it, remained as they had always been, impecunious, shiftless and generally indebted to all who would trust them. A few of them were men of education and refinement, reticent, cautious and thrifty; more, however, were garrulous, imprudent and spendthrift; almost the whole of them being men of generous impulses, free-hearted, and even liberal towards their friends or those whom they happened to like, to a fault.

The first parties who realized any money from the Comstock mines were

The Owners of the Small Rich Claims at Gold Hill,

Where a number of arastras were being profitably run several months before the silver bearing deposit in the Ophir ground was opened or even discovered. These Gold Hill claims, beginning on the north, consisted of the following, applying to them the names by which they were latterly and more generally known: The Triglone, 31¼ feet; the Imperial-Empire, 123 feet; the Bacon, 45 feet; Empire North, 55 feet; Eclipse, 30 feet; Treuch, 20 feet; Empire South, 20 feet; Plato, 10 feet; Bowers, 20 feet; Piute, 20 feet; Consolidated, 51 feet; Rice, 13¼ feet; Imperial South, 65¾ feet; Challenge, 50 feet; Confidence, 130 feet; and the New York and Washoe, 130 feet; the most of these claims being now covered by the ground of the Imperial-Empire company. Small as they were, the majority of them were shared by two or more partners, their extreme richness justifying such subdivision of ownerships. With the transfer of these properties that frequently took place, they often changed names, being sometimes known by one name and sometimes by another.

Among the principal owners in the claims along at first was

Alexander Bowers,

Generally known as Sandy Bowers, owner of the ground that bore his name. Through of Scotch descent he hailed from Missouri, whence he came overland and, tarrying on the Eastern slope, had been following the business of placer mining along Gold canyon for several years, when the notable silver find occurred. He was a rough, honest fellow and well liked by his companions, though not so canny and circumspect in his wordly affairs as his countrymen are commonly reputed to be. He owned originally but 10 feet on the main lode, the additional 10 having been the property of his wife, acquired by her before their marriage. Mrs. Bowers was also of Scotch origin, a hard working, industrious body, who, having repaired to the little hamlet of Gold Hill in the spring of 1859, was there living in a very rude and comfortless sort of abode as late as the month of August of that year. She did the washing for the miners, a business that paid well at that day, there being, as yet, no Chinamen in the country, and had gathered not a little gear prior to her marriage with Sandy.

Bowers' claim proved very rich and he made a great deal of money along at first. Afterwards he built a large mill near his mine, and still later a splendid mansion over in Washoe valley. The mill was not a success, which, with some pecuniary reverses afterwards sustained, reduced his accumulations materially prior to his death, which occurred some 10 or 12 years ago at his residence in Washoe. His widow still lives and is reputed to be endowed with something of that occult power that enables the possessor to foresee future events. In the exercise of this faculty she has frequently prognosticated ore developments on the Comstock, some of which are said to have been verified by subsequent events.

Joseph Plato

Was the owner of the once well known Plato claim, which, although it contained but 10 feet, turned out for some time a large amount of extremely high grade ore, having been even richer than the Bowers ground, which it adjoined on the north. Plato was a man of ex-

traordinary physicel powers, and although not a professional athlete, was much addicted to feats of skill and strength, having, as is apt to be the case with men so constituted, injured himself by over-indulgence in exercises of this kind. He was an early resident of Washoe, and obtained his ground at Gold Hill for a trifling consideration. He was one of the few of those pioneers who not only made money, but possessed the faculty of keeping and employing it to advantage. He died in San Francisco about 10 years ago from general debility, his death having been hastened by a wound caused by the bursting of a gun, while on a visit to Carson valley. His widow, who was left in good circumstances, afterwards married Mr. Howard, now one of the rich men of the city.

John Newman,

Who was part owner in several good claims, one of them situate at Gold Hill, put up the first permanent house erected on the site of Virginia City. This was a stone building and was completed in the month of August, 1859. It afterwards enjoyed the infamous distinction of being the house on which the first and only secession flag ever hoisted in Nevada was run up. This event happened in the spring of 1861, and came well nigh costing the proprietor his life. In this house Newman shortly after killed a man, and, as it was at the time alleged, without any sufficient cause or provocation. As the country was then without courts or law, no notice was taken of the crime. This man was a tailor by trade, but honored the calling by leaving it and betaking himself to less reputable pursuits. He came to San Francisco a few years after the discovery of the Washoe mines, and there married a woman greatly his superior, being a person of some education and pretentions to literary taste. He died soon after, leaving some real estate but not much money behind. Of

Jamas Rodgers

Very little is known. He was quite a young man, was in the country when the silver mines were discovered, and obtained interests in many valuable claims at both Virginia City and Gold Hill. He was also largely interested in the Flowery district, then considered a promising mining locality. Rodgers was noticeable for his quiet and retiring habits, and without being intimate with any, stood well in the estimation of all who knew him. One morning in the summer of 1860, he was found dead in his room in Virginia City, shot through the head by a pistol ball. Whether it was a case of suicide or assassination never was ascertained. The fact that he had no enemies seemed to favor the theory of self destruction, while the still stronger fact that no trace could be found of his money or other effects argued that he had been murdered by parties who had already taken measures for securing his property, knowing that in the loose state of society that prevailed no very searching inquiries would be instituted as to the manner or causes of his untimely taking off. If Rodgers had any friends living the fact never came to light, nor did they probably ever receive any portion of his really valuable estate, this having in some mysterious way been absorbed by strangers.

Thanksgiving Proclamation by Governor Irwin.

State of California, Executive Department: In pursuance of a custom which obtains in most, if not all, of the States of the Union, I hereby appoint Thursday, the 30th day of November, instant, to be observed as a day of thanksgiving and praise. The people of the State are invited to desist from their ordinary vocations on that day, and, assembling in their accustomed places of worship, to give thanks and praise to the Divine Providence for the many blessings bestowed on them, as a community and individuals, during the past year.

We have not suffered from the visitation of famine and pestilence; abundant harvests have rewarded the labors of the husbandman, while general health has blessed the people. General prosperity has visited every part of the State, and caused contentment and happiness among all classes.

We have not been subject to the evils of arbitrary power on the one hand, nor to those of unbridled license on the other. We have enjoyed the inestimable boon of liberty regulated by law. We felicitate ourselves that the cause of education, morality and religion has been advanced.

Our condition, material, social and political, as compared with the condition, in these respects, of most other, even enlightened and Christian peoples, should inspire us with emotions of gratitude, and dispose us to give thanks and praise to the Source of all Good.

Let us, then, on the day set apart for that purpose, recount our obligations to God, and thereby nourish in our hearts those feelings of dependence and sentiments of gratitude which should ever characterize a free, intelligent and religious people.

In testimony whereof, I have set my hand and caused the great seal of the State to be affixed hereto, this, the 14th day of November, A. D., 1876. — William Irwin, Governor; Thomas Beck, Secretary of State.

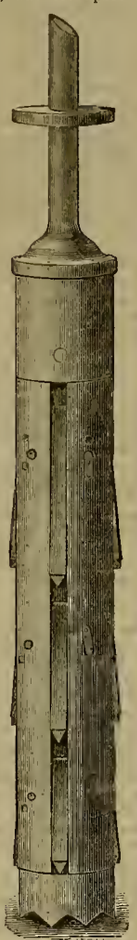
The Justice mining company have found in their south mine a lot of stoped ore averaging $45 per ton. A hundred tons have already been taken out and milled, and it is believed that fully 75 tons more will be taken out of the dump.

Formal Closing of the Centennial.

Last week we closed up the Centennial in these columns, receiving the news by associated press dispatch. The telegraphic report was, however, very tame and very inaccurate, as we learn from the graphic account of affairs which our representative in Philadelphia sends us by mail. He writes as follows:

From beginning to end interest in the exhibition increased. During the last few weeks the every-morning view of people drawing near through the broad avenues leading to the grounds was grand indeed. They poured in incessantly by steamboat, steam and horse cars. For hours each day every conceivable kind of conveyance was hurrying to the front between black ribbon-like lines of people a-foot—walkists of all nations, sorts and sizes, anxious to reach the universal center of attraction on the double-quick.

On Thursday, the last day before the closing ceremonies, over 200,000 people were admitted. Friday, November 10th, last day of the exhibition, was set apart for the "closing ceremonies." A mammoth platform stretching wide across the front of the main building was erected the previous night. In front of this decorated elevation extending back towards machinery hall, were placed thousands of seats for invited guests, still leaving acres of standing room for the patriotic multitude, which under ordinary circumstances would have overrun its borders, like an over-flowing sea, and it really was such a multitude which became disappointed.



Woolhouse's Artesian Well Borer.

The exercises were announced to take place between 2 and 4 P. M. Long before 12 the crowds began to gather around the rope-bound space. The rains also descended and deluged the platform and the vacant seats, but the men and women outside of the ring stood their ground. The numbers with and without umbrellas increased and multiplied. And until nearly three o'clock all were expectant of seeing President Grant with the officers of the day march forth from the judges' hall to perform at least a part of the ceremonies promised. Meanwhile the ceremonies proceeded in the judges' hall, (before the few accommodated within its limited walls,) in the order reported to our readers by wire last week.

Disappointed upon the grounds, many who revered the great exhibition, allured by the statement that President Grant would himself stop the big Corliss engine in machinery hall, took up their position in the nearest proximity attainable to the great motor, and patiently awaited their second disappointment, the valves being finally closed by the engineers, without the least formality observable by the crowd.

Delighted, as at the low murmur of the ocean waves, thousands had approached and hesitated again and again near this ponderous craft-work, ere its busy life so quietly ebbed. Hardly had its power through miles of shafting and a million of cranks gently ceased, when a furious screeching of numberless whistles, humming of blowers, ringing of bells, booming of cannon and acres of general din and clatter incessantly rent the air for a full quarter of an hour.

Ere quiet was restored, a sparse built man, of more than medium hight, rising 50 years of age, affable and venerable looking, appeared upon the platform. It proved to be George H Corliss. He modestly received the loud and repeated applause of the earnest and intelligent multitude that still lingered around the engine.

Packed, jammed and crowded towards the center from its immense periphery, the breaking up of this solid mass of men and women was fraught with great danger. For a few moments the sacrifice of human lives seemed inevitable. All was beyond the control of the mere sprinkling of policemen. Children were trampled on; women, terrified, shrieked for protection. Some were taken off their feet and carried a hundred yards down the main avenue. Two ladies were carried insensible up on the bass platform of the engine, and scores of others helped over the railing for safety, ere quiet was restored.

At half-past four the crowd waiting in front of the main building, reinforced by detachments from machinery hall, were having a jolly time. Men cleverly counterfeiting the president and authorities of the day, were stepping to the front, raising their beavers, bowing, scraping, thumbing their vests with elbows akim, returning thanks, etc. Umbrellas in the rear made dents in the speakers' hats. Hats, regardless of cost, returned compliments right and left to umbrellas, and so the high carnival went on in the best of humor and manners ludicrous enough to have choked even our old forefathers with laughter.

This, as far as it goes, is a true report. Our readers will not likely find it in any other print. It seems a pity that the storm disarranged the original programme. Notwithstanding the "formal" closing, the exhibition is to remain open ten days or more to visitors on the same terms of admission as heretofore. Although many things are being removed, enough remains to invite the attendance of new-comers. A permanent exhibition is being formed of great importance. D.

Fig. 3. ASBESTOS ROOFING—SECTION.

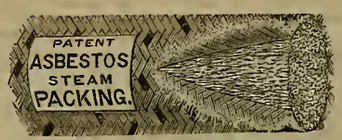


Fig. 4. ASBESTOS PACKING.

Fig. 5. A FINE PIECE OF ASBESTOS.

Bullion Shipments.—Since our last issue shipments from prominent mines have been as follows: California, Nov. 14th, $108,160; Con. Virginia, Nov. 14th, $23,319; Grand Prize, Nov. 14th, $2,378; Modoc, Nov. 12th, $33,800; Northern Belle, Nov. 12th, $18,000; Chollar, Nov. 15th, $9,087.38; Modoc Con., 14th, 200 bars—total to date, $42,000; Leopard, Nov. 12th, $9,216 05; Northern Belle, Nov. 14th, $12,003.06; California, Nov. 18th, $107,108.56—total to date, $459,440.66; Modoc Con., Nov. 15th, 600 bars—total to date, $54,600; Chollar, Nov. 17th, $16.013 01—total to date, $25,100.39; Con. Virginia, 18th, $122,713 10—total to date, $238,800 46; Leopard, Nov. 16th, $4,511.71; Tybo Con., Nov. 12th, $8,551.11—total to date, $17,598.08; Manhattan, Nov. 17th, $12,205 35—total for week, $24,595.04; Leopard, Nov. 20th, $4,300; Modoc, Nov. 18th, 400 bars bullion—total to date, $63,000; Tybo Con., Nov. 16th, $8,765.20—total this month to date, $27,363.28; Ophir, Nov. 21st, 4 bars bullion, value, $16,175.64—total to date, $24,100.84; Manhattan, Nov. 21st, $11,400; Northern Belle; Nov. 19th, $18,001.71; California, Nov. 21st, $112,235.13—total to date, $571,675.79; Modoc, Nov. 20th, 232 bars—total to date, $67,872.

Improved Artesian Well Borer.

Considerable difficulty has heretofore been experienced in boring artesian wells, for the reason that frequently, at the depth of several hundred feet, very hard rock is reached, in which the ordinary form of drill usually employed fails to cut a bore of sufficient size and regularity for the well pipe shoe to pass through. To obviate these and other defects, John A. Woodhouse, of Anaheim, has invented and recently patented through the Mining and Scientific Press patent agency, a drill which by reason of an arrangement of automatically expanding or projecting side drills and chisels and a main center drill below such arrangement of side drills, will insure in every instance a bore of sufficient size and smoothness.

The main center drill of this device, illustrated herewith, is mortised to the lower end of a cylinder in such a manner that while it will be held securely in place during the drilling operation, it may be readily detached therefrom when necessary. This may be accomplished by means of bolts provided with spring catches or locks, conveniently arranged to maintain the tenons securely between their mortises. The mortises in the drill are so formed that passages shall be left therein for the inflax of water and drillings into the cylinder through a valve located in the lower part thereof.

The cylinder is constructed with three series of longitudinal recesses or compartments, each series embracing about ten compartments, at such distances apart that the cutters pivoted therein may thoroughly cut away such rock as may have been left by the main center drill. The side drills are pivoted at or near their upper ends within the said compartments by bolts or pins, or by a rod passing entirely around the cylinder. Said drills are provided with a drill or bit, and also a cutting blade or chisel located higher up on the shank and serving to smooth the walls of the well, which may have been left by the lower drills in a rough condition.

These side drills also rest upon springs which are proportioned in strength to the work to be done, and tend to press the said drills and cutters outwards to the working point during operation, which is practically a vertical and slowly rotating movement of the device. During any movement, however, of the device within the shoe of the well-tube the drills and cutters are compressed and fit snugly within their respective compartments, the springs being usually compressed within a recess formed by cutting away a portion of the lower side of each drill.

The chisels are intended to be made separate from the drills and to be secured thereto by bolts or suitable mechanical means.

A metal disk somewhat less in diameter than the cylinder is secured to the upper end of the same as shown, by short rods or studs, so that an open space shall be left between the two. A screw bolt is fastened in this plate and is the medium through which the drilling device couples with the usual working shaft. The lower end of the working shaft is provided with a guide disk which maintains the drill in a steady central position and couples with the said rod.

When rock or other substance is reached which necessitates the use of this construction of drill it is coupled with the working shaft as described, enclosed within the shoe or lower cylindrical case of the well tube and sunk to the bottom of the well; after this the shoe is raised above the several series of side cutters and the operation of drilling commences. The side drills will be kept wet by water which usually will flow over the top of the cylinder, but in case no water is reached it can be supplied from above.

Centennial Figures.—A dispatch from Philadelphia says: Totals of receipts at the exhibition from all sources, from May 10th to November 10th, may be stated approximately as follows: From admission fees, $3,813,724; from concessions, $290.000; from percentage and royalties, $205.011; grand total, $4,308.735.

The completion of the C. & C. side-track of the railroad now enables the shipping of ore to the Carson river mills. The raising of ore through the C. & O. shaft is an important feature, as it will greatly facilitate the production of a sufficient amount of ore to keep the mills all running during the winter months.

Ward district, Nevada, now has a newspaper, the Ward *Miner*, the first number of which has reached us. It is published by Mark W. Musgrove, and, although small, will grow with the camp. We hope the editor will keep us well posted on the mining news in his locality.

Last month eight vessels carried coal from the coal mines near Seattle to San Francisco, their cargoes aggregating 8,805 tons. Of these eight cargoes, two were shipped by the Renton company and six by the Seattle.

Recent Patents.—Our usual list of recent patents came to hand too late this week for notice.

Mining Appliances.

Several very useful suggestions recently made in connection with mining appliances are worthy of being placed on record, although but one to which I shall refer has been secured by patent, not the least important being that of Messrs. Davis and Fieldhouse, of Tipton, for an apparatus to be used in sinking pits or sumps; it is constructed with a metallic cylinder (varying in diameter and hight according to the nature of the work to be effected,) provided with a movable or detachable bottom, which is connected to the cylinder by hinges or by a central rod (referred to hereinafter), and in which are two valves or doors opening upwards, and near the outside of which four spikes pass through, and are cottered upon the upper surface of the plate, and in the center of which is another spike similarly cottered, and above which latter cotter a beater is attached to prevent the said valves or door opening too wide. On each end of the diameter of the movable bottom is a hinge and clasp, one of which clasps is unfastened when the contents of the cylinder are required to be emptied out; otherwise if a center rod is used passing through the entire length of the cylinder we form the center spike at the bottom of the rod, and at the top of the cylinder we place a horizontal guard, a cotter on the upper surface of which keeps the movable bottom in its place. About 12 inches above this cotter is a movable cap, and when it is required to empty the cylinder the machine or apparatus is drawn up to the surface of the pit or sump, and the said cotter is removed, when the movable bottom will fall the 12 inches, and the contents, sand, gravel, or earth, of the cylinder will escape, and if required, into a specially provided receptacle, or if the said detachable bottom is connected to the cylinder by hinges, as above mentioned, it may be detached by a plug.

Working within the said cylinder is a piston or bucket somewhat similar to an air-pump bucket, which is provided with two valves opening upwards, and which are prevented opening too wide by a bester, and secured by bolts going through and to the under side of the bucket. The bucket is also provided with four eye-pins, underneath which are hinge-holes in which the valves work. The said eye-pins are secured underneath the bucket, in the outer diameter of which are two grooves, in which fit two guides or slides attached to the inner diameter of the cylinder by countersunk rivets or bolts. To the said eye-pins are attached chains which are connected above by a ring or link connected to a steam-engine or any other suitable motive power. Motion is by this means imparted, and the bucket is actuated in the cylinder. Upon being raised, a partial vacuum is formed under it, and the debris is, consequently, sucked through the bottom valves into the cylinder. A continuation of the strokes of the bucket causes the cylinder to become nearly filled, when the whole apparatus is drawn up to the surface and can be emptied by one man, as before described, no one being employed in the pit or sump, so that by the use of this improved apparatus human life is not endangered, and the work required to be done is effected much more economically than if performed by manual labor. Besides this, the apparatus can be used in sinking and cleansing pits and sumps, where, on account of an influx of water or the presence of quicksand, manual labor cannot be employed without risking life. The improved apparatus thus acts as, and after the manner of, a pump for earth instead of water, and it will work any depth under water and bring up the earth.

Another unpatented invention of interest to miners is that of Mr. J. T. Fewkes, of Philadelphia, for an improved miner's pick having a head with sockets for the reception of bits of various kinds, and set screws for holding the same firmly in position. It also relates to a wrench fitted in the handle of the pick, and concealed in the eye thereof, so that it is within convenient reach for tightening the set screws of the head, and is without the danger of being lost or liability to filling with dirt. It also relates to holding the bits and sockets by wedging joints. With the eye portion of the head there are formed the bit sockets, which project in opposite directions therefrom, and on the lower side of said sockets there are bosses in which are fitted set screws. The bit is formed with a wedge-shaped groove, and the inner face of the socket with a wedge-shaped tongue, or vice versa, the location of the parts being such that when the bit is fitted in the socket the tongue will enter the groove, and thus there is formed a wedging joint. In the bases of the sockets there may be placed pieces of soft metal that constitute cushions against which the inner ends of the bits will come in contact. When the said bits are properly located the screws are tightened, and the former are securely held, the cushions preventing fracture to the bases of the sockets and inner ends of the bits.

It will be seen that bits of various kinds may be readily applied to and removed from the head, and the screws form simple and convenient means for securing and releasing the bits. The bosses provide large surfaces for the set screws, so as to strengthen their hold and steady them during rotation. A portion of the upper end of the handle is removed, and in the space thus formed there is fitted and secured a wrench, which is flush with the surface of the handle. When the handle is in position in the eye of the head the wrench is concealed thereby, and does not interfere with the hold of the handle, but when the said set screws are to be tightened or loosened the handle will be readily removed from the head by a few blows, and the wrench immediately presented for service, the handle affording convenient means for operating the wrench and providing long leverage therefor. When the wrench has accomplished its work, or is not required, the handle will be restored to its place in the eye of the head and tightened therein. It will be seen that the jaws of the wrench are covered by the adjacent wall of the eye of the head, whereby dirt will be excluded from said jaws. The wrench cannot fall out and be lost, and the miner, or other operator, has a wrench within convenient reach, thus avoiding the necessity of carrying or having a separate tool.

Some improvements in anemometers, or instruments for measuring the velocity of air or gas, has been suggested by Mr. R. M. Lowne, of East End, Finchley. He forms the blades of the fan of vulcanite, instead of forming them of metal or mica, as has heretofore been the case, by which means he is enabled to produce a durable, cheap and light fan, capable of withstanding the deleterious and corrosive effects of gases and impure air. He also arranges the gearing communicating with the counting apparatus, so that the latter shall be practically sealed off or protected from the entrance of dust, gases or impure air. For this purpose instead of mounting a worm or screw on the axis of the fan of larger diameter than such axis, as heretofore, which necessitates the leaving of an open hole in the case of the counting apparatus, he either forms such worm or screw as small or smaller than such axis; or, preferably, the improvements suggested by Mr. Lowne dispenses with the worm or screw, and in lieu thereof fixes on the axis of the fan a toothed wheel or a pinion, which communicates motion to the counting gear, thereby enabling him to pass the axis of the fan through a hole in the case of the counting gear closely fitting such axis. He also in that class of anemometer known as Byram's anemometer applies thereto a lever mounted on an axis of motion, one end of which lever acts upon suitable mechanism, as will be well understood, so as to readily throw the counting apparatus in or out of gear with the wheel or pinion on the axis of the fan.

The last invention I shall notice is that patented by Mr. P. E. Gegnon, of Paris, which, although rather less directly connected with mining, is not without interest. His invention relates to the manufacture of machine bands, ropes, cables and fabrics for various purposes, composed wholly or partially of brass wire of any suitable gauge, which is first covered with hair or bristles, and then formed into strands, of which a number are twisted together and woven or braided into a fabric, the weft being composed of single strands, and the warp of a number of strands twisted together, or *vice versa*. The rope, cable, or fabric thus obtained is then heated to about 150 degrees Cent. for the purpose of rendering the hair viscous and causing it to adhere to the wire. The same result may also be attained by the application of pressure and a suitable cement without the aid of heat.—*London Mining Journal.*

British Lead Mines.

We have received an early copy of the fifth edition of Mr. Murchison's pamphlet, and the contents fully justify the interest which has been felt in its appearance. The amount of dividends paid by the public companies in the first nine months of 1876 is not only considerably more than that paid by them in the corresponding period of last year, but is even larger than the whole of 1874, and nearly equal to the whole of 1875. Mr. Murchison may well say, "the continued prosperity of British lead mining in the midst of the surrounding and prolonged depression in all other industries is a striking and undeniable fact in its favor, and an additional confirmation of the opinions I have so often expressed for many years, when no one else had the inclination to support my views." People often expect mines to pay—and, indeed, to do so largely—and yet grudge, and often refuse, the moderate capital required to give a fair chance of realizing profits. But, as Mr. Murchison asks, "is there any other industry or business in the country that can be compared to them (lead mines) for permanency, steadiness and the high rate of return, even under the difficulties (as to getting capital) they have had to encounter? What else can show so many instances of continuous satisfactory profits from 50 to 100 years?" Particulars are then given of the capital invested in railways which yield an average return not exceeding three per cent. £35,000,000 laid out on constructed lines paying nothing, while upwards of £9,500,000 pay not exceeding one per cent. Even the leading lines are continually increasing their capital, the result being diminished returns; and the shares have frequent and considerable fluctuations.

On the other hand, Mr. Murchison shows that, taking the whole capital invested in public British lead mines (dividend and non-dividend), the average return is more than double that of railways, and if the private lead mines were included he believes the difference would be still more marked. Why, then, he asks, should it be more difficult to get capital for promising lead mines than for desirable railways? The price of lead ore continues good and steady; the same quality which in 1870 realized £11 13s 6d to £13 10s 6d per ton, now fetches £14 10s, "notwithstanding the general cry of depressed trade and business generally. Whether during times of peace or war, lead is an article which maintains its value, either for commercial and social requirements or for destructive purposes; while as a metal it is comparatively cheap." Money is now said to be literally a "drug" in the market, and there are unmistakable signs that capitalists are sadly in want of some means of employing their accumulated idle funds; and we believe they can in many ways do much worse than invest in legitimate British lead mines. Mr. Murchison gives, as usual, some particulars of the principal lead mines, dividend and progressive, and we heartily recommend his remarks to the attention of the public.—*London Mining Journal.*

On a New Water-Pressure Pumping Engine at Clausthal.

The completion of the Ernst August deep adit level at Clausthal having relieved the older mines of a large amount of water that was formerly pumped up and discharged through the shallower adit known as George III's deep level, the water-power thus rendered disposable has been utilized in the establishment of a central deep pumping station for the whole district in the new Queen Mary shafts, where a quantity of 770 gallons of water may be lifted per minute to a hight of 754 feet. The fall of water available as a pressure column is 1,207 feet; but in order to avoid the necessity of heavy reciprocating rods, the engines, designed by Bergrath Jordan, of Clausthal, in imitation of the newer kind of direct-acting steam pumping engines used in collieries, have been placed at the bottom of the shaft, 1,958 feet below the top of the pressure column, and 751 feet below the deep adit through which the water is discharged. The construction of the engines is similar to that of a direct-acting steam pump, there being two double-acting pressure pistons, each having a double-acting plunger pump placed behind it, the opposite ends of the piston rods being connected with a fly-wheel, which carries the valve gear for the engines. This consists of a pair of eccentrics, moving piston valves which, in order to prevent shocks in the tubes at the change of stroke, are made somewhat shorter than the admission and discharge ports, so that when in mid stroke the water ways are not completely closed. The main pressure cylinders, with their pistons and rods, are of gun metal, as well as the valve pistons, which work in a tube lined with the same metal. Both engine and pump pistons are without packing, being turned to fit accurately in their working barrels, and are provided with annular grooves to prevent the passage of fluid from one side to the other (Ramshottom's construction).

The pistons of the pressure engines are 12.2 inches in diameter, those of the pumps 12.9 inches, the length of the stroke common to both being 24 6 inches. The piston rod which is carried through both cylinder covers is 6.5 inches thick. The effective volume of the cylinder from these dimensions requires a consumption of 14 5 gallons of water per revolution, apart from that expended by the valve cylinder, while the corresponding discharge of the pumps is 17.2 gallons, so that the effective duty of the engines appears to be about 66 per cent. of the power developed by the pressure column. With a piston velocity of 19.7 inches per second, about 50 revolutions are made, and 830 gallons of water are lifted per minute. The pumps have short suction pumps and double best valves, whose seats are one-fourth of the sectional area of the pistons, after allowing for the section of the rods. The power water, after doing its work in the engines, is discharged with that lifted by the pump through a common rising pipe. At this speed the velocity of the water in the driving column and rising pipe is about 3.28 feet per second. The former has to resist a pressure at the lower end of 60 atmospheres, and the latter of 23 atmospheres. The author points out that although a plunger-lift of 754 feet is very different from anything used in his own district (Freiberg), a single lift of the same hight was adopted in Juncker's water-pressure engine at Huelgoat, and that that at Illsang, forcing brine to a hight of 984 feet, with one pump, worked for nearly 40 years without stopping. He concludes with the expression of a doubt as to whether the disadvantage of using rotary water-pressure engines under such a heavy backwater pressure may not more than counterbalance the advantages derived from the abolition of pump rods in the shaft.—*Berg und Huttenmannische Zeitung.*

India Rubber.—Consul Green, reporting on the trade of the Brazilian provinces of Para and Amazonas, states that the crop of india rubber, which was little over 2,000 tons in 1861, has been steadily increasing ever since, and reached 6,763 tons in the year 1875. He is able to add that there are vast rubber yielding districts which have never yet been touched, and that if the rumors that the old districts are becoming exhausted should be correct, there is no reason why the yearly collection should not, in ordinary seasons, continue the steady increase it has shown for some years past, so long as there is an outlet for the produce in the European markets. The increase in 1875 was less than usual, but he observes that this was owing to an exceptionally long, rainy season and much sickness, and must not be taken as a criterion of a diminution of population or an unwillingness of the inhabitants to work.—*Colliery Guardian.*

Nickel.

Our contemporary, *La Houille*, extracts the following article on nickel in New Caledonia from a paper published in that colony: Nickel has now so much importance in our colony, that we intend to give an article on it every month, so as to keep our fellow colonists informed of the value of their produce in the markets of Europe, and, in the second place, to give really true accounts of the quantities exported, the number and value of our mines, and the kind of people we are.

After doubting for a long time of the reality of the discoveries made near the end of 1874 at Mont d'Or, about 18½ miles from Noumea, our people at length began to explore for nickel with great zeal and activity. The presence of ore was proved at a large number of places in our island, and people began to believe that mines might be opened anywhere and everywhere, and that we were about to enter on a period of unlimited production. Fears were entertained of a deficiency of ships to take the ore away, and it was imagined that Europe and America together would hardly consume all that was going to be raised. But these dreams and exaggerations were soon over; and the present position of affairs is that the total amount exported in the course of the past 14 months—*i. e.*, from the date of the earliest extraction to the present day—is 2,000 tons.

The Boa Kaine mine sends away from Canala to Germany every month about 125 tons; The Bel-Air mines at Onaillon have raised 1,200 tons, of which 160 tons were sent to London at the beginning of 1875. In April, 1876, 550 tons were shipped for Havre per the *Buffon*, and in May 430 tons by the *Nouveau-Mondelli*. The remaining mines, all told, including the Fatma mine, have not sent away more than an aggregate of 100 tons. About the end of the next month (August?) 550 tons will be shipped on board the *Indien* for Havre. That is the whole truth about the heavy shipments of which we have heard such varying accounts.

Will this production increase? Possibly, and yet we cannot be certain. We hear that the proprietors of the Bel-Air mines have resolved to ship no more after they have dispatched the *Indien*, before they have learnt the reception which their three former consignments meet with in Europe.

Letters brought from Europe by the *Egmont*, on the 8th, have informed us that the English smelters have formed a coalition—a ring—for the purpose of abstaining from buying, and so speculating for a fall; and that a lot of 35 tons put up to auction remained without a bid. The French and Germans, too, we find, await the arrival of the *Buffon*, and the result of an analysis of its cargo, before they make up their minds what to do. On the other hand it is certain that nickel is getting in use more and more every day. A letter we received from a friend in Paris, last May, tells us that nickel is quite the rage; hardwaremen, cabinet makers, leather workers and others are abandoning gilding and bronzing in favor of nickel. We cannot think, therefore, that any difficulty will be experienced in placing the quantities already shipped; but our larger mine owners, alarmed at the prospect of coalitions of merchants, such as the London ring, are actively engaged in erecting smelting works, in the conviction that whatever a ring can do with unsmelted ore in the docks, they will be powerless to work any wickedness on the metal itself. The smelters of nickel in Europe do not number, it seems, more than seven or eight, while the number of buyers of the metal is practically unlimited. The owners of our principal mines are solid enough to stand out against a fall; but we should be extremely sorry, for the sake of the colony, if they were to stop raising and sending. A cargo of ore, which was being made up to be sent to France, was countermanded on the arrival of the last mail from Europe; and the entire energies of the owners are turned in the direction of building furnaces for the transformation of their profitless ore into profitable metal.

The present situation of nickel may be summarized as follows: In New Caledonia, a total current production of 450 tons per month, and a resolve on the part of mine owners to stop sending ore, in order to send metal. In England, a coalition speculating on a fall in prices; in France and Germany, a fear lest too much should be exported by us, and at the same time a doubt as to the exactitude of the figures in the statistics of extraction, consequently, complete abstinence.

This is our reason for wishing to throw a little light on the subject of nickel, and we beg the help of our fellow colonists, who may thus contribute to the prosperity of an industry to which the colony owes so much. In addition to the supplies in New Caledonia, there is a very considerable deposit in America. This is situated near the Gap, Lancaster county, Penn., on the divide between Chester and Pequea valleys, and is said to be the largest yet discovered in the world. It is the only deposit of nickel worked in America. Copper has been worked for 70 years in the same mine which now yields nickel. The latter ore, first noticed in 1856, has a gray color, is very heavy, and so hard that it has to be mined entirely by blasting. After the ore has been broken into fragments it is put into kilns holding 80 or 90 tons each, and calcined, the heat being first produced by the burning of a small quantity of wood, and continued by the conversion of the expelled gas. The smelting process is much the same as that of iron.

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ISSUED OCT. 1st, 1876.

Testing and Working Silver Ores.

The above is the title of an illustrated work of 114 pages, for miners and prospectors by Chas. H. Aaron, which has jnst been issued by Dewey & Co. Mr. Aaron has managed to give many nseful hints and suggestions, free from all technicalities, and in such a style as to be easily comprehended. It is written for the miner, with no chemical symbols or metallurgical technicalities to confuse those who are not chemists or metallurgists. The following summary of the contents of the work will give an idea of its scope:

Under the heading of the first chapter, "Testing Ores for Silver," we find paragraphs on ora formatioo, test for silver, with heat and water, acid or blow pipe. In speaking of testing for a process, the extent and richness of ore is considered, smelting ores, selecting and working sample, appliances for testing, roasting, etc. Under the head of "Working Ores" the author describes Aaron's process, has something to say of superheated steam, preparation of dichloride of copper and protochloride of copper, use of copper and iron, quantity of chemicals, carbonate of lime, chloride ores, amalgam, Patchen's process, etc. He also describes the methods of working roasted ores, treatment of base metals, stirring, heat of furnace, want of sniphur, etc. Under the head of "Leaching Processes" are the titles, Smelting, Mexican process, Kroecke's process, Chilean process, etc. Under "Pulverizing Machines" are described the arastra and its construction and operation, stamp batteries, screens, Crocker's trip-hammer battery, Paul's pulverizing barrel, Kendall's battery, Noice's pulverizer, a cheap rock breaker, etc.

In speaking of amalgamators the anthor describes a cheap amalgamator, grinding the ore, directions for making a barrel, preventing mechanical wear, use of quicksilver, copper in bars, Freiberg barrel, cheap barrel, trough, barrel on rollers, Aaron's amalgamator, separator, etc.

He describes an improved retort, roasting furnace, furnace tools and furnace building. Among the miscellaneous mention may be found Aaron's leaching apparatus, with two or three different arrangements a small mill, sampling tailings and settling tanks, dichloride of copper, etc. Mr. Aaron is a practical miner of long working experience on this coast.

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Continued from Page 349.

beneficial flow of pnre air through the entire southern portion of the mine. An east cross-cut from the north drift on the 2000 tt level has just been started, to ascertain the full width of the ore vein at that point.

DAYTON.—The sump of the main shaft has been considerably enlarged, and the pumps lowered to a point 40 feet below the 900-ft level. At the 900-ft level a large working station is being opened preparatory to drifting through the ledge. The north and south prospect ng drifts on the 700-ft level are each steadily advancing, both having very encouraging ors prospects.

YELLOW JACHET.—The drift north at the 1940-ft level bas completed connection with the drift south from the Imperial, giving a very valuable circulation of air. A cross-drift is now started west at the north line of the mine, and another will he started east at that point. Drifting south at the 2040-ft level is progressing in very favorable looking ground.

JULIA.—The main south drift on the 1800-ft level is steadily advancing, the face in broken quartz and porphyry mixed. Two cross-cuts have been started from this drift, one east and the other west, at a point 642 feet south of the main shaft.

BELCHER.—The usual amount of milling ore is being extracted, keeping the mills steadily running. Sinking both the main incline and the air and drain shaft is making good progress.

GOULD & CURRY.—The pumping machinery at the surface is being erected as fast as the perfection of the work will admit of. The old pumps are being taken out and the new ones put in.

NIAGARA.—Sinking the main incline is making splendid headway. A double track has been completed in the main shaft, so that double the amount of rock can be hoisted, or the extraction of ore commenced whenever the company so desire. The mine was never in so good a condition as now.

OPHIR.—Recent openings made in the ore stopes on the 1500 and 1600-ft levels have shown an improvement in both quality and quantity of ore. This steady improvement indicates that the river mills will he enabled to start into full operation again in a very short time.

SAVAGE.—The pumps are kept running at their full capacities. The general progress has been steady, and to-day the water is reduced to a few feet below the 200-ft level.

NORTH CARSON.—Shaft, 490 feet deep. Material at bottom porphyry with streaks and feeders of good sulphuret ore coming in and being continually cut through as sinking progresses. Considerable water is met with.

BUCKEYE.—The north drift on the 300-ft level is following the ore veln and is affording considerable good ore in its progress. It ia being run to the northward to tap a chimney of rich ore known to exist in that portion of the mine near the surface. It is expected that the supply of ore will he sufficient by 1st December to again etart the Hope mill.

BULLION.—The north drift on the 2000-ft level is being pushed steadily ahead, with much more favorable indications of ore.

SUTRO TUNNEL.—Total length of tunnel, 14,052 feet. Face of header in tough porphyry with occasional streaks of white quartz and thin clay seams. A small accident to the machinery at shaft No. 4 a few days ago interrupted operations a little, hut not to any serious extent. Everything is going ahead as before, and the Ingersoll and Burleigh drills are doing good work in the face of the header.

SOUTH OPHIR.—Preparation are being made to commence sinking a fi st-class three-compartment working shaft, which will intereect the ledge at the depth of 300 feet. The tunnel, which is 500 feet in lengih, shows a fine looking ledge, the main ore streak of which is some four or five feet in width, giving excellent assays.

PROSPECT —Better progress is being made in advancing the main west drift at the 400-ft level, the material being somewhat softer and more favorable, improving continually as farther advancement is made.

WARD.—Sinking the main shaft was suspended two days during the past week in order to give an opportunity to arrange double-deck cages and water tanks, to facilitate the hoisting of rock and draining the water. Sinking is being again prosecuted.

COSMOPOLITAN.—About 10 tons of ore per day is added to the accumulation on the dump, and another milling run will soon he commenced

HERALD.—The fine ore prospects at the hottom of the main incline are daily growing more favorable as the shaft attains depth.

FLORIDA.—The shaft is down 680 feet, having cut through the east clay wall of the ledge at a depth of 568 feet. The last 13 feet penetrated bas heen in broken quartz, interspersed with spots and streaks of exceedingly rich ore. The prospects for a good paying ore development grow better.

SOUTH COM-TOCK —The face of the east drift from the 300-ft station is in a little softer and more favorable material. Superintendent Leunon has great confidence that he will develop a good paying ledge in that direction before long.

CROWN POINT.—Sinking the main incline is making splendid progress. There is no water to hother, notwithetanding the fact that the hottom is far helow the point yet reached hy the Belcher and Crown Point pump shaft, at which point the water is now taken. Sinking is being pressed ahead with great vigor, the progress being greatly expedited hy the Burleigh drills.

BALTIMORE AND AMERICAN FLAT.—The winze from the east cross-cut from the north drift on the 1050-ft level is down 60 feet, the hottom still in fine ore, affo.ding every appearance of forming an extensive hody. The east crose-cut on the 1450 ft level is steadily advancing with every indication of soon cutting the main ledge.

SILVER HILL.—Sinking the main incline is making steady progress, the hottom i i hard blasting rock.

NEW YORK.—The enlargement of the main shaft is progressing very favorably nnder the energetic management of Superintendent Owens. When this compartment is completed the shaft will he one of the very best on the line of the Comstock.

TRIPOLI.—The pay ore so developed hy the north drift on the 300-ft level is 10 to 12 feet in thickness and is of excellent qualiiy. The prospecta of the mine are growing better every day.

NORTH CON. VIRGINIA.—Sinking the main sbaft is making splendid progress. It is now considerably below the 1100-ft level. Air pipes have heen extended to the hottom of the shaft for driving Burleigh drills hy compressed air.

LEVIATHAN.—Some very fine streaks and hunches of ore, giving good aasays, have been passed through hy the drift north at the 600-ft level.

CHOLLAR-POTOSI.—Daily yield, 100 tons of ore, the assay value of which is $31 per ton. There is no change of value in any of the ore producing sections.

TAHOE —The erection of the new hoisting works hutlding is getting well under way.

KOSSUTH.—The new ore dump is completed and the hoisting of ore commenced. The ore is of a good milling quality, and the appearances aro that almost any desirable quantity can be extracted when desired.

EAST ALTA.—Thie is a new mine, located about 1,200 feet to the eastward of the Alta shaft. The location is an excellent one. Sinking a fine three-compartment working sbaft is ahout heing commenced under the able superintendency of Sam Owens, one of the oldest and best of Comstock miners.

LAKE BAYAN —The foundations for the reception of the huge pumping machinery were finished to-day. A car-load of the machinery arrived on the ground yesterday, and its erection will now he prosecuted with all speed possible.

CALEDONIA —The flood of water encountered last week has heen again overcome and sinking the shaft resumed.

LADY WASHINGTON.—The east drift from the 860-ft station, cross-cutting the ledge at that point, is now in 122 feet to-day. The face is in ledge porphyry, dry and firm, hut liable to change into regular vein material at any time.

WEST BELCHER.—The main ore hody is now being cut into hy the southeast drift. There is plenty of good pay ore developed at the 300-ft level, and above, and milling the ore will he commenced in about 10 days.

AMAZON & GLASGOW.—Every effort is being made to crowd the shaft downward to the 400-ft level at the very earliest moment possible.

UNION CON.—Driving the north drift on the 1900-ft level is making good progress, the face in ledge matter.

MEXICAN.—The upraise from the north drift on the 1465-ft level is being pushed vigorously forward. The west cross-cut from the same drift is showing some fine quartz mixed with spots of good ore.

PHIL. SHEHIDAN —Sinking the shaft is going ahead at a very rapid rate, the hottom still in porphyry mixed with quartz.

CABINET.—The work of enlarging the shaft to three compartments is progressing at a lively rate.

MONUMENTAL.—Preparations are made for putting up efficient machinery and resuming the development of the mine in good earnest in a very few days.

SUCCOR.—Putting in the new pumps is making good progress. The erection of the powerful pumping engine is going steadily forward.

ROCK ISLAND.—Tearing out the old pumps and columns, preparatory to putting in the new, is making good progress.

BEST & BELCHER.—The drifts and cross-cuts on the 1700-ft level are cleaned out, repaired and put in good working condition again.

HALE & NORCHES.—The pumps are kept steadily running and the water is being slowly lowered.

TUSCARORA DISTRICT.

GRAND PRIZE.—*Silver State*, Nov. 15: The Humboldt reduction works have just completed the working of a lot of 76 tons of ore from the Grand Prize mine, in Tuscarora district. This ore was worked by the ordinary wet process, without roasting, and produced $25,136, or an average of $334 per ton. The ore worked up to 91 per cent. of its assay value, and the bullion averaged 996 fine. These results from this new mining camp are certainly very encouraging, and show that there is rich free milling ore in central Nevada. We understand that Jasper McDonald and G. W. Grayson, of San Francisco, are the owners of this mine.

WHITE PINE DISTRICT.

THE TUNNEL.—White Pine *News*, Nov. 18: Work at the Eberhardt & Aurora company's new tunnel is progressing finely; 40 feet per week is now the average being made. At the present time it is in a distance of 400 feet. When completed the tunnel will be 6,000 feet long.

WILL START UP.—We are informed that the Eberhardt & Aurora companya mill, after undergoing thorough repair, will again commence running on Monday next.

PAY DAY.—Last Wednesday the Eberhardt & Aurora company paid off all their employees on Treasure Hill, and on the following day at Eberhardt.

Arizona.

MINING.—Cor. Arizona *Miner*, Nov. 10: Some recent trips down and up the Hassayampa creek, where ten and 12 years ago the placer miners used to make an ounce a day with a rocker, shows that the old creek is not worked entirely out yet. A short time since, a little above the old Montgomery mine, Duff & Co. took out $1,200 in about three weeks, and Duff put out for the Centennial. Just below the mouth of Copper creek, Kelly and Hemphill are opening a claim that promises one-half ounce diggings; and above Copper creek, Merrill & Co. have a fine piece of ground that pays them from $6 to $10 per day. Half a mile below the Umqua mine, two men are sluicing with good pay. A mile above, a party of Frenchmen are opening a har claim with good prospects, through five feet of ground, and between there and the Clipper saw mill several men are working with rockers and sluices, making ordinary wages. Nearly all the placer miners are also interested in quartz, and with J. R. Darroche, I examined the Commissary, Buck, Silver Star, Orphan Boy, Buckskin, and Often veins, and found them all looking well for the developments made and evidently only needing more expenditure to put them in paying condition.

Some ore we got on the dump of the Chance, which has not been worked for nearly 10 years, gave an assay of $490 per ton in silver, hut as the shaft is filled with water up to within 30 feet of the top, we could not examine the vein. Houghtelin & Curtain are sinking a shaft on the Silver Prince, on the main vein, nearly opposite the 100-ft shaft on the little vein, and are down about 70 feet, intending to go 30 feet deeper. They are getting some very good ore in a small seam, which shows every indication of near approach to a good body of rich ore. At the Peck business is lively. After making a contract with the Aztlan mill to crush 200 tons of ore, the Peck company put George Opdyke in charge of the mine, and he has been opening it in good shape. One hundred and fifty tons have been sent to the mill by pack trains and the rest will he delivered in a few more days. Some croakers said when the bargain was made that the ore could not he taken out fast enough to keep the mill running, hut as those who knew best stated at the time the getting out of 200 tons has only begun to show where the ore is. The average assay value of the ore sent to mill for the days previous to the 24th inst. was $1,428 per ton.

Colorado.

MATHEWS & CO.'S CONCENTRATION WORKS.—Colorado *Miner*, Nov. 11: Repeated trials having demonstrated the inntility of the sizing machine, which has been built in this mill, it has been removed, and revolving screens are now being placed in its position. The managers have met with many unlooked-for delays, and ore has been crowding their bins for some weeks, hnt they are determined to have all their machinery in complete running order before they start to concentrate ore.

OUR MINES.—The interest manifested in the presidential election has not lessened our production of silver ore, and from all quarters we hear encouraging reports. Mill men state that they are receiving more ore than at any time for nine months past, and Brown, Sherman, Republican, Democrat and Leavenworth mountains show a larger number of paying mines than usual. The price of silver holds up strongly, being quoted now at $1.17⅞, and gold at about $1.10.

ATLANTIC.—The lessees have for some time been engaged in the work of development and have taken out little ore. They have sunk a shaft 70 feet in depth from the heading of the lowest level, have run a drift 25 feet from the hottom of this shaft, and started a stope above the drift. Good ore is in sight, and the 70 feet of stoping ground will yield many thonsand dollars before it is exhausted. A mill run this week gave highly satisfactory results. A tunnel has been started which will cut the vein 200 feet helow the lowest level. The boys have shown an energy and determination in their operations which entitle them to success.

ELECTROTYPING ORGANIC SUBSTANCES.—In electrotyping insects, ferns, etc., M. Cazeneuve immerses the object in a solntion of nitrate of silver in wood naphtha. When partially dried the object is treated with ammonia, the result being a donble salt easily reduced. After being thoronghly dried, the object is exposed to the vapor of mercury, and the snrface is completely metallized in a few minutes. It oan then be placed in the hath, and metal deposited in the usnal way.

Thanksgiving.

The early bird of winter holidays is at hand. Thanksgiving, the day of family re-nnions, the day when cene-bearing grandfather and table-drumming baby meet on a common level and look in opposite direotions—np and down the course of time. The day when they who hold the homestead rejoice to see its walls embrece again the loved ones from afar. The day when the family tree is laden with the full round of its fruition; for then its brenches show fruit, blossoms and tiny buds together clinging. The day when the devotional rejoice and give thanks. The dey when the undevout rejoice and give not God the glory. The joys of Thanksgiving, like the rain from heaven, fall alike upon the thankful and those who take the joys and forget the thanksgiving. Such is the generons charaoter of the blessings which are vouchsafed to men, and yet he who forgets to receive these gifts in the spirit which their bonnty is fitted to invoke loses the greater share of the priceless bestowal.

If there is anything which this generation needs, it is the spirit of true thankfnlness, the feeling of trne gratitnde. Rushing along the tide of prosperity, gathering the fruits of progress such as have been given to no generation since the world began, there has arisen a wide sentiment of self trnst and confidence which would be glorious were it coupled with a wider recognition of the sonrce whence come to men those qualities which compess success and advancement. It reqnires no creed to teach men to he thankful. It does not need a sermon to teaoh the thoughtfnl that there is a Power rnling in the effairs of men, whom the mind instinctively honors, and exalts itself in the honoring. To enconrage this spirit of true thenksgiving among the people, the President of the United States and the Governor of California proclaim Thursday, November 30th, a day to be observed with thanksgiving and praise—a day to ceese from ordinary avocations and give thanks to Divine Providence for the blessings of the year.

Thns, es is cnstomery, comes the formal call for the favorite holiday of the American people. Christmas and New Year's we join the world in observing, bnt Thanksgiving is a day peculierly onr own. As onr readers assemble in their happy homes and joy crowns the generous feast, it will be easy to give the thankful spirit possession of the heart and let it banish care and vain ambition. Then will come to mind the many blessings for which we may be thenkful. We have peace while great nations are vexed with wars. We have safety while provinces have been the scenes of massacre and outrage. We have prosperity while upon the other hemisphere dronth, famine end the cyclone have slain their thonsands and tens of thonsends. Are not these fitting themes for thanksgiving?

In onr own State, as our governor reminds us in his proclamation, may he fonnd greet blessings for which to thank Dtvine Providence. Favored of all the earth is California. During the year there have been taken many steps in onr onward progress. Bright as onr winter sunshiue is our promise for the fntnre. Outliving the disadvantages of onr hasty growth, we are advancing on the plane of true prosperity. Resting from the building of colossal fortunes we are making homes. Forgetting, little by little, to count men hy their millions, we are developing a truer standerd of manhood and womenhood. The era of wealth to be seized and borne away is closeo; the time of industry, giving its success toward ennobling and developing and beautifying onr favored State, is one which calls for truest thanksgiving.

We have attempted to glorify the thankful spirit in onr words a bove. This is, indeed, the greatest treasure which Thausgiving day can bestow. To all olasses are its joys outheld. The man with broad acres reaching from the valley stream to the mountains, with his pastnres filled with noble animals, his stables with fleet steeds and his granaries with wealth of golden grain, might easily be thankful, and if he looks beyond his wealth to the giver and holds his heritage as a trust for noble deeds, happy, indeed, he is. So too with the manufacturer whose workshops are filled dnring the long honrs with the hnm of profitable indnstry, and wh olooks from the elegance of his city mansion upon the breadth of his gardens with rare beauties of leaf and flower. So too the miner, who views the richness of his claim, the perfection of his machinery and feels in his pockets the weight of precious metal. To all these possessors of iudividual prosperity it wonld seem the thankful spirit would rise like the waters of the fonntain, and refresh and beantify the man and all his deeds. Thus, indeed, should the thankful spirit rise with prosperity. Thns wonld wealth be noble and thus would the world bless the man who possesses it, because the truly thenkful spirit will make the rich man a benefactor, and the community will praise him as their friend. Let this be the thought for the rich man's Thanksgiving day.

Valuable as is the thankful spirit to the abode of wealth, it is a hnndredfold more a blessing when it inspires those whose lot is cast in less fruitful fields. The thankful spirit shines most brightly when its luster borrows nought from the gleam of gold. It comes like a benediction npon the happy home where homely oomforts dwell and where hearts join with hands in labors for life and loved ones. By its light the cottage becomes a palace; the toil-stained hands are beautiful; and the faoe traced with lines of cere is lighted with joys nnspeekable. The home filled with the spirit of thanksgiving is foretaste of the home above. Let it be a cottage sweet with the perfnme of vines and flows, let it be the single room of city toiler or the miner's hnt, it matters not, for the thankful spirit may adorn them all. The spirit of contentment and thenksgiving will rest the tired frame and meke the poor man rich indeed.

As we are preparing onr laden tables for the day of thanksgiving bounty, let ns not forget those whose measure of prosperity will not call them to a feast. All around ns both in city and conntry there are homes whose inmates we can fill with thanksgiving, oheer, and joy. Think of the little eyes which never have beheld the oomforts which we provide so lavishly; think of the little hands which will grasp nought but a crust unless we give them finer fare on the day of glad thanksgiving. The thankful spirit is generous. It longs to impart its joy. Remember the poor on the day of rejoicing. Thus will the day be twice blessed. Thus in giving thanks ourselves we may promote thanksgiving.

Items of Interest from the Mines.

We give below items of interest from prominent mines, most of which are collated from letters of the respective superiutendents on file at the offices in this city. Considerable of this news is later than that procured from the interior jonrnals:

When the pnmp is pnt in below the 900-foot station of the Dayton, they will oommence opening up the 900-foot level.

The furnace at the Pinal, inclnding all the machinery necessary for smelting, is completed.

In the Belcher they are mnoh tronbled with water in the main incline and will be obliged to put down a large compressed air pnmp to keep the water low enough to allow sinking.

In regard to the sale of Meadow Valley tailings, the snperintendent says: Sold the entire pit of them for $2.50 per ton, and $1,000 of the forfeit money was paid to-day and the parties bind themselves to have everything in running order by the 1st of February, when a payment of $4,000 will be due.

The clean-up for the last six days' run of ten stamps of the Eureka (Grass Valley) mino was 255 ounces of amalgam.

The west drift on the 11th level of the Raymond & Ely has now a total length of 1,799 feet. The fissure still maintains itself, but the formation is getting very irregular and broken and does not look as promising as heretofore. The flow of water from the face of this drift still continues bnt does not materielly interfere with the progress of the work. The raise which is being carried up from 10th level is still showing a very promising formation, with some small spots of good ore, hut very limited in extent.

The ore body on track floor, northeast drift, 400-foot level of the Justice, is fully 27 feet in width, composed of fair milling ore. They are sending 250 tons of ore daily to the mills.

The average of the ores worked from the Manhattan last week was $211.78 per ton.

In the Baltimore Consolidated mine the developments at the different points on the 1050-foot level continne to be of great interest. The winze from cross-ont No. 1 on this level is down 55 feet. The ore is widening at this depth and is of a much richer quality than it was on the 1050-foot level. The upraise from the same cross-cnt is in ore of a very good character.

Letter from snperintendent of the Electrio mine says: The dam is now finished and we now have a permanent weter power second to none in the State; the dam is well made, snbstantial in every respect and is good for years. I have resumed work in the tuunel and will now pnsh it along as fast as possible nntil the ledge is reached. There is nothing wanting here now, but the oompletion of the tunnel, then can see no reason why dividends will not take the place of assessments.

The snperintendent of the Grand Prize says: Will now give you a full statement of the Grand Prize. Ore worked at the Humboldt reduction works of this place. Amount of ore, 150,807 ponnds; assay value per ton, $382.03; total assay value, $28,052.36; percentage obtained in bnllion, 90 30; average assay valne of tailings per ton, $31.05; amount of bnllion shipped, $25,356.66.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING NOVEMBER 14TH, 1876.

FEEDERS FOR THRESHING MACHINES.—William Hutchings, Fresno, Cal.

ELECTRIC SIGNALING APPARATUS AND KEY.—William Lundberg and Daniel F. Leahy, Portland, Ogn.

ORE CONCENTRATORS.—Lewis Stoner, Virginia City, Nev.

KNIVES FOR PITTING FRUIT.—George W. Tarleton, San Jose, Cal.

STUMP PULLERS.—John B. Forbes, Olympia, W. T.

PROCESS AND APPARATUS FOR DEHYDRATING AND REFRIGERATING AIR.—Robert H. Lucas, S. F.

SASH BALANCES.—Barnet M. Whiting, Los Angeles, Cal.

GAG-RUNNERS FOR HARNESS.—William M. Blain, Salinas City, Cal.

SPARK EXTINGUISHERS.—James W. Donaldson and Allen C. Miller, Fairfield, Cal.

NAPHIN HOLDERS.—Benjamin F. Hardy and Victoria A. Hardy, S. F.

Singular Specimen.

The following item recently appeared in the Virginia, Nevada, *Enterprise:* "Recently, while preparing the foundations for the new pumping machinery at the Gould & Curry, the workmen had occasion to break a large piece of volcanic tufa, of which the foundations are being laid, and there found a geode containing some beautiful stellated bunches of fibrous gypsum. The crystals are from one-half to an inch in length, and as clear as water. The singularity is that these crystals should be found in the heart of a great rock quarry of leelite or rhyolite, for such is the tufa formation from which the geode was taken. It is to be presented by Superintendent Osbiston, through Professor Stewart, to the society of Pacific Coast Pioneers."

Although we are usually very careful in copying such items as the above from our contemporaries, we did not consider a close scrutiny essential in copying anything pertaining to mining matters from a journal of such standing as the Virginia *Enterprise*, published as it is in the center of the most prosperous and extensive mining region in the world. Accordingly the item was transferred to our columns, and due credit given, without examining it very closely. Happening, however, to notice it more particularly this week, we found that the geological terms were somewhat mixed. The term "tufa" is applied to a fragmental group of sedimentary rocks, being the accumulations of lapilla, fragments, ash or other substances ejected from volcanoes and more or less firmly compacted together. Fibrous gypsum does not occur in transparent crystals L elite is a *mineral*, a red variety of orthoclase feldspar, and not a rock according to the accepted meaning of the word. Rhyolite is a volcanic acidic rock belonging to the trachyte group, with a compact enamel-like or vitreous matrix, enclosing grains or crystals of sanidine, oligoclase, mica or even quartz.

General News Items.

ANOTHER revolutionary movement is apparent in Mexico.

SILVER bullion was quoted in London, Wednesday, at 54¼d per ounce.

A PORTION of the Sonoma county prismoidal railway is now in operation.

THE telegraph informs us that from 120,000 to 215,000 lives were lost in the cyclone in India.

THE railway conductors' excursion party, consisting of some 70 Eastern conductors, with their families, is now "doing" San Francisco.

SMALL-POX has not by any means entirely disappeared in this city. There were several deaths last week.

EX-PENSION AGENT H. C. BENNETT has been indicted by the Grand Jury, and action has been begun against his bondsmen.

THE Postal Commission, appointed under an act of Congress to ascertain how the postal service can be improved, is now holding sessions in this city.

MRS. ELIZA ROSS, wife of Captain George Ross of the bark *Lizzie Williams*, fell off the Oakland pier on Thursday night, and was drowned before aid could be procured.

IT is now understood that construction work in all the navy yards will be stopped in a few days. There is no money to pay the workmen the appropriations at the last session having been very small.

THE San Francisco general fund, school fund and street fund are exhausted at present, but Treasurer Hubert anticipates that before the 20th of next month sufficient money will stand to their credit to enable him to meet all demands.

THE Army Reorganization Board continues its sessions at the War Department. The discussions of the board refer particularly to providing for a speedy and effective enlargement of the army in time of necessity. Among the propositions is that of making 75 men the quota of each company, and to be kept at this standard in time of peace, but in time of war the maximum to be 250 men.

KNIGHT'S American Mechanical Dictionary is a book for all persons who make, buy, sell, use, or want to know anything about tools for machines, or are curious as to the history and development of mechanic art. It is a descriptive word-book of tools, instruments, machines, chemical and mechanical processes; civil, mechanical, railway, hydraulic and military engineering; a history of inventions; general technological vocabulary; and digest of mechanical appliances in science and the industrial and fine arts, etc. For circulars or price address or apply to A. Roman & Co., wholesale and retail booksellers, 11 Montgomery street, San Francisco.

"SPEAKE WELL," ETC.—We would return thanks for an exchange and back numbers of the MINING AND SCIENTIFIC PRESS, published by Dewey & Co., of San Francisco, Cal. It is a well edited, interesting, and valuable journal, and speaks well for our Pacific neighbors.—*U. S. Milling and Manufacturing Journal.*

METALS.

[WHOLESALE.

THURSDAY, M., Nov. 23, 1876.

American Pig Iron, ₱ ton	32 00	@	—
Scotch Pig Iron, ₱ ton	31 50	@	32 00
White Pig Iron	40 00	@	50 00
Oregon Pig, ₱ ton	31 50	@	32 50
Refined Bar	— —	@	— 4¼
Boiler, No. 1 to 4	— —	@	— 5½
Plate, No. 5 to 9	— —	@	— 5½
Sheet, No. 10 to 14	— —	@	— 5¾
Sheet, No. 16 to 20	— 5¾	@	— —
Sheet, No. 22 to 24	— 6	@	— —
Sheet, No. 26 to 28	— 6¼	@	— —
Horse Shoes, per keg	— 7 00	@	8 50
Nail Rod	— 10	@	— 9½
Norway Iron	— 8½	@	— —
Rolled Iron	— 4	@	— 8
Other Irons for Blacksmiths, Miners, etc.	— —	@	— 4¼
COPPER.—			
Copper Tin'd	— 37	@	— 40
Sheathing, ₱ lb	— 24	@	— 40
Sheathing, Yellow	— 21	@	— 22½
Sheathing, Old Yellow	— 11	@	— 11
Composition Nails	— 21	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ₱ lb	— 20	@	— 25
Anderson & Woods' ordinary sizes	— —	@	— 15
Drill	— —	@	— 16½
Flat Bar	— 16	@	— 20
Plow Steel	— 8	@	— 9
TIN PLATES.—			
10x14 I C Charcoal	11 00	@	— —
10x14 I X Charcoal	13 00	@	— —
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	— 24	@	— —
Australian	— 25	@	— —
ZINC.—By the Cask	— —	@	— 11
Zinc, Sheet, No. 7 to 10 ₱ lb	— —	@	— 11½
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 12½
do do 8x4 ft, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	3 60	@	3 75
QUICKSILVER, per ₱	—	@	50 —

DOMESTIC PRODUCE.

[WHOLESALE.]

WEDNESDAY M., Nov. 22, 1878.

BEANS.			
Sayo, ₱ ctl	2 50	@	3 00
Butter	3 50	@	4 00
Pea	2 00	@	—
Red	2 75	@	3 00
Pink	2 75	@	3 00
Sm'l white	2 00	@	—
Lima	2 00	@	2 25
BROOM CORN.			
Common, ₱ lb	2	@	2½
Choice, do	3	@	4
COTTON.			
Cotton, ₱ lb	15	@	18
DAIRY PRODUCE, ETC.			
BUTTER.			
Cal. Fresh Roll per ₱	30	@	45
Point Reyes	47½	@	—
Pickle Roll	30	@	32½
Firkin	25	@	32½
W'st'n Reserve	16	@	25
New York, do	—	@	—
CHEESE.			
Cheese, Cal., ₱ lb	10	@	15
do Old	—	@	—
Eastern	12½	@	15
EGGS.			
Cal. fresh ₱ doz	45	@	47½
Ducks'	40	@	—
Oregon	40	@	4 ½
Eastern	21	@	30
FEED.			
Bran, per ton	16 00	@	—
Corn Meal	27 50	@	—
Hay	6 00	@	16 00
Middlings	22 50	@	—
Oil cake meal	—	@	33 50
Straw, ₱ bale	50	@	72½
FLOUR.			
Extra ₱ bbl	5 75	@	6 12½
Superfine	4 50	@	5 00
Graham, ₱ bbl	4 50	@	4 75
FRESH MEAT.			
Beef 1st quality lb	4½	@	6
Second do	3½	@	4½
Third do	2½	@	3½
Mutton	4½	@	5
Pork, undressed	6	@	6¼
do, dressed	8¼	@	8¾
Veal	5½	@	6
Milk Calves	7	@	8½
GRAIN, ETC.			
Barley, feed ctl	1 00	@	1 05
do brewing	1 05	@	1 17½
Chevalier	1 25	@	1 40
Corn, White	1 05	@	1 10
do Yellow	1 05	@	1 10
Oats	1 40	@	1 65
Milling	1 70	@	1 90
Rye	1 55	@	—
Wheat shipping	1 85	@	1 92½
do milling	1 95	@	2 00
HIDES.			
Hides, dry	15½	@	16
do wet salted	7	@	7½
HONEY, ETC.			
Beeswax, per lb	25	@	27½
Honey in comb	10	@	12½
do Strained	6	@	8
HOPS.			
New crop	25	@	28
NUTS—Jobbing.			
Almonds, soft sh'l	14	@	16
do, soft sh'l	14	@	16
Brazil do	14	@	16
Cal. Walnuts	11	@	12
Chile Walnuts	11	@	12½
Pecannuts	17	@	19
Peanuts per lb	8	@	9
Filberts	15	@	16
ONIONS.			
Union City ctl	60	@	80
Stockton	55	@	65
POTATOES.			
Petaluma, ₱ ctl	60	@	75
Salt Lake	—	@	—
Humboldt	—	@	—
Half Moon Bay	60	@	85
Cuffey Cove	—	@	01
Early Rose new	60	@	75
Sweet	50	@	62½
POULTRY & GAME.			
Hens, per dz	7 00	@	8 50
Roosters	5 00	@	6 50
Broilers	4 00	@	5 00
Ducks, tame, dz	7 00	@	9 00
Geese, per pair	1 75	@	2 00
Wild Gray dz	2 00	@	2 50
White	—	@	1 50
Turkeys, Live, lb	14	@	16
do Dressed	14	@	18
Quail, per doz	1 25	@	1 50
Snipe, Eng., doz	—	@	1 25
Doves, per dozen	50	@	75
Rabbits	1 00	@	1 25
Hare, per doz	2 00	@	2 50
Venison lb	5	@	8
PROVISIONS.			
Cal. Bacon, Ex, lb	15½	@	16½
do Medium	14½	@	15
do Heavy	—	@	15
Lard	13½	@	15½
Cal. Smoked Beef	10	@	11
Eastern do	—	@	—
East'n Should's	—	@	12
Hams, Cal	14½	@	15
do Armour	—	@	—
do Worster'n	—	@	—
do Dupee's	18	@	19½
do Davis Bros'	—	@	19
SEEDS.			
Alfalfa, Chile lb	9	@	14
do California	15	@	17
Canary	10	@	12½
Clover Red	—	@	22
do White	50	@	55
Cotton	8	@	10
Flaxseed	—	@	3½
Hemp	12½	@	—
Italian Rye Grass	25	@	30
Perennial do	20	@	30
Millet	10	@	12
Mustard, White	8	@	10
do. Brown	3½	@	4
Rape	4	@	5
Ky. Blue Grass	30	@	—
Lawn do	20	@	25
Sweet Vernal Grass	15	@	75
Orchard do	30	@	35
Red Top do	—	@	25
Hungarian do	8	@	12
Lawn do	50	@	—
Mesquit do	20	@	25
Timothy	10	@	10½
TALLOW.			
Crude, ₱ lb	6¼	@	6⅝
Refined	8¾	@	9
WOOL, ETC.			
FALL—			
Free	12	@	14
Choice	14	@	16
Northern	17	@	21
Burry	10	@	16
Oregon Eastern	21	@	—
do Valley	25	@	—

LUMBER.

CARGO PRICES OF REDWOOD.

Rough, ₱ M	$18 00
Rough refuse, ₱ M	14 00
Rough clear, ₱ M	30 00
Rough clear refuse, M	20 00
Rustic, ₱ M	32 50
Rustic, refuse, ₱ M	22 50
Surfaced, ₱ M	30 00
Surfaced refuse, ₱ M	20 00
Flooring, ₱ M	28 00
Flooring, refuse, ₱ M	18 00
Beaded flooring, ₱ M	30 00
Beaded floor, refuse, M	20 00
Half-inch Siding, M	20 00
Half-inch siding, ref. M	16 00
Half-inch, Surfaced, M	25 00
Half-inch Surf. ref., M	20 00
Half-inch Battens, M	20 50
Pickets, rough, ₱ M	1 00
Pickets, rough, p'ntd	13 00
Pickets, fancy, p'ntd	26 00
Shingles, ₱ M	35 00

PUGET SOUND PINE Retail Price.

Rough, ₱ M	22 50
Fencing, ₱ M	22 50
Flooring and Step, ₱ M	32 50
Flooring, narrow, ₱ M	35 00
Flooring, 2d quality, M	25
Lath, ₱ M	4 50
Furring, ₱ lineal ft	—¾

REDWOOD—Retail.

Rough, ₱ M	22 50
Rough refuse, ₱ M	18 00
Rough Pickets, ₱ M	18 00
Rough Pickets, p'd, M	20
Fancy Pickets, ₱ M	30
Siding, ₱ M	25 00
Surfaced and Beaded	37 50
Flooring	35 00
Do do refuse, ₱ M	25 00
Half-inch surfaced, M	32 50
Rustic, No. 1, ₱ M	40 00
Battens, lineal foot	—¾
Shingles, ₱ M	3c

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, Nov. 22, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 91¼ to 91¾. Silver 66⅝.

GOLD in N. Y., 109⅛.

GOLD BARS, 830 to 890. SILVER BARS, 12@20 per cent discount.

EXCHANGE on N.Y., 50@55-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, 6 per cent. discount.

LONDON — Bankers, 203½; Bonds, 102⅝.

QUICKSILVER in S. F., by the Cask, per ₱ 56@57½c.

GOOD PRINTING INK.—We prefer Chas. Eneu Johnson's printing inks, having used them on this paper for the past four years. H. S. Crocker & Co., printers, stationers, blank book and paper dealers, are Johnson's S. F. agents.—DEWEY & Co., Publishers.

BOUND VOLUMES of the MINING AND SCIENTIFIC PRESS from Jan. 1st, 1864, are for sale at the office at $5 per volume, two volumes a year. Unbound at $3 per volume.

Mining and Scientific Press.

THIS PUBLICATION, SO VALUABLE FOR MINERS, MECHANICS AND MANUFACTURERS,

Will enter upon its THIRTY-THIRD Semi-Annual Volume on Saturday, January 6th, 1877. It has ever been and will still continue to be the aim and object of the publishers to make the PRESS

A Practical and Interesting Journal.

To this end, we aim, through the constant watchfulness of our editors and correspondents, to seize upon everything new in the way of mining and the various processes connected with the saving and separating of the precious metals, and place the same before our readers at the earliest day. It has been well said that

A Newspaper is a Window

through which men look out upon all that is going on in the world. Our window is a special one, so placed and arranged as to bring within the scope of its vision all that is going on

In the World of Mining, Mechanics and Science.

Without a paper of this kind, the miner or mechanic is shut up in a small room or shop and can know but little of what is going on in the world around him in relation to his particular calling. In this age of rapid progress books are necessarily slow and behind the times. It is only through papers devoted to the specialty which he has chosen that one can be easily apprised of the discoveries and improvements which are constantly being made by his fellow workers, and without a knowledge of which he soon becomes a lag gard in the race.

The Value to the Community

Of such publications in disseminating important information, in checking useless and exploded experiments and in instigating important enterprises, can scarcely be overrated. Through them the readings and observations of thousands are collected and collated, and brought directly to the shop or table of the reader without any effort of his own. For a mere trifle of cost he is regularly furnished with an encyclopedia of just the information he needs—an unbound book forever issuing but never finished.

Nowhere in the Wide World

Is such an aid more needed than by the miner of California. It is needed alike in the mill, in the mine and in the placer. We have here

The Largest Mining Field on the Globe,

Embracing a variety of minerals nowhere else found within the boundaries of a single field. We have here also, men gathered from every quarter of the globe, bringing with them the collective wisdom of the world,

Useful, Practical and Directly from the Field

Of labor. The mustiness of books has been brushed away, and their minds are stored not only with the experience of the past, but also with the practice of the present. It is to this fact that we are indebted for our present

Able List of Correspondents,

Through whom we are able to promise to our readers so much that cannot be collected in the mere routine of office work. By the aid of such help our editors will be able, during the coming year, to do more than ever in furnishing information which shall be

Fresh, Novel and Interesting,

And which shall comprise all that is known of the latest and best means for saving gold and silver, and for economizing labor and cost in that direction.

Our Illustration Department

Will still continue to form an important feature, and no effort will be spared to make it of the greatest possible local and general interest to our readers. The important matter of

Home Manufactures and Inventions

Will also largely occupy the attention of the publishers and editors, and will be constantly encouraged, as an important means of furnishing employment to those who are seeking our shores, and adding to the wealth of the Pacific coast.

The Large and Increasing Circulation

Of a journal thus devoted exclusively to useful and practical information, speaks more in our behalf than anything we could say of ourselves, and is an encouragement to its further increase, especially in these times of trifling and trashy journalism.

The class of readers who are interested in such a publication as this, have no need to be anything more than merely reminded that such journals are necessarily more costly than those of a lighter class, such as are read by the "million" and thrown aside as soon as read. Considering the character and location of the MINING AND SCIENTIFIC PRESS, our rates are as favorable as can possibly be afforded and do justice to the great industries in aid of which we are laboring.

A Handy Map

Of California and the principal portion of Nevada will be furnished free to all subscribers who pay one year in advance, during the year 1876. The map is plain, printed on tinted paper, about 18x20 inches, showing townships in California, and the counties, railroads and principal towns in California and Nevada.

We Prepay the Postage

On all papers sent to subscribers in the United States.

SUBSCRIPTION RATES, payable in advance: One year, $4. Sample copies free to those who will assist in obtaining subscribers.

DEWEY & CO., Publishers,

No. 224 Sansome street, S. F.—Jan. '76

To Mining Secretaries.

An amendment to Section 336 of the California Code, taking effect July 1st, 1874, provides that in addition to the regular publication, daily or weekly, of the assessment and sale notices as heretofore,

PERSONAL NOTICE

Must be served as provided in the following quotation from the law:

"The notice must be personally served upon each stockholder, or in lieu of personal service, must be sent through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where the principal office of the Corporation is situated."

The above refers to the ASSESSMENT NOTICE only. Advertisers in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assessment notices printed on slips suitable for serving personal notice under this law at short notice.

DEWEY & CO., Publishers.

UNITED STATES

Mineral Land Laws, Revised Statutes,

And Instructions and Forms Under the Same.

We have just issued a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office. The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statute of July 9th, 1870. Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Register's Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,

Publishers of MINING AND SCIENTIFIC PRESS, S. F.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Office Cascade Blue Gravel Mining

Company.—NOTICE:—A meeting of the stockholders of the Cascade Blue Gravel Mining Company will be held at the office of the company, 311 California street, rooms 3 and 4, second floor, San Francisco, Cal., on Monday, November 20th, 1876, at two o'clock P. M., for the purpose of disposing of the company's stock, and authorizing the sale of the entire property of the company, with any other business that may come before said company. R. F. KNOX, President,

J. M. BUFFINGTON, Secretary.

San Francisco, Oct. 13th, 1878.

Cerro Bonito Quicksilver Mining Company.

Location of principal place of business, San Francisco Cal. Location of works, Cerro Bonito mining district, Fresno county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors held on the 13th day of November, 1876, an assessment (No. 1) of four dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, 418 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 18th day of December 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the eighth (8th) day of January, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK, Secretary.

Office, Room No. 2, 418 California St., San Francisco, Cal

Eagle Quicksilver Mining Co.—Location

of works, Santa Barbara county, Cal. Principal place of business, San Francisco, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 30th day of September, 1876, an assessment (No. 9) of two hundred and fifty ($250) dollars per share was levied upon all the shares of said company, payable immediately, in gold coin of the United States, to the Secretary, at his office, rooms 5 & 6, No. 302 Montgomery street, San Francisco, Cal.

Any shares upon which said assessment shall remain unpaid on Wednesday, the 27th day of November, 1876, shall be deemed delinquent, and will be duly advertised on Saturday, the second day of December, 1876, for sale at public auction, and unless payment shall be made before, will be sold on Monday, the fourth day of December, 1876, as provided by the articles of agreement of said company, to pay the delinquent assessment, together with cost of advertising and expense of sale. By order of Board of Trustees. WM. H. WATSON, Secretary.

Golden Sun Gold Mining Company.—

Notice is hereby given that the regular annual meeting of the stockholders of the Golden Sun gold mining company will be held at the office of the company, No. 302 Market street, (up stairs,) San Francisco, Cal., on Monday, the 11th day of December, A. D., 1876, at one o'clock P. M., for the election of Trustees of said company for the ensuing year. The transfer books will be closed on December 4th, 1876, at three o'clock P. M., and remain closed until after the meeting. By order of the President.

JOSEPH PENTECOST, Secretary.

Mariposa Land and Mining Company

of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the ninth day of November, 1876, an assessment, No. 8, of one dollar per share was levied upon the capital stock of the corporation, payable immediately, in United States currency, to the Secretary at the office of the Company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office, No. 9 Nassau street, New York, N. Y.

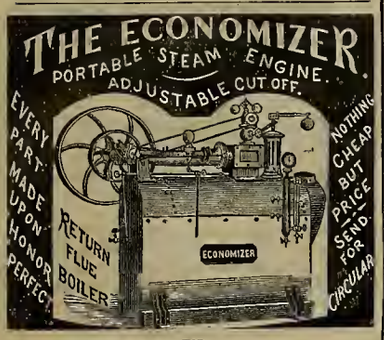
Any stock upon which this assessment shall remain unpaid on the 11th day of December, 1876 will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the eighth day of January, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

By order of the Board of Directors.

LEANDER LEAVITT, Secretary.

Office, Room No. 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal.

Machinery.



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Cotton Gins, Printers, Cheese Makers Laundries, Cabinet Makers, and All Manufacturing where Light Power is Required.

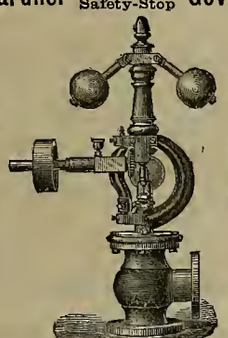
A. L. FISH & CO.,

Sole Agents for California,

9 and 11 First Street, - - San Francisco.

The Gardner Automatic Safety-Stop Governor.

MORE THAN TEN THOUSAND NOW IN USE. EVERY ONE WARRANTED. SEND FOR DESCRIPTIVE CIRCULAR AND PRICE LIST.



☞When all others fail, buy a "Gardner." We have all sizes of these celebrated Steam Governors on hand at all times.

BERRY & PLACE,

Selling Agents for Pacific States,

Cor. Market & Fremont Sts., S. F.

The Ingersoll Rock-Drill

Is Extensively Used in the East and

TAKES THE PLACE OF ALL OTHERS,

Wherever introduced, because it can be run with less power, labor and repairs, and do more work than any other Drill in the market. It has but few parts, is easily handled, being light, and HAS AUTOMATIC FEED, which saves labor. WE ASK FOR TRIAL AGAINST ANY COMPETITOR. For particular information regarding Drills or Air Compressors, send for circular to

J. B. REYNOLDS,

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THE

LANE & BODLEY COMPANY,

John & Water ., Cincinnati, O.,

Sole Manufacturers of

BRUCKNER'S PATENT

REVOLVING FURNACE,

For Chloridizing, Desulphurizing and Roasting Ores.

—ALSO—

STEAM ENGINES, SAWMILLS, SHAFTING, GEARING AND MINING MACHINERY.

☞Send for our illustrated catalogue.

Marine Screw Engines

And BOILERS for driving Model Yachts from one to ten feet in length, and Row-Boats or Skiffs 16 feet and upwards in length; either plain castings, partly finished, or complete ready for use, so constructed that a speed of from six to twenty miles per hour can be easily obtained.

The Engine can be quickly detached from the Yacht or Boat, and is then suitable for Agricultural, Domestic, Mechanical, Commercial or Amateur requirements, when small power only is needed.

☞100 Scroll Work Designs free on receipt of Stamp. GEO. PARR, Buffalo, N. Y.

THE O'HARRA

CHLORIDIZING FURNACE.

Gnaranteed to Chloridize from 85 to 95 per cent. of any gold or silver ores that are not more profitable for smelting. Will also desulphurize ores and put them in proper shape for working in cupola furnaces.

Cost of Roasting and Chloridizing by this Process:

Two cords of wood at $6	$12.00
Two firemen at $4	8.00
1500 lbs of salt at 1½c	22.50
Wear of shoes and power	1.50
Cost for 15 tons	$44.00
Cost for one ton	2.93½

In a furnace of three or four times this capacity the cost is decreased by 20 per cent.

The furnace is now working successfully at the Poe Consolidated Co.'s mines, in the Peavine District. For further information, apply to

D. J. O'HARRA,

Reno, Nevada.

PICKERING ENGINE GOVERNOR.

Vallejo Foundry, October 17th, 1876.

MESSRS. NEYLAN & YOUNG, San Francisco,

Agents "Pickering Governors."

Gents:—The 10 two-inch Improved Speed Adjusting Governors I bought of you this year for my Patent Straw Burning Threshing Engines give splendid satisfaction. They far surpass for regularity of speed any Governor that I have ever seen, and I have seen all of the best kinds; I have seen the main belt fly off the pulley several times this season while threshing, and the engineer did not discover it, so perfectly was the speed maintained, until he was told of it; this I consider something wonderful; I consider the Governor absolutely perfect, so far as speed is concerned. I bought, and put on to one of my engines a Shive Governor, to see which was the best and after one season's trial I have no hesitation in saying they are as far superior to the Shive, or any other Governor that I have seen or used, as the Shive Governor is to the old Butterfly Valve Governor. I wish you would send me the lowest price that you can furnish 25 Governors for next season's engines.

Yours, respectfully, I. L. HEALD.

LOOK

The Great Western Scroll Saw Co.'s New and Improved $5 00 Foot and Steam Power Scroll and Bracket Saw is the best one yet invented. With it men and boys are making from $3 to $10 per day. We will send you a Machine, six Saws, 15 Patterns and two feet of prepared wood on receipt of $5. Address,

GREAT WESTERN SCROLL SAW CO.,

Leavenworth, Kansas.

Diamond Drill Co.

The undersigned, owners of LESCHOT'S PATENT for DIAMOND-POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

A. J. SEVERANCE & CO.

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DEETKEN ROASTING FURNACE.

The CHEAPEST and MOST EFFICIENT furnace for GOLD, SILVER and COPPER ORES. Capacity of furnace from six to fifty tons per day.

Apply to

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Graes Valley, Cal.

Iron and Machine Works.

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HAWKINS & CANTRELL,

MACHINE WORKS,

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Near Howard, - - - SAN FRANCISCO.

MANUFACTURERS OF

Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horse Power.

N. B.—Jobbing and Repairing done with Dispatch.

Miners' Foundry and Machine Works,

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First Street, bet. Howard and Folsom, San Francisco

Machinery and Castings of all kinds.

THE RISDON

Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

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Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

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Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary

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MANUFACTURERS OF

STEAM ENGINES,

Quartz, Flour and Saw Mills,

Hayes' Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard, San Francisco.

THOS. PENDERGAST. HENRY S. SMITH.

ÆTNA IRON WORKS.

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IRON CASTINGS

and MACHINERY,

OF ALL KINDS.

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SHEET IRON PIPE.

THE

Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,

Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

☞ All kinds of Machinery made and repaired.

24v22-3m JOSEPH MOORE, Superintendent.

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EUREKA FOUNDRY,

Light and Heavy Castings of Every Description Manufactured.

Sole Proprietors and Manufacturers of

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Ventilating and Illuminating Tile,

The Only Illuminating Tile Manufactured for Lighting Cellars, Basements and Dark Rooms which provides proper ventilation for such places.

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PRACTICAL BOILER MAKERS,

Marine, Stationary and Portable Boilers, Smoke Stacks, Hydraulic Pipe, Oil or Water Tanks, Ore and Water Buckets, Gasometers, Girders, Bridges and Iron Ship Building.

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Repairing promptly attended to at the lowest possible terms.

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☞PRICES MODERATE.☜

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Established for the Manufacture of

RAILROAD AND OTHER IRON

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Every Variety of Shafting,

Embracing ALL SIZES of

Steamboat Shafts, Cranks, Pistons and Connecting Rods Car and Locomotive Axles and Frames,

—ALSO—

HAMMERED IRON

Of every description and size.

☞Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2032, San Francisco, Cal., will receive prompt attention

☞The highest price paid for Scrap Iron.

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Manufacturing Company,

MANUFACTURERS OF ALL KINDS OF

Wharf and Bridge Bolts, Railroad Trestle Work, Car Frames and Bolts, Machine Bolts, Set Screws and Tap Bolts, Lag or Coach Screws.

ALL STYLES OF FANCY HEAD BOLTS.

HOT AND COLD PRESSED HEXAGON AND SQUARE NUTS, WASHERS, BOLT ENDS, TURN-BUCKLES, ETC., ETC.

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Sole manufacturers of the Hepburn Roller Pan and Callahan Grate Bars, suitable for Burning Screenings.

NOTICE.—Particular attention paid to making Superior Shoes and Dies.

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Dunbar's Patent Self-Adjusting Steam Piston PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets,

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Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

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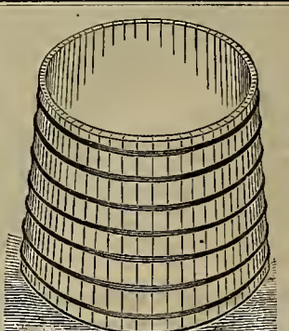

WATER TANKS of any capacity made entirely by machinery. Materials the best in use; construction not excelled. Pan Staves, Tubs and Oak Guides or mining purposes a specialty.

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San Francisco Pioneer Screen Works,

J. W QUICK, MANUFACTURER,

32 Fremont Street, San Francisco.

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Several first premiums received for quartz mill Screens, and perforated sheet metals of every description. I would call special attention to my SLOT CUT and SLOT PUNCHED SCREENS, which are attracting much attention and giving universal satisfaction. This is the only establishment on the coast devoted exclusively to the manufacture of Screens. Mill owners using battery Screens extensively can contract for large supplies at favorable rates. Orders solicited and promptly attended to.

$55 to $77 a Week to Agents. Samples FREE. P. O. VICKERY, Augusta, Maine.

PACIFIC MACHINERY DEPOT,

H. P. GREGORY & Co., Nos. 14 & 16 First Street,

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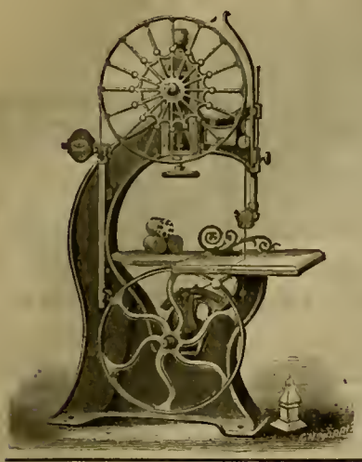

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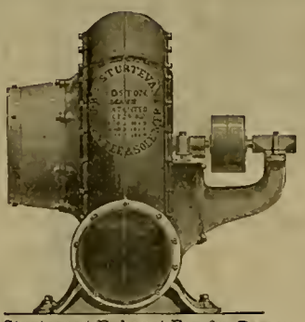

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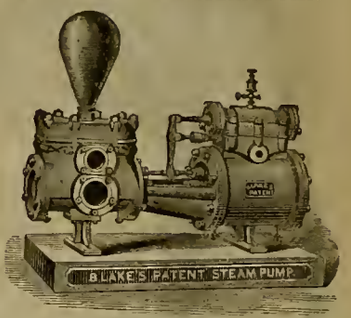

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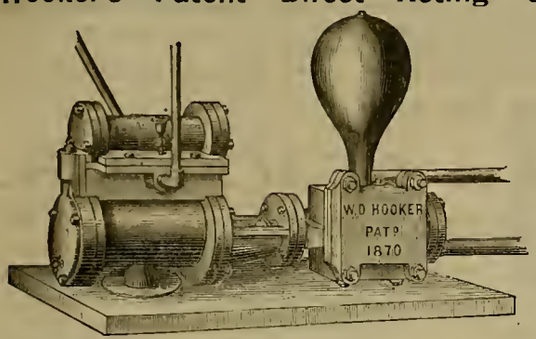

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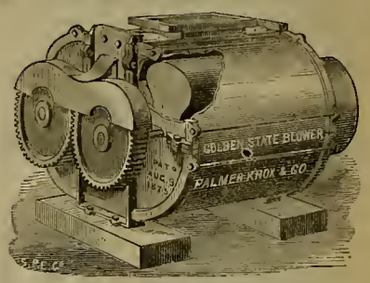

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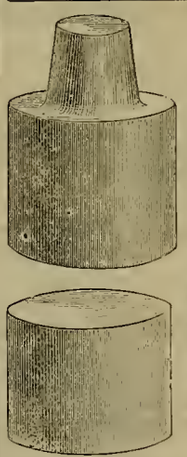

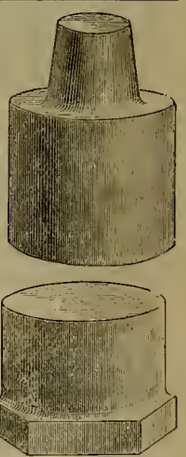

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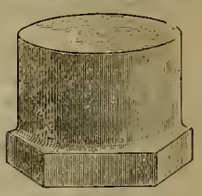

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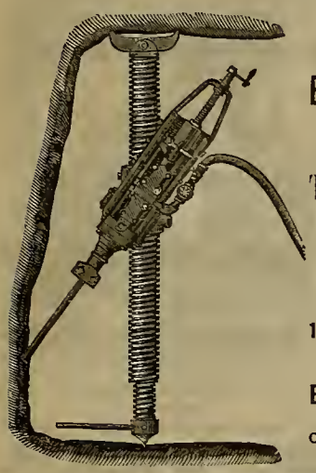

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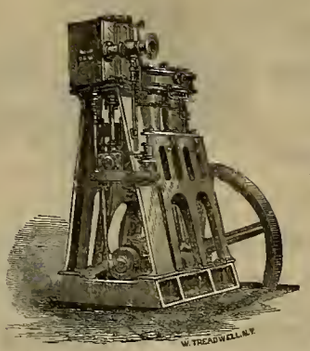

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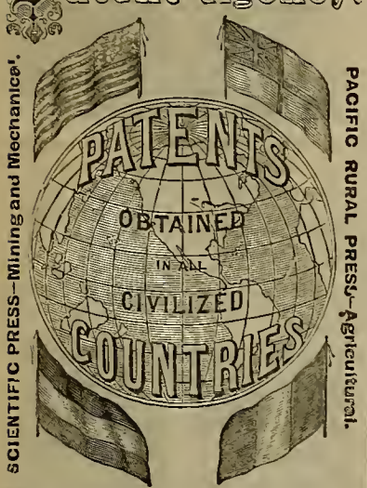

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Again thanking you for your promptness in securing my patent, I remain, obediently your·,

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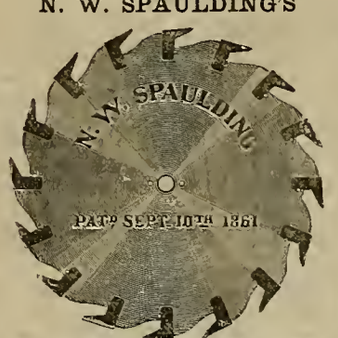

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SAN FRANCISCO, SATURDAY, DECEMBER 2, 1876.

VOLUME XXXIII. Number 23.

Comstock Papers.

No. 10.

Coppers and Mills.

Among other original or very early owners in the various small but rich claims at Gold Hill were Paul Coppers and John H. Mills, proprietors of what was for a time known as the Coppers & Mills ground, which for several years made a large and profitable production. Joseph Webb, an assayer by profession, owned one half of Coppers' interest, the two being joint proprietors of and running a saloon at Gold Hill meantime. Webb passed from the earth plane a good while ago, and if he has since been keeping company with Dives it will not be because he died possessed of the riches imputed to that unhappy personage. Webb's estate was by no means hurtfully large, having barely sufficed to defray his funeral expenses and make his accounts square with the world. Coppers also suffered a financial collapse, after which he emigrated to Idaho, where he is said to have again made some money. John H. Mills still lives at Gold Hill, where he continues to be interested in mines and mining affairs, his fortunes since the period we are speaking of having fluctuated widely. At times he has been accounted rich, and is now said to be at least tolerably well off. He enjoys the reputation in the community where he lives of being a man of integrity, energy and first-rate business capacity. He is one of the most popular men in Nevada, having held a number of high official positions, among others that of Speaker in the lower branch of the State Legislature.

The Eclipse Ground,

Covering 30 feet on the richest part of the Gold Hill bonanza, was purchased from Comstock in 1859, by Wm. and Alexander Henderson, brothers, who that summer arrived in Washoe overland from Missouri, two of their companions, named Allen and Hudson, having afterwards become equal partners with them in the ownership of this property. The consideration paid Comstock for this piece of ground, consisted of an old horse and $40 in money. Being unacquainted with the business of mining, these men, notwithstanding the low price at which they had bought their claim, ran themselves in debt in their attempts at working it. The following year DeLand, who had advanced them considerable money to enable them to keep operations in progress, took the management of the mine, seeing no other way to save himself from loss. At first the ore which paid well was reduced at custom mills; when funds enough had in this manner been accumulated a mill of their own was put up, the net earnings of which sufficed for a long time to pay a monthly dividend of $25,000, being $5,000 to each proprietor, DeLand having by this time become a one-fifth owner. In 1861 Allen was killed, having been shot through the head while prospecting near the town of Aurora in the State of Nevada. Alexander Henderson returned to Missouri. William, his brother, married in Washoe and afterward settled in San Jose, California, where he has a fine residence and is now living, being in good circumstance; Hudson we have lost sight of and DeLand is a denizen of San Francisco, still actively engaged in mining, milling and kindred pursuits.

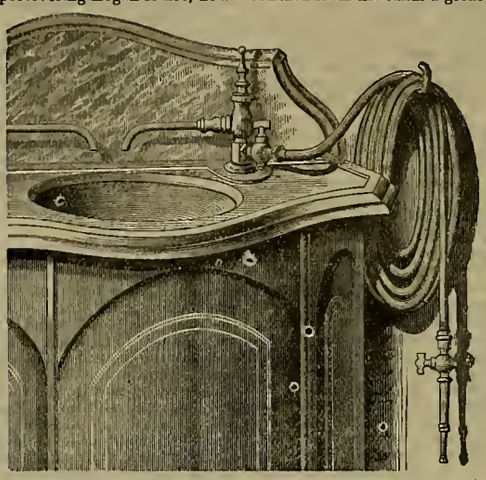
Logan and Holmes

Bought, in the summer of 1859, a section of the rich ground at Gold Hill, which, so long as they continued to own it, went by the name of the Logan & Holmes claim. In the fall of that year they put up several water-driven arastras on Carson river, near the site of the present town of Dayton, then called Chinatown. The next year they erected on this spot extensive reduction works, and for awhile prospered and made money. The cost of these works, coupled with an unfavorable turn in their mine and some other untoward events led to a turn of luck, and finally to such embarrassments that the most of their property passed from their hands, leaving them comparatively poor. Holmes, during his prosperous days, married a young wife, but survived this event only a short time, having died in 1865, leaving little money or property behind. Logan still lives and has, in the role of prospector and miner, been for many years past pursuing the fickle and fugacious Goddess of Fortune in the mountains of central and eastern Nevada without being able to quite overtake her. At White Pine he caught a glimpse of her vanishing form, and afterwards at Pioche actually laid his hand upon her, but somehow she managed to elude his grasp. The active and persevering Logan is not, however, the man to give up, and will yet possess himself of a fair share of this world's lucre if only his lease to earth life shall be renewed for a year or two longer, as he is said to own some very promising locations which only require a little capital to make their wealth practically available.

Of all these early-day Gold Hill nabobs, none were more heard of at the time, nor did any scatter their money with a freer hand, than

John Harrold,

Who, with his partner, John Drynan, owned one of the best claims at this famous locality. Born at the South, and bred to the business of overseer on a large slave plantation, his natural frank and generous disposition was apt to manifest itself in such an imperious way as often involved him in trouble with others. It was this sort of schooling that led him, on the outbreak of the late civil war, to take such a pronounced stand on the side of the South, that the United States authorities felt compelled to arrest and imprison him; a proceeding that greatly exasperated him and his friends at the time, but which Harrold himself did not afterwards very strongly condemn. For two or three years he realized from his claim a great deal of money,



TREMBLEY'S PATENT HOSE ATTACHMENT.

but, having one or two actual and perhaps many more "quasi" partners, with hosts of boon companions, political confreres and hangers-on, amongst whom he shared his income freely, he failed to get much ahead, even while his mine was yielding princely revenues. With deeper working the ores depreciated in value, while the cost of extracting them rapidly increased, and but few years elapsed before Harrold, with his lavish expenditures, was forced to part with his ground; and, although he still retained an interest in several other claims about Gold Hill, they failed to replenish his coffers; and his old friends falling away or being unable to assist him, he was finally borne on one of those tidal waves of excitement that occasionally swept over Nevada across the deserts towards the east, fetching up at last with the great army of the dead broke upon the Pogonip-enveloped hills of White Pine, where he became enfeebled in health and utterly cleaned out in purse. After drifting about for a while in that desolate region, aided by some friends, he joined a party that had been formed for working the gold mines of Honduras. This company are said to be meeting with fair success, and expect in the course of a year or two to take out a good deal of money. Harrold, being in feeble health, does the cooking for his companions and thus manages to maintain his interest in the concern, and, should his life be spared, it is not improbable that he will once more partially recuperate his fortunes and return to the scenes of his former successes and failures. Drynan, his partner, who was a different style of man, saved some money and returning afterwards to California, bought a homestead and settled in Oakland, where he is now living, having for some time past held the position of usher in the mint.

"STRUCK IT."

Patent Hose Attachment.

There are so many causes of little fires, which may easily grow into great ones, that the ingenuity of inventors has been taxed to supply some prompt, simple, and effective means of extinguishing fires at the start without calling on the fire department. Such a device is herewith illustrated, it being a hose attachment to a wash-basin faucet. The cut will give any one who ever saw a garden hose a perfect idea of its construction and use. The merits claimed for it are these: It is always in order; it is right at hand when a fire first breaks out, and can be made to throw immediately an effective stream on an incipient fire. The foregoing merits make it an element of security in a house, and when its value shall have become well known its use in a dwelling ought to lessen rates of insurance.

The cost of the attachment is very slight, and the inventor says that $35 and upwards will provide attachments enough to protect any ordinary house in every part, from garret to cellar. The inventor, D. G. Trembley, 103 South Fourth street, Brooklyn, New York, is desirous of selling town, county, or State rights in the invention.

Struck It.

The little sketch on this page, illustrative of the early mining days, when labor and not capital was needed, and when a pick, pan and shovel, combined with a little energy, were all that were necessary to make a pile, will recall those "days of gold" to the minds of many of our readers. The hardy miner, with a smile on his face, is holding out a nugget he has found in the pan and pauses in his work to show the lump to his companions. Although those halycon days are past when nuggets were plentiful and rich claims plenty, the miners of our coast have cause for thanksgiving yet. The mines generally are yielding well all over the coast and the past year has been a prosperous one. Our mining population has pretty steadily worked at good wages, and they are much better off in this respect than their brethren in other parts of the world. Steady employment can always be found for steady men in the mining districts, and even where miners do not own their own claims they can be pretty sure of making a good honest living. Though fortunes were made quickly in early days they were spent quickly too; but experience, the best of all teachers, has taught us all a beneficial lesson in this respect, so that if money comes harder now it is more appreciated and not recklessly squandered.

The Sportsman's Club of California has between 180 and 190 members in good standing, and holds a lease from the Spring Valley water company of the fishing preserves in lakes Pilarcitos, San Andreas and Merced, for which it pays an annual rent of $1,200.

CORRESPONDENCE.

More of the Quartz Mines of Madison County, Montana.

[From our own Correspondent.]

EDITORS PRESS:—There is qnite an excitement at present, and not without reason, in regard to some recent discoveries in gold quartz near the head of Willow creek, six miles above Harrison. I was informed hy Mallory Bros., mill men and mine owners here, and formerly of Gold Rnn, Cal., that not a ton of quartz had been milled, since the location of the mines, that had not paid a profit, and that not a claim, worked to any extent, had not paid a dividend.

The new camp is called Pony, a name savoring on one hand of a safe ride to fortune, hnt, on the other, reminding one a little too much of a "horse" to be altogether pleasing to the miner. Be this as it may, it has only had an existence about three months, and already boasts of a store, two saloons, a blacksmith shop, boarding house, large livery stable and wo 10-stamp mills, in complete running order. One of them is owned by the Mallory Bros., the other by Mr. F. S. Getchell, both being built by Mr. G. H. Sparrell, who is also making preparations to pnt up another on his own account. Including those alluded to, it is thonght that at least a dozen mills will be in operation before the close of another year. Thus far, not a dollar of foreign capital had come in, the principal development being made hy men of limited means, some of them even as poor as one of your San Francisco capitalists once was, when credit conld not be had for a sack of flour. Those best acquainted and most deeply interested, think it the best mining district in the Territory.

After a visit to the mills and a careful examination of some of the leading mines, it may be safely stated that it is as promising as anything met with at the same stage of development.

The Red Mine,

Three miles above the camp, is opened hy a tnnnel 90 feet in length, and a shaft 47 feet in depth. The quartz vein is about four feet in width, and was yielding ore in considerable quantity, that averaged about $60 per ton. Some of it had worked as high as $114 in gold, several hundred tons having been reduced, and apparently an inexhanstible supply in sight. It is owned hy Messrs. Mason, Barnes, Mallory and Moreland.

The Willow Creek,

Owned principally hy the same parties as above (both under the superintendence of Mr. S. J. Sangwin), is opened in three different places, showing from three to eight feet of quartz; the greatest depth 75 feet, with here and there a barren spot; the ore working $30 to $35 per ton. It has yielded about the same amount of quartz as the Red, and, although not producing so much when visited, there was every indication of an approach to a large body of good ore.

The Emeln Mine,

The property of H. H. Hickman, is about 600 feet north of the Willow Creek. An open cut had been made 10 feet wide and six feet deep, cutting a body of quartz eight feet thick, worth from $12 to $15 per ton.

The Boss Tweed,

Belonging to Messrs. Robinson, the discoverer, Mason, Carmin, Dimock, Avery and Getchell, has a lode from 28 to 30 feet of solid quartz, all of which is said to pay for working, running from $10 to $15 per ton, with some assorted as high as $75.

The Belknap.

Lying southwest of the Boss Tweed, and owned hy Messrs. Hickman and Boles, will go about $25 for second class and $60 per ton for first class. The Last Chance, Hickman, Carmin and Sangwin owners, situated on the Boulder slope, 2,000 feet west of the Belknap, runs for third class $12 per ton; second, $25, and first class $100. The White Pine, Mr. Carmin owner, is a very rich but narrow vein from six to 20 inches, with fine specimens of free gold—may be safely estimated to work from $100 to $200 per ton.

The Strawberry,

The property of Messrs. Moreland and Robinson, but with interests segregated, has a shaft 65 feet, a lode from two and a half to six feet wide. The whole of the quartz is worked, and runs from $10 to $100. It is ranked as one of the best paying mines of the district. Adjoining this mine on the south is the Keystone, the property of Mr. Robinson, with a four-foot vein of $20 rock.

The Atlantic and the Pacific, two different claims on the same lode, and owned by Mood & Co., show respectively a width where opened of 18 feet for the former and 70 feet for the latter. It is situated on the divide between Willow creek and South Boulder. Rock from tests estimated at $12.

The Mammoth

Is one of the late discoveries at the South Boulder that has taken its name from its immense proportions, being in the neighborhood of 250 feet from wall to wall, mostly quartz. It prospects from $6 to $75, with some strata going as high as $200 per ton. Much is anticipated from this and other mines in this vicinity the coming season, and many think that this and others of the district will prove fully as valuable as that near Pony. This large lode belongs to Howe, Hughes & Co.

The Etna mine, four miles above Pony, the property of L. W. Woodruff & Co., is said to be nine feet in width and to prospect fully as well as the ore taken from the Willow Creek mine and to be in all respects similar. The Custer mine, belonging to Boyer Bros., is also a nine foot lode, average tests giving an assay value of from $7 to $8 per ton. The Banta, lying between Pony and Sterling, has been yielding $25 per ton, and work will be continued during the winter.

There are four companies engaged in placer mining in Norwegian gulch and all supposed to be doing well, some of them probably more so than formerly, as Mr. P. V. Jackson, of Sterling, who purchases all the gold from the district, has bought double the usual amount the present season. The first placer mine was opened on Hot Spring creek last summer with very encouraging prospects, believed to pay if worked by hydraulic $8 a day to the man.

Hot Spring District,

With camps at Sterling and Red Bluff, was discovered as early as 1865. Very rich surface rock was found. Eastern capital nailed in under the excitement. The old story of California and Nevada was repeated. Costly mills were built before the mines were sufficiently opened to supply them with ore. Probably inexperienced hands were at the bellows. Consequence, failure. It is still believed, if not fully demonstrated, that there are good mines here if properly developed.

Mr. W. R. Reed, who has interest in several leads at Sterling, has put up an arastra and is doing some work, principally with the view of making good his claims. The rock worked the present and past seasons has run from $10 to $40 per ton, the last reduced paying better than usual.

Mr. P. V. Jackson, who now owns the Midas mill and mine, is making preparations to commence developments anew and in earnest the ensuing winter. The mines are represented to be paying better than at any former period, in view of the amount of work performed.

The Red Bluff Mine.

Situated at a place of the same name, the property of Mr. J. J. Lown, paid very well to the depth of 100 feet, where a large body of water was encountered, the ore at that depth being also found rather rebellious, but giving assays in gold as high as $130, the ore containing some silver, lead and antimony. The quartz is from three to five feet and filling the fissures. Like most of the ledges of the district, it lies wholly in the granite. The Boaz paid in early days from $100 to $125. It is not worked at present. A lead that had been abandoned here, is now successfully worked hy Messrs. Hapgood & Goodwin, under the name of the

Centennial Bonanza.

Narrow but rich and said to pay $125 per ton. The Cordwain lode, owned hy J. S. Minnis, at Red Bluff, is from four to five feet wide from wall to wall; the quartz from 20 inches to two feet, and works from $20 to $30.

The Tioga, owned hy Mr. C. P. Bradley, is from three and a half to four feet in width, and all the quartz taken from the shaft, with exception of a little near the surface, was worked, yielding from $15 to $20 per ton.

The Madisonian,

On Meadow creek, 18 miles east of Virginia City and seven miles from Sterling, has an incline shaft 220 feet, probably the deepest in the county, disclosing on the east level a body of ore from eight to nine feet wide, with an average width of four feet for 200 feet on the level. Mr. Daniel Yondee, who purchased the mine a year ago last July, within less than three months, with two men and a shift, took out over 1,200 tons, which averaged $18 per ton. During the last summer over 1,800 tons have been reduced, paying fully as much, from which it will appear that this is among the best paying mines of the county. Owing to want of sufficient pumping machinery, the mine was for a time closed down, but now all things necessary for the successful working of the mine have been received and put in place. Operations have been commenced with one steam five-stamp battery and shaft house, together with a 10-stamp water mill, all complete and in fine running order. This valuable property is owned jointly by D. & D. Yondes. No better wish can be expressed for them than that the future rnne may be as successful as the past.

A. O. K.

THE WEALTH OF WASHOE.—Not a few scientists are of the opinion that great quantities of low-grade ore now thrown into the waste dumps in this city, will eventually be worked. German experts say that there are now being carted into our streets richer ores than many of those that they are working at home. With cheap water and cheap fuel, the "float-rock," the capping of our great leads, will be worked. Hundreds of tons of this rock now lie on the hillsides in this city that will probably eventually be worked at a fair profit, and it is not improbable that some years hence parties will be found who will be willing to take the very dirt from our streets and pay a good price for it, for the precious metals it contains, or at least to bind themselves to leave the streets as good as they found them, for the privilege of working their ores.—*Virginia Enterprise.*

The Morgan Mining Suit.

On November 20th there was filed in the clerk's office of the Nineteenth District Court a complaint in the case of Henry D. Bacon et al. vs. Wm. Irvine, the Morgan mining company, et al. The plaintiffs aver many things of interest to stockholders of the corporation, and set forth the same old story of one man controlling the majority of the stock, electing all the officers of the company, pocketing the earnings and attempting to "freeze out" the minority through the medium of frequent and heavy assessments. A synopsis of the document is herewith published, stripped of legal verbiage:

The Morgan Mining Company.

The mine and mining property owned hy this corporation is situated on Carson hill, Calaveras county, California. It was incorporated with a capital stock of $2,000,000, divided into 20,000 shares of the par value of $100. Wm. Irvine, defendant, owns 11,021 shares, and it is claimed that he has exercised complete control of the property affairs, doings, proceeds, earnings and funds of the corporation; has elected the Board of Directors, whose members implicitly obeyed his directions; that he caused his brother, Robert Irvine, to be appointed Superintendent of the mine, and John Douglass, the brother-in-law of Robert, to be appointed the foreman. William was one of the directors and also Treasurer of the company up to May 5th, 1876, when new deal was given by him, for reasons that will appear hereafter, and he stepped down and out. One of the directors then elected was formerly his partner, another his warm bosom friend, another his attorney, and another his counsellor. It is claimed that this board stand ready to obey Williams' mandates in every particular, even to levying of assessments, whether the same be necessary and proper, or the reverse; they allow said Irvine to direct and manage the affairs of the company, and to dictate to them how they shall act and vote as such directors.

Grave Charges.

Work was stopped at the mine on the 6th of May last. Up to that time the proceeds from the working of the claim—as reported hy Irvine when he ceased to be treasurer—amounted to $2,708.12. Since then the company has realized $6,597.50 from the crushing of certain lots of ores and rich specimens previously extracted. After setting forth this fact, the plaintiffs boldly charge that the two Irvines and Douglass "combined, colluded and confederated together" to fraudulently appropriate and embezzle the proceeds and yield of the Morgan mine. They charge that from statements made under oath by parties who worked in the mine that the gross yield up to May 6th exceeded $100,000; that the directors knew that the treasurer's report made on May 6th, was false; that no attempt was made to compel the guilty parties to account to the company for the funds embezzled and appropriated. From the report made by the directors, May 6th, 1876, it appears (so it is averred in the complaint) that the sum of $22,562 had been realized from two assessments and from the crushing of rich specimens. There was then in the treasury $7,766.69; and no debts were owing by the company, except the expenses for the month of April, amounting to $1,500.

On the 19th of September, 1876, an assessment (the third) of $1 per share was levied, and they proposed to sell the stock upon which the assessment should become delinquent on November 20th, 1876. This assessment was levied, so states the complaint, for the purpose of aiding William Irvine in the fraudulent scheme and plan of selling certain alleged mining ground owned by him to the company at an exorbitant and fraudulent price. He and Robert McMillan own 25 acres of land lying to the eastward of and directly adjoining the Morgan mine; the price asked and proposed to be paid for it was $250,000. Irvine solicited Bacon, one of the plaintiffs, to join him in the scheme, but he declined.

Freezing Out.

It is claimed hy the plaintiffs that Irvine, having this scheme in view, abstained from electing himself a director at the last annual election (May 6th), because it would not look well for him to vote for the purchase of his own property.

C. T. Botts, president, and one of the present directors, stated to a well-known member of the bar of San Francisco that the board intended to purchase a piece of property at a large figure, and that they would "freeze out" all stockholders who failed to pay up the assessment.

It is further claimed that the sale of this property to the company is entirely unnecessary and not needed, and the board of directors were enjoined.

ANOTHER MINERAL DISCOVERY. — Not long since a party of young men, while walking in the Mineral King district, on a prospecting tour, came across an old Mexican drift. One of them said that if ore was taken from the drift it must have been worked close at hand. Search was then made, and soon a large stone was found on top of a limestone ledge, poised upon a pivot, after the manner of the old Chile arastra, so that it could be worked with a lever, and the rock beneath worn perfectly smooth. Mineral fragments were found beneath the rock. For many years parties have been searching our mountains for an old Mexican mine; perhaps it is found at last.—*Tulare Times.*

Opening the Mine.

The following from the *Reese River Reveille* furnishes a practical illustration with reference to our remarks in a recent issue of the PRESS on the "eyes of a mine:" The Manhattan company do not propose to be caught without ore when the breasts from which ore is now being extracted in the various mines are exhausted. A new level is about to be opened at the depth of 560 feet in the Curtis shaft, which is 43 feet perpendicular depth below the lowest ore breasts recently opened in this shaft. This will be commenced with the 517-foot west drift by an incline which will be sunk 75 feet, and which will open up the chimney on the Panamint vein between the 517-foot and 560-foot levels. The shaft will be continued on down to the depth of 600 feet, when another level will be started. At present there is a very large vein in the 517-foot level west drift, which carries good ore all through it. Breasting has already been commenced on this vein and when this connection is made there will be an additional breast opened of 75 feet in depth.

In the Frost shaft a depth of 571 feet has been reached, and a cross-cut from this point to tap the Independence chimney is now in 75 feet, and has yet to go 153 feet to strike it. This will open up another stope of 100 feet in depth between the 500-foot level and 571-foot levels.

The ore bodies in the Curtis and Frost shafts can be said to be barely touched as yet, there being ore enough in sight between the 290 and 500-foot levels of the Frost, and between the 700-foot level of the Bowman and the 517-foot level of the Curtis shaft, to keep the mill running steadily for many months to come. But the policy of the company is to extend their prospecting works to greater depths, while the ore is being taken out of the upper breasts already opened, so that when these breasts are exhausted they have other levels open to commence on, and are never caught without ore. They have never resorted to the ganging system for the purpose of making a big showing in bullion shipments, but always kept reserves ahead, so that it never becomes necessary to shut down the mill for lack of ore. The Panamint vein in the Curtis shaft workings and the Independence vein in the Frost shaft workings can be easily located by survey from depths below those at which they are now worked, and as neither show any indications of the exhaustion of their ore chimneys at the respective depths from which they are now worked, there is no reason to suppose that they do not extend with equal size and richness to the depths at which work is now being done to prospect them, viz., the 560-foot level of the Curtis and 570-foot level of the Frost shaft. The fact of the matter is, that the veins of Lander hill extend to as great a depth as the ingenuity of man can devise to work them, and there will be productive mines in Lander hill as long as mines exist and mining is prosecuted in the State of Nevada.

The Tuolumne Hydraulic Company.

In this mine, at Sullivan's dry arroyo, one mile east of Sonora, steam is being introduced for hoisting purposes, as power enough cannot be obtained with their water works. J. T. McLean, the superintendent, about two months ago recommenced work in this mine, which had been laid over until next season, it being supposed that the winter was too near to alter the system of working. McLean, however, who has been absent in Nevada, thought differently, and with his usual go-ahead, has put the mine in good shape for continued operations. This mine has been exceedingly rich. In 1851, on top, as high as 13 pounds per day have been taken out. After the top was worked off, a ledge of limestone was found covering the claim, and sloping down to a point. Through the center of this a hole was pierced, and gravel found. Twenty feet below, a floor of limestone was struck. The gravel was worked out and found very rich. This chamber, with limestone level floor and sloping roof, had granite walls, which came to a point on the lower side, giving the chamber the shape of a triangle. Through this floor a water worn hole was discovered, which led into a chamber beneath, which has been enlarged by a shaft three feet by 18 inches. This has been carried down below the limestone floor to a depth of 25 feet. The first strata below the floor consists of soft slum, and below this the gravel—very rich. In sinking, the slum crowds in at the rate of two buckets of slum to one of gravel; and to make it a success it became necessary to get power enough to raise the gravel faster—hence, the new steam works. The new gravel deposit, worked thus under such disadvantages, has paid 15 ounces to 24 hours' work—three shafts. How extensive the new deposit is no one can estimate. It only proves what many old miners have often asserted, that rich gravel beds exist under the great fields of lime boulders which extend up through Shaw's Flat and Columbia. If so, untold millions are yet sealed up under these apparently worked-out placers. —*Tuolumne Independent.*

THE BOSS CABLE.—In our account of the combination shaft a few weeks since, mention was made of the boss cable of the Comstock. This cable was manufactured by Hallidie & Co., and is the largest cable ever brought to the Comstock, its total length being 2,900 feet, and its weight 12 tons. It measures seven inches in width and five-eighths of an inch in thickness. It will easily handle 60 tons. It was put upon the reels ready for use last week.

MECHANICAL PROGRESS.

The Influence of Piece Work.

The *Engineering News* is epprehensive that the present prectice in large mechine shops is not favorable for the edncation of master workmen. Where a large contract for machines of eny kind is teken, or a namber of perts have to be msde, she aim is to have as mnch done by the machine tools, and as little by hand as possible, redncing the amonnt of fitting ap to a minimum. For example, in gun work, the parts of one arm are interchangeable with those of another of the same pattera; the same thing is trne with good sewing machines, end in fact with all the artiolss which are produced in qnantity. The forgings as far es possible are made by dies, the drilling and tarning, the planing and shaping ere done on machiace arranged with etops and guides, and tested by gaages, so that no carefal attention is nscessary after the tool is once set. Then the use of milling machines enables one to produce snrfaces more or less irregnlar, which wonld once have been roughed oat as well as finished by the file. Indeed, much of the filing is done when the object ie olamped in a templet or form, so that it mnst be perforce brought to the desired shape.

The ordinary workman then may tend a lathe or planer, or may file at a vise, repeating the same or similar proceeses for months, earning fair wages and turning out an immense amoant of work, as he netnrally acquires a certain amonnt of dexterity in a epecified operation. Even the fitter assembles the same piecea, and goes through the same manipulatioas from day to day in one narrow roand. There is employment for a few mea who sink the dies, make the templates and gauges, lay ont the work in the beginning, and repair such tools as reqnire it. Boys are put at work tending screw and nnt machines or lathes where the operations are entirely mechanical. Where then, among the hundreds of men oftsn employed in our lsrge shops, will yon find a sufficient number of boys who are eo employed as to have any instractioa in the rndiments of a mechinist's trade, or any probable chance of learning the different ways of manipnlating iron, steel and wood, from the raw material to the finished product? A sufficient nnmber, we mean, to replace the men who from time to time retire by reeson of old age or other disebility.

One of the smaller shops, where a considerable variety of work is undertaken, offers mach better facilities for the young learner, but, even here, boys under systematic and definite instruction are not so freqaently to be fonad as is desirable. The system of apprenticeship seems almost to have gone out of vogue. The old fashioned seven years term, which our elders had to serve, and which gave ample time for the pupil to become a thorongh and skilled workman, was mnch too long for oar restless American youths, and even the short period of three years, scanty time as it is for accomplishing aay good result, seems long to the shop boy, when he might be tending a machiae or working at piece work for himself in such establishments as we first referred to.

The paper from which we qaote the above, looke upon good industriel schools as the agency to impart the general mechanical knowledge and skill which is reqaisite to the finished mechanic. That the instraction shall be of the best character, and eminently practical, that the workroom or laboratory shall be side by side with the school and leotnre room, is of course necessary. With care and experience, the attainable results are admirable; indeed, a systematic arrangement of the instruction brings about such a saving of time that the papils will far oatstrip any apprentices in the best arranged shops.

A Powearul Diooino Maohine.—In a railway excavation in Scotland, one of the machines need is an ingenious digger invented by Mr. Milroy, and which, after excavating to a depth of over 90 feet, strnck the rock for the first time. In constrnction, and in the action of its various parts, the digger somewhat resembles an inverted umbrella, except that the connecting bars, repreaenting the rihs of the nmbrella, are swivelled and worked on points at either end. As affording aome idea of the powerful action of the machine at present in use in Glasgow, it may be mentioned that it can grasp within its gigantic "claws" as mnch as three tons of material. It is worked by meane of an engine of 16 horee-power, the chain nsed in the operation being no less than 345 feet in length. The cylinders themselves are immense specimens of foundry work. Aronnd the cylinder, on the inner side, weights have been placed to the extent of 280 tons, the object of arranging thie enormoas mass in such a position being to provide against the probability of the adjacent ground subsiding to a degree which would be highly dangerons. Boulders weighing as much as seven or eight cwt. were brought np by the digger. The clay enconntered in one part was of a consistency similar to india rnbber. This kind of material being encountered to the extent of 50 feet in depth, the difficulty of the task will be readily imagined; and it speaks well for the strength and effioiency of the digger that it has performed its work very satisfactorily, and there hes not been, as far as can be ascertained, a single inch of subsidence since the contractors first oommenced operations.

Makino Mosaics.—The Sevres mosaic works are aboat to be opened to the public. The art of mosaic is young in France. At Rome, where it hes long been nsed in the reproduction of the works of old masters, no less thau 10,000 different shedes of eaamel are kept. At the workshops in Sevres, which are not so developed as those in Rome, there are shelves and drawers fixed parallel to the walls. These draws contain 5,000 or 6,000 tiny cubes of enamel or colored glass, ranged according to tint. The pattern, nsually a peinting, is placed before the artist, who works in a sqaare of cement, in which he lays his cnbes in shades corresponding to the design furnished him. The Romsn artist worke on the seme plan, bat inetead of whole blocks of cement and enamels a centimeter eqnare, they use microscopically emall tnbes, with which they have to work hard to fill up a sqaare centimeter a day. The design is copied with a blacklead pencil on a sarface prepered with white plaster; this is removed little by little, and its place sapplied with cement, in which the fragments of out enamel ere pleced one by one. The finer the shading, the smaller the cubss of enamel.

A Paintino Machine.—Every oae who has had to paint slats or laths or like narrow work knows thet doing so is a tedious and not over easy operation. Plenty of paint is wasted in using a big brash, and to employ a small one is to throw away time. Mr. W. Roberts, of Liverpool, has invented an ingenions little apparatus which performs this work very rapidly and in a mach better meaner than it could be doce by hand. An example of the machine is exhibited at Philadelphia. The paiat is poured into a lower tray. Above are located first a pair of rollers, which seize the slat and draw it in between a series of brushes, one of which paints the apper side, another the lower side, while two more cover the edges. To keep these brnshes wet with paiat two wheels beside the grasping rollers rotate partially in the paint in the tray beneath. These are so grooved as to carry up the liqnid at every revolution, and dash it on the brushes. The machine is said to be capable of painting 6,000 running feet of lath per hour without the aid of steam power.

Winans' Novel Organ.—Mr. Winans, the Baltimore millionaire, who accnmulated an immense fortnne in constructing railroads for the Russian government, is building a novel opera-air orgen at his country seat near Baltimore. Mr. Winens himself is an enthusiastic lover of the musicsl art. The instrument is a large church organ, which is to be located in an octagon shaped building a short distance from Mr. Winaas' residence. The organ building and the residence are connected with a Morse telegraph. The organ building has three large windows with movable blinds, which can be adjnsted by the performer so as to increase and diminish the power of the tones. The pipes are made to speak by the eid of steam power at a pressure three times the ordinary force of the wind. Pnenmatic levers and electric conaections are need to make the touch light. This is one of the last of Mr. Winans' numerous eccentricities.

The Paris Exhibition of 1878.—The plan of the Internetionel exhibition of 1878 has been isened by the minister of commerce. The main building on the Champ de Mars will be 689 meters long by 350 wide. The French eection will occupy the left half of it, and the foreign sections the right. Visitors walking through it transversely will he able to see the "exhibits" of all countries in any particaler class. The fine arts will occupy the centrel avenue, and will have five times the space allotted to them in 1867. The breadth of the avenuee will be one of the most striking features of the building, the area of which will be 240,000 meters, as against 153,000 last time. There will be five departments—namely, mechinery, raw material, furnitnre, clothing and the fine arts. There will be a large hall decorated with statutes at each extremity, one fronting the Trocadero and the other the military school. The plan of the buildings on the right side of the river and of the connecting foot bridge is not yet settled.

Fast Steaming.—A steam yacht has been pnt on Lake Geneva that ran the distence between Geneva and Villeneuve, 43 English miles, in 1h. 48m. 22s., being at the rate of 23.89 English statute miles, or very nearly 20¾ knots per hour. During the first 20 miles a light head wind and some waves were encountered, which reducsd the speed somewhat, but during the remainder of the run the lake was quite smooth. The boiler preseure averaged 100 pounds per sqnare inch, vacuum 24 inches, and the engines made from 309 to 325 revolutions per minute, and developed abou 450 indicated horse-power.

Change for Inventors.—The *Carpet Trade* says: A practical carpet-sewing machine is still an unsolved problem. The attempt very generally made by most of our large retail carpet houses, of sewing their carpets by machines has had to be abandoned in consequence of unsatisfactorily bulky seams. We believe there are not more than two or three machines used at present in the country.

The last number of the *Railroad Gazette* is informed of the completion of 105 miles of new railroad, making 1,875 miles completed in the United States in 1876, against 986 milea reported for the corresponding period in 1875, 1,363 in 1874, 3,075 in 1873 and 5,709 in 1872.

SCIENTIFIC PROGRESS.

What is Phosphorescence?

The phenomenon of phosphorescence has oftea troabled the chemist and the photographer, and there are, no doubt, among our readers some who have, at one time or another, endeavored to obtain reflections of phosphorescence upon the photographic film. We heve never heerd of the attempt proving successful, for the luminosity given off is, after all, eo faint that snch a result is hardly to be expected. We see that a German philosopher has recently been directing his attention to phosphorescence, not from a photographio point of view, however, bnt in order to discover, if possihle, the trne cause of the remarkable pheaomenon. The result of his investigation is thet he is enabled to confirm the conclnsions arrived at by others—such es Hulme, Placidas, Heinrich—who have worked in the same direction. The simpleet mode, so it appeare, of bringing about phosphorescence is to piece mariae fish in a three per cent. solation of salt, and, according to M Pfluger, the phenomenon may he observed the second evening. The lnminosity, M. Pflnger tells us, begins in the eyes, and thence spreads all over the fish, increesing in intensity from day to day, its duration depending upon the temperature. The laminosity is of snch a nature that the fish appears, after a time, to be luminous all through; but this is not the cese, for, on scraping off the surface, it is quite black nnderneath. The luminous matter is, indesd, a kind of slime, which is perfectly appareat in day-light, when it is of a dirty white color; it ie only in the dark that it shines with a phosphorescent luster. It appears that any aaimal matter may be rendered phosphorescent by applying to the surface some of this slime, or, in other words, can be infected by the slime. M. Pfluger has examined the slime under a microscope, end it was fouad to contain a mass of schizomycetes, whioh, from the fact that they moved actively aboat, were doubtless alive. Hence he concindea that the small living cells of the schizomycetes are the luminous agents. The animalculæ, he points out, are not so small that they cannot be filtered from any water in which they may happea to be. M. Pflnger, in his peper, proceeds to give the results of investigation of other deceying matter in which phosphorescence is observed; but we need merely quote the summing up of his conclneions in respect to this mysterious question—nemely, "all phosphorescsnce of decaying organisms is the luminoas respiration of living parasites.—*Photographic News.*

The Last Arctic Expedition.

Thoagh Captain Nares and his colleagnes have f.iled to achieve complete saccess, says *Iron*, there can be no disputing that they have thoroughly deserved it. They fonnd the way to the pole, beyond the atmost northern land, barred by ancient end thick-ribbed ice, over which progress with sledges was impracticable at a greater speed than a mile a day; and there were over 400 miles between them and their goal. The sledging, besides, seems to have been sometimes done under a temperature of 40 degrees below zero. Scnrvy, too—the great bane of northern navigators, against which even preserved meats appear to furnish no remedy—with the lowered vitality and muscnlar weakness it induces, attecked the explorers. The winter's night was prolonged through 142 periods of 24 hours; and when the saa returned to illumine a still longer day, the spirit in the thermometer, for the cold was below the freezing point of mercury, indicated 70 or 80 degrees of frost. The lower deck of the *Alert* was kept, ell throughout the long and savage winter, at a mean temperature of 49 degrees, and that while on the upper deck the air wes 70 degrees below zero. It is now almost certain that the immediate circumpolar region is covered by a shallow sea, and access to the earth's axis blocked by ice fices, practically impassable by all known means of progreesion. If it has thus failed in its first aad most popnlar object, it is satisfactory to learn that the expedition has done excellent work in a really more important direction. Many and weighty observetions in physical science have been made. In geology, miocene strate, entombing a flora and fauna that indicate a comparatively warm temperature at that period, have been traced as far as the existing boundary of animal and vegeteble life; and should it be necessary to repeat or extend investigation at or about the same point, the find of a thick seam of excellent coal close to the winter quarters of the *Discovery*, will prove of great service.

Photographino the Sun.—We learn from *Nature* that Dr. Janssen is devising the construction of an automatic photographic revolver, which will take a photograph of the sun every hour each day of the year from sunrise to sunset. The photographs which will he taken under clondy conditions being useless so far as "sun-spots" are concerned, will be utilized for meteorological purposes; the others being kept and tabalated. The advantage of the plan is that it will dispense with an observer, end will obtain a mechaaical regularity. A communication will be made very shortly to the academy of sciences on the invention, which was suggested by the discussion on the transit of "Vulcan." When completed, it ie proposed to set the instrument at work in the physical observatory of Dr. Janssen.

The Twinkling of the Stars.

The scintillation of stars, and its close connection with changes of weether, hes, as is known, much interested Humboldt, Arago, Kaemtz, Secchi and many othere; and recently it has also been the sabject of valuable spectroscopio researches by M. Respighi. M. Montigny, who some time ego investigated scintillation in relation to the special charaoteristics of the light of different stars, pnblishes in the bulletin of the Belgian Academy, No. 8, en elaborate report upon his researches into the connection existing between scintillation and verious meteorological elements. The chief results, errived at after a discussion of 1,820 observations, mede on 230 days on 70 different stars, are as follows: The intensity of scintillatioa (measured by a special apparatus, the *scintillometre*) increseses invariably with the occurrence or epproach of rainy weather, and with the increase of tension of vepor in the air on one side, and the increase of pressure and decreese of temperatnre on the other, the influence of the two former factors being far more seneible than the combined infinence of the two latter. The scintillation, which is on an average stronger during winter than during sammer, increases with the arrival of moist weather et all seasons. It increases not only on rainy days, but one or two days bsfore, decreasing immediately after the rain has ceased. Moreover, the intensity of scintillation increasss dnring stroag winds, and with the approach of barometrical depressions or *bourrasques*, the increese being most pronounced when the depression passes neer to the observer. It then largely exceeds the average increase corresponding to rainy days; and the influence of great movements in the atmosphere totally coanteracts the contrary influence of a lowering of pressure. M. Montigny ie thas correct in saying that a continued iavestigation of scintillation would be of great service, not only for the prevision of weather, but also for the general study of meteorology, affording a very usefnl means for the exploration of the higher region s of the atmosphere.—*Nature.*

Wool and Hair Under the Microscope.

The *American Naturalist* fnrnishes some interesting facts on this subject. The United States Treasury Department has admitted hair goods free from the dnties levied on those composed in pert of wool; and evidence having been furnished that some fabrics, claimed as made of hair, contained more or less wool, a commission was appointed, in which Dr. J. G. Hunt, the well known microsoopiet, was associated, for the examination of these fabrics. The possibility of distinguishing in manufactured mixture the hair of the cow and calf and that of the sheep has been denied by some microecopists, especially as these fabrics vary on different parts of the same animal. The commission has, however, been able to classify and distinguish them. Wooly hairs have no pith, and no perceptible taper. Their mean diameter varies from a five-hundredth to the thousandth part of an inch. At irregnlar intervals they have one-sided spiral thickenings, causing the wool to curl. They occur on sheep, camels, goats and llamas; and many other animals have a portion of these wooly heirs. On the other hand, straight hairs are shorter, thicker at base and tapering. The pith is a large part. The scales on the outside, of which there are twenty to forty in a hundredth part of an inch, lie smoothly. In wool they project more or less, and are from fifteen to thirty in the hundredth pert of an inch. With these and other distiactions before them, the commission found, by first bleaching the colored fibers in mineral acids, and then moanting them in glycerine, and by usiag high powers, that in a few samples there was no wool; in a larger proportion there was a small quantity; in a very large number of samples there was from five to ten per cent., as well aa a much larger proportion; and in two cases it was difficult to find five per cent. of genuine cow hair.

Science of a Cigar.—The *Scientific American* shows that a cigar contains acetic, formic, butyric, valerio and propionic acids, prussic acid, creosote, and carbolic acid, ammonia, sulphureted hydrogen, pyridine, viridine, picoline, lutidine, collodine, parvoline, coridine and rabidene. "The blue up-curling smoke," which leads the smoker to reverie, contains water in a vaporoas state, soot, carbonic acid and carbonic oxide, and a vaporous substance condensable into oily nicotine. The feathery white ash, which in its cohesion and whiteness is generally considered indicative of a good cigar, yields potash, soda, magnesia, lime, phosphoric acid, sulphuric acid, silica, and chlorine. The ingredients of a poor cigar, a "cabbageora," for instance, is fearful and wonderful to contemplate. An English parliamentary report on adulterations in tobacco gives the following liet: Sugar, alum, lime, flour or meal, rhabarb leaves, saltpeter, fuller's earth, starch, malt commings, chromate of lead, peat moss, molasses, burdock leaves, common salt, endive leaves, lamplaock, gum, red dye, a black dye composed of vegeteble red, iron and liquorice, soraps of newspaper, cinnamon stick, cahbage leaves, and straw (brown) paper. The English, we believe, have a reputation for manufacturing poor cigers. If the foregoing are some of the ingredients, or component parts of their stock, we pity them. With such a formidahle array of "rare chemicals," how can one expect to obtain a good cigar for less then ten cents?

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to Nov. 9.		1 W'k to Nov. 16.		1 W'k to Nov. 23.		1 W'k to Nov. 29.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	....	....
Advance	....	....	....	....	....	....	....	....
Alpha	45	41	41	30½	36	30	35⅜	33
Alta	2¾	....	....	....	2½	2½	2⅝	2½
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Plat	....	....	50	....	....	....	....	....
Andes	2	1⅞	2	1¾	2	1½	2	1.80
Alps	....	....	....	....	60c	....	....	....
Amazon	....	....	....	....	....	....	....	....
Balt'm's Con	3	1¾	2¾	2	4	2	3¾	3½
Belcher	17	16	15¾	13¾	15¾	13¾	14¾	13½
Belmont	2	....	2½	2	3¼	2¾	2¾	2½
Best & Bel	48	42¾	43	41½	47	40	47½	42¾
Buckeye	....	....	....	....	....	....	2½	2¼
Bullion	33	31⅜	35	33	33¼	30	33¾	30
Caledonia	9¾	9	9⅞	8½	10¾	8	11	10
California	57½	54¼	55¾	50	54¾	46	54¾	47¾
Challenge	3	....	3	....	3	2	....	....
Chollar-P'tsi	76	72½	72¼	67	77	66	76	70
Confidence	15	14	13¾	12	14	11¾	13¾	11½
Con Imperial	3.62	3 50	3.45	2¼	2¾	2.61	3.10	2½
Con Virginia	52	49¼	49¾	43½	51	42½	52¼	45
Crown Point	10½	9¾	10	8¾	10	7¾	9¼	8¾
Coso Con	50c	35c	35c	20c	25c	22½c	....	....
Daney	....	....	....	....	....	....	....	....
Dayton	4½	4	3¾	2¾	3	....	2¾	....
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka(G V)	....	....	....	....	....	....	....	....
Eureka Con	13½	11¾	12	11¼	11	10½	11	10½
Exchequer	14½	14	13¾	11½	14	11¾	15	12¾
Europa	....	....	....	....	....	....	....	....
Gila	65c	....	60c	55c	75c	60c	1¼	1
Globe Con	....	....	....	....	10c	....	....	....
Goldenchar	1¾	1½	1½	....	....	....	1½	1¼
Gould & Cur	15	13	13¼	12½	14	10¾	14	11¾
Hale & Nor	7½	7¼	8	6¾	7⅞	6	7¾	6¾
Ida Elimore	....	....	....	....	....	....	....	....
Jefferson	....	....	....	....	....	....	....	....
Julia	7	6¾	6¾	5	6½	5¼	6¼	5¼
Justice	24½	21¾	22½	20¾	27	22¾	26½	23½
Jackson	4½	4	3½	....	....	....	3¼	3
K K Con	3	2¾	....	....	....	....	2½	....
Kentuck	14½	11½	13½	10½	11¾	10	10¾	9
Knickerb'k'r	....	....	....	....	....	....	30c	....
Kossuth	1¾	1½	1¼	....	1¾	1½	1¾	....
Lady Bryan	70c	65c	65c	60c	55c	50c	25c	22½c
Lady Wash	2½	2¼	1¾	1¼	2½	1½	2	1½
Leo	....	....	....	....	....	....	....	....
Leopard	7	6	7	6¾	6¾	5	6⅞	6
Leviathan	70c	65c	70c	65c	1	70c	1½	1¼
Mahogany	....	....	....	....	....	....	....	....
Mansfield	30c	25c	25c	....	25c	....	....	....
Meadow W	50c	....	....	....	....	....	....	....
Mexican	28	25¼	25	22¼	26¾	21¼	25	22
Mides	....	....	....	....	....	....	....	....
Mint	13	12½c	25c	15c	....	....	....	....
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	....	....	1	62½c	75c	62½c	87½c	75c
Niagara	....	....	....	....	....	....	37½c	....
North'n Belle	30½	26¾	32	28¼	32	27	33¾	30
New Coso	3¼	2¾	2¾	2¼	2½	2¼	3¼	3
Occidental	....	....	....	....	3	3	2½	....
Ophir	51¾	47½	46¾	41¾	46	41	45½	42¾
Or Gold Hill	....	....	....	....	....	....	....	....
Overman	83	78¾	78	73	85	72½	91	81
Pacific	28c	....	....	....	....	....	....	....
Phil Sheridn	2½	....	....	2¼	2	2	....	....
Ploche	....	....	....	....	....	....	....	....
Poorman	10c	....	10c	....	80	50	30c	....
Prospect	1¾	1	1½	1	1½	1¼	1½	1
Pranaan	....	....	....	....	....	....	....	....
Ray & Ely	5½	....	6	....	3½	3	5¼	4½
Rock Island	1¼	1	90c	....	1	75c	1	....
Rye Patch	....	....	....	....	....	....	....	....
Savage	13¾	11¾	12	10½	12	9	11	9½
Seg Belcher	....	....	....	....	....	....	....	....
Sierra Nev'da	12	11¾	11¾	10¾	11¾	10	11¾	11¼
Silver Hill	10	8¾	9	7¾	9½	7½	10¼	9
8th Chariot	62½	50c	62½c	....	87½c	....	....	....
Succor	40c	....	50c	....	....	....	50c	40c
Union Con	12⅞	12	12	10¾	12¼	10¾	12⅞	11¾
Utah	17½	16½	16	13	16	14	16	15
Wells-Fargo	....	....	10c	....	10c	5c	8c	....
Woodville	1¼	1	1¼	1	1¾	1	1⅜	1
Yell'w Jacket	22½	18¾	18½	14½	18¾	13¾	17½	15

Sales at S. F. Stock Exchange.

FRIDAY, A. M., Nov. 24.

385 Alpha.....38@38¾
1750 Best & Bel.....47½@47
905 Belcher.....13¾@14
210 Bullion.....33¾@34
905 Caledonia.....@10⅞
190 Confidence.....13@13¼
330 Crown Point.....9¾@9
2080 Con Imperial.....3.10@3
3320 California.....54¾@55
100 Chollar.....76@77
4025 Con Virginia.....51½@52
530 Exchequer.....14½@15
675 Donld & Curry.....14@15¾
240 Hale & Nor.....7¾@7⅞
7450 Justice.....26¼@26
445 Julia.....6¾@6¾
645 Kentuck.....10¢@10¾
1070 Mexican.....25@26
670 Ophir.....46¼@45¾
705 Overman.....@67
440 Savage.....10¾@11
535 Sierra Nevada..11¾@11⅞
80 Seg Belcher.....7½
100 Succor.....50c
20 Utah.....16
195 Union.....12¾@12⅞
465 Yellow Jacket..17½@16⅞

AFTERNOON SESSION.

510 Alpha.....38¾@38¼
359 Alta.....2½@2⅝
100 Andes.....2
100 Belmont.....2¾
530 Baltimore Con...3¼@3⅜
70 Bullion.....33¾@34
350 Belcher.....14
310 Best & Belcher.47½@48
1060 California.....54@55
745 Con Virginia..52½@53¾
1730 Con Imperial.3.05@3.07½
190 Caledonia.....10¾@11
80 Chollar.....74@75
240 Challenge.....8
120 Crown Point.....9
100 Cromer.....2¾
200 Dayton.....3¾
70 Eureka Con.....11
1530 Gila.....
475 Gen Thomas.....1½@1¾
225 Golden Chariot.....1¾
575 Justice.....26¾@26
60 Kossuth.....1¾
100 Knickerbooker.....25c
100 Kentuck.....10¾
1530 Leopard.....6⅝@6¾
580 Leviathan.....80c
155 Manhattan.....15½@15¾
430 Mexican.....24¼@24
100.0 Monumental.....24@23c
60 Northern Belle.....27@30
1700 New Coso.....2¾
635 Ophir.....45¾
140 Overman.....90@89
160 Poorman.....80c
160 Rock Island.....1¼
105 Sierra Nevada 11¾@11⅞
155 S Hill.....10¼
600 Silver City.....50c
180 Savage.....
100 Trojan.....75c
75 Union.....12⅞@12⅜
120 Woodville.....1⅛
370 Yellow Jacket..16¾@16⅝

SATURDAY, A. M., Nov. 25.

80 Andes.....2⅛
730 Alpha.....36¾@37½
390 Best & Belcher.45¾@47
580 Belcher.....13¾
250 Baltimore Con.....3¼
2-5 Bullion.....32¼@33
1485 Caledonia.....10¾@10⅞
1460 California.....54@52½
1:0 Crown Point.....8¾@8⅞
125 Chollar.....73
100 Cosmopolitan.....20c
2295 Con Virginia..50¾@50¼
2750 Con Imperial....2.92½@3
60 Exchequer.....13@13¼
60 Eureka Con.....11
245 Gould & Curry.13¾@13¾
160 Gila.....
100 Grand Prize.....5
810 Hale & Nor.....7¼@7⅝
675 Julia.....@6⅜
50 Jackson.....@3¼
1100 Justice.....25¾
120 Kentuck.....10½@10¾
100 Ko-smith.....
50 Knickerbooker.....32c
400 Leopard.....6½@6⅝
430 Mexican.....24½@24⅜
150 Modoc.....5¾@5½
75 New York.....75c
265 Northern Belle...31¾@31
545 Ophir.....44⅜
381 Overman.....38.@90
650 Occidental.....2½
130 Prospect.....1.10@1⅛
175 Raymond & Ely...4½@5
150 Silver Hill.....10
245 Savage.....10½@10¾
495 Sierra Nevada.11½@11¾
50 Succor.....50c
680 Union Con.....12¾@12⅝
200 Ward.....1
175 Woodville.....1@1⅛
100 Wells Fargo.....85
355 Yellow Jacket..16@15¾

MONDAY, A. M., Nov. 27.

455 Alpha.....35@35¾
210 Andes.....2
35 Alta.....2⅝
15 Belcher.....32@32½
170 Baltimore Con...3@3⅛
95 Belcher.....13¾
760 Best & Belcher.45¾@45½
1230 California.....51¾@52
60 Con Virginia.....49
3485 Con Virginia.....49@49¼
1515 Con Imperial...2.80@2.80
20 Chollar.....71
140 Caledonia.....10¾
195 Exchequer.....13@13½
100 Gould & Curry.....13
875 Hale & Nor.....7⅛@7
1185 Justice.....24¾@25
190 Julia.....5⅞@6¼
320 Kentuck.....10
530 Knickerbocker.....30c
150 Lady Bryan.....25c
150 Lady Wash.....1½
250 Leviathan.....1¼@1¾
4 0 Mexican.....23¼@23½
7 New York.....87½c
685 Ophir.....43¾@43
150 Overman.....88
100 Phil Sheridan.....1¼
50 Rock Island.....1
515 Sierra Nevada..11¾@11¼
795 Savage.....9¾@9¾
50 Succor.....50c
395 Union.....11¾@11⅞
75 Woodville.....1
535 Yellow Jacket..15½@15¾

AFTERNOON SESSION.

120 Belcher.....13¼@13¾
450 Best & Belcher...44¾@45
60 Belmont.....2¾
1050 California.....51½@51¾
1835 Con Virginia..48½@48¾
1350 Caledonia.....10¾@10¾
80 Chollar.....72
30 Eureka Con.....10¾
1990 Gila.....1¼@¾
645 Justice.....24¼@24½
100 Jackson.....3
720 Leopard.....6⅝@6½
210 Mexican.....24¾@24¾
55 Manhattan.....15½
650 Modoc.....5¾@5½
240 N Belle.....31¾@33½
750 Ophir.....45@44¾
450 Savage.....10¾@9¾
150 Sierra Nevada..11¾@11¾
335 Yellow Jacket..15½@15¾

TUESDAY, A. M., Nov. 28.

335 Alpha.....34@33
365 Alta.....2⅝@2⅜
160 Andes.....1.80@2
200 Best & Belcher.....47¼
330 Belcher.....13½@13¾
150 Baltimore Con.....3
1890 California.....48¾@49¼
2515 Caledonia.....10½@10
4570 Con Virginia..45¾@46¾
85 Crown Point.....9¾@9¾
1830 Con Imperial...2.½@2¾
10 Chollar.....70
210 Confidence.....11½@12¾
10 Challenge.....2¾
310 Gould & Curry...12@12½
170 Hale & Nor.....7@6¾
1810 Justice.....23¾@24½
240 Julia.....5½@5¾
200 Kentuck.....10@9¾
810 Knickerbocker.....30c
1150 Lady Bryan.....22½@25c
390 Lady Wash.....1½
1230 Leviathan.....1.37½@1.40
530 Mexican.....24¾@24
640 Overman.....87@87¾
20 Ophir.....44½
30 Prospect.....1¼
120 Savage.....9¾@10¼
1530 Sierra Nevada.11¾@11¾
160 Silver Hill.....9
1045 Union.....11½@11¾
80 Utah.....18
100 Woodville.....1
1005 Yellow Jacket...15½@16

AFTERNOON SESSION.

285 Alpha.....33½@34
200 Belmont.....2¾@2¾
70 Belcher.....13¾@13½
345 Best & Belcher.....43¾
745 California.....49¾@49
1034 Con Virginia..46¾@48¾
1900 Con Imperial..2.60@2.65
160 Caledonia.....10¾@11¾
320 Crown Point.....9
55 Chollar.....71@70
50 Eureka Con.....10¾
150 Gould & Curry.....12½
1775 Gila.....1@1¼
50 Gen Thomas.....75c
20 Geddes & Bertrand....2
40 Golden Chariot.....1¾
300 Grand Prize.....5
50 Hale & Norcross.....7
245 Justice.....23¾@23¾
50 Jackson.....9
150 Kentuck.....10¾
240 Kentuck.....9½
540 Leopard.....6¼@6⅝
500 Mexican.....23¾@23¾
25 Manhattan.....15¾@15¾
520 Modoc.....5¾@5½
100 Mansfield.....15c
180 Northn Belle.....33@33¼
1100 New Coso.....3⅛@3
10 Overman.....89
710 Ophir.....45¼@43⅝
10 Ray & Ely.....5¼
100 Savage.....9⅞@10
235 Sierra Nevada.....11¾

Pacific Board—Latest Sales.

WEDN'SDAY, A. M., Nov. 29

100 Alpha.....31½
80 Best & Bel.....42¾@43
160 Crown Point.....8⅞@8¾
50 Con Virginia.....45½
120 California.....48@48¼
200 City of Boss.....60@60
1040 Con Imperial.2.63@2.67
10 Exchequer.....12¾
50 Globe.....30c
50 Hale & Nor.....6¾
150 Julia.....5⅝
50 Justice.....24½
500 Knickerbocker.....30c
300 Lady Bryan.....25@30c
200 Leviathan.....1.35@1.30
320 Mexican.....22⅞@22¾
200 Monumental.....25c
275 Ophir.....43@42½
40 Phil Sheridan.....1
100 Pbil Sheridan.....1
100 Sierra Nevada.....11¾
300 Savage.....9¼@9⅝
100 Trojao.....50c
140 Trenton.....8
100 Twin Peaks.....1¼
600 Wells-Fargo.....10@8c
50 Woodville.....1¼
150 Yellow Jacket...15½@15¾

AFTERNOON SESSION.

30 Belcher.....13½
330 Con Virginia.....45¾
230 California.....49¾@49¾
35 Crown Point.....8⅞@8¾
60 Caledonia.....11
100 Con Virginia..46¾@46¾
900 Erie Con.....4c&5c
20 Gila.....87½c
200 Hale & Nor.....7
140 Leopard.....5¾
100 Lady Bryan.....25c
70 Mexican.....23¾
120 Northern Belle...31¼@33
40 Overman.....94
75 R & Ely.....4¾@4¾
200 S Leviathan.....60@
99 Savage.....9¾@10
10 Sierra Nev.....10¾
200 Wells-Fargo.....8@9c
130 Yellow Jacket..15⅞@15¾

California Board—Latest Sales.

WEDNESDAY, A. M., Nov. 29.

10 Alpha.....33
150 Alta.....2½
300 Accidental.....50c
300 Baltic.....30c
185 Best & Bel.....43¼@42⅞
1825 Coso Con.....37½@43c
40 Crown Point.....8¾
2.25 Con Imperial 2.70@2.62½
5) California.....48@48¾
50 Con Virginia.....45¾@4
25 Exchequer.....1
45 Gould & Curry.....12
175 Gila.....1
1500 Globe.....27@30c
100 Glasgow.....10c
55 Hale & Nor.....6¾@6⅞
25 Julia.....5¾
30 Justice.....23½
10 Leviathan.....1¾
450 Lady Bryan.....25c
200 Monumental.....25@27½c
1100 Mansfield.....5c
300 Niagara.....15c
50 Nevada.....27¼c
25 Ophir.....43
10 Pacific.....42¾c
50 Prospect.....1.10
800 Sierra Nevada.....11¾@11
20 Silver Hill.....9
45 Savage.....9½@9¾
80 Tuscan.....9¾
650 Trojan.....45@47½c
500 Union Flag.....8¾c@1
275 Union.....11½@11¾
25 Woodville.....1¼
10 Yellow Jacket.....15¾

AFTERNOON SESSION.

10 Baltimore.....2¾
50 Belcher.....13¾@13¾
25 Best & Bel.....44
10 Caledonia.....10¾
20 Con Imperial.....2¾
100 Cosmopolitan.....12½c
1570 Coso Con.....40@43½c
5 California.....49¾
35 Con Virginia.....46¾
100 Crown Point.....9
130 Gila.....
100 Hasgow.....12c
115 Hale & Norcross..7@7¼
100 Hussey.....45c
5 Julia.....5¾
50 Knicker.....30c
5 Lady Bryan.....25c
50 Lady Bryan.....25c
60 Mexican.....23¾
250 Mansfield.....5c
200 North'n Con Vir.....50c
40 Ophir.....43¾
100 Oregon.....2c
10 Overman.....92½
100 Oasis.....2
300 Ophir.....43¾
50 Raymond & Ely.....5¾
200 Rising Star.....2c
200 Southern Star.....1½@1¾
1100 South Chariot.....40@50
100 Sierra Nev.....10¾
1000 Senator.....60c
100 Superior.....8c
600 Shasta.....30@15c
800 Trojan.....45@46c
70 Wells-Fargo.....6c

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertiseemente in the Mining and Scientific Prees and other S. F. Journale.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Delinq'nt.	Sale.	Secretary. Place of Business.
Belmont M Co	Nev	10 50	Nov 22	Jan 4	F Swift 418 California st
Cherry Creek M Co	Nev	7 30	Oct 3	Nov 10	D F Verdenal 409 California st
Crown Point M Co	Washoe	28 1 00	Oct 26	Nov 29	J Newlands 4 9 California st
Dayton O & S M Co	Washoe	6 1 00	Nov 6	Dec 12	W E Dean 419 California st
General Thomas M & M Co	Nev	3 50	Oct 27	Dec 1	W Willis 309 Montgomery st
Globe Con M Co	Washoe	9 25	Oct 27	Nov 30	W F Bogart 402 Montgomery st
Golden Chariot M Co	Idaho	18 50	Oct 26	Nov 13	W P Shaw 408 California st
Gould & Curry S M Co	Washoe	20 1 00	Nov 15	Dec 29	A K Du brow 309 Montgomery st
Hale & Norcross S M Co	Washoe	52 1 00	Oct 10	Nov 14	J F Lightner Nevada Block
Hussey Con M Co	Nev	2 20	Oct 21	Nov 22	R H Brown 426 California st
Jefferson S M Co	Nev	2 50	Oct 11	Nov 18	C A Sankey 331 Montgomery st
Knickerbocker M Co	Nev	16 *1 25	Nov 13	Dec 16	J H Sayre 330 Pine st
Lady Bryan M Co	Washoe	8 50	Nov 2	Jan 25	W H McClintock 419 California st
Lady Washington M Co	Washoe	9 50	Nov 11	Dec 14	Jan 2 D L Thomas 419 California st
Meadow Valley M Co	Ely Dist	13 75	Sep 29	Nov 6	Dec 4 T W Colburn 418 California st
Mint M Co	Washoe	15 15	Oct 12	Nov 15	Dec 7 D A Jennings 401 California st
Monitor Belmont M Co	Nev	25	Oct 17	Nov 20	Dec 18 B B Minor 309 Montgomery st
North Con Virginia M Co	Washoe	6 50	Nov 21	Dec 22	Jan 16 J Maguire 418 California st
Overman M Co	Washoe	36 3 00	Oct 21	Nov 25	Dec 15 Geo D Edwards 414 California st
Panther M Co	Nev	3 25	Oct 4	Nov 8	Dec 5 F Swift 419 California st
Picoche S M Co	Ely Dist	Nev 14 50	Oct 5	Nov 8	Dec 1 F V Smith 419 California st
Poorman G & S M Co	Idaho	7 25	Oct 23	Nov 27	Dec 16 W Willis 309 Montgomery st
Rye Patch Con M & M Co	Nev	5 5	Nov 11	D c 19	Jan 9 D F Verdenal 409 California st
Savage M Co	Washoe	2½ 1 00	Nov 25	Dec 28	Jan 17 E B Holmes 309 Montgomery st
Sierra Nevada M Co	Washoe	46 1 00	Oct 24	Nov 28	Dec 15 W W Stetson 309 Montgomery st
Trojan M Co	Washoe	3 10	Oct 20	Nov 21	Dec 11 D Wilder 338 Montgomery st
Utah S M Co	Washoe	14 2 00	Nov 15	Dec 20	Jan 9 G C Prest 305 Montgomery st
Wells-Fargo M Co	Washoe	6 15	Nov 6	Dec 8	Dec 29 O H Bogart 402 Montgomery st
Yellow Jacket M Co	Washoe	24 1 00	Oct 28	Dec 4	Jan 3 G W Hopkins Gold Hill

* $1.25 old stock; 30o new.

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Atlantic Con M Co	Nev	1 25	Oct 20	Nov 25	Dec 19 P Robinson 330 Pine st
Blue Jacket M Co	Nev	3 2 25	Nov 3	Dec 9	Dec 30 C J Eaton 724½ Market st
Eagle Quicksilver M Co	Cal	9 250 00	Sep 30	Nov 29	Dec 4 Wm H Watson 302 Montgomery st
Eclipse & Lee M Co	Cal	2 25	Nov 11	Dec 16	Jan 5 D Buck 308 Montgomery st
Gold Run M Co	Cal	14 50	Nov 14	Dec 21	Jan 10 C C Palmer 41 Market st
Lexington M Co	Nev	1 5	Nov 10	Dec 12	Dec 28 H B Camgdon 330 Pine st
Lone Star & Eclipse Con M Co	Cal	10	Oct 25	Nov 30	Dec 21 D Buck 309 Montgomery st
Lone Tree M Co	Cal	1 10	Oct 28	Nov 29	Dec 16 C A Gonld 418 California st
Monumental Quicksilver M Co	Cal	2 5	Nov 17	Dec 26	Jan 18 W H Manlove 6 Market st
New England Tun & Smelting Co	Cal	3 25	Nov 2	Dec 6	Dec 23 O C Thorp 401 California st
Nugarell G M Co	Cal	7 1 00	Oct 13	Nov 16	Dec 4 A DuPrat 509 Jackson st
Peytona G & S M Co	Nev	50	Nov 21	Dec 23	Jan 8 T J Cwens 215 Sansome st
Purdy S M Co	Colorado	1 2 00	Sep 23	Nov 14	Dec 5 A J Bell 331 Montgomery st
Rising Star M Co	Cal	2 10	Nov 8	Dec 9	Dec 30 J W Coppage 330 Pine st
San Francisco Petroleum Co	Cal	2 5	Nov 22	Dec 26	Jan 14 W Easton 32 Montgomery st
Silver City M Co	Nev	1 25	Nov 16	Dec 22	Jan 11 A K Durbrow 309 Montgomery st
South Ophir M Co	Washoe	1 10	Oct 9	Nov 23	Dec 12 A C Gilbert 224 Montgomery st
Volcano Gold Gravel M Co		1 10	Oct 20	Nov 21	Dec 11 E A Peck 330 Pine st
Weaverville Hydraulic Co	Cal	8 40	Nov 10	Dec 18	Jan 15 F H Rogers 334 Pine st
Yarborough S M Co	Cal	7 50	Oct 24	Nov 23	Dec 23 E Barry 415 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Allison Ranch Franklin M Co	Cal	T O Connor	505 Front st	Annual	Dec 22
Andes S M Co	Nev	M Landers	Nevada Block	Annual	Dec 18
Gold Bar Gravel M Co	Cal	A C Hammond	401 California st	Annual	Dec 2
Gold Canyon Con M Co	Nev	A A Perdow	639 Clay st	Annual	Dec 13
Gould & Curry S M Co	Washoe	A K Durbrow	309 Montgomery st	Annual	Dec 18
Great Bine Gravel Range M Co	Cal	C L McCoy	419 California st	Annual	Dec 5
Lamoille M & M Co	Nev	L Hermann	220 Sansome st	Annual	Dec 5
Mexican G & S M Co	Nev	O L McCoy	419 California st	Annual	Dec 5
Napa Con M Co	Cal	W W Farrish	328 Montgomery st	Annual	Dec 1
Steptoe Con M Co	Nev	Myron Angel	Merchants' Ex	Annual	Dec 8

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	C D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	Oct 11
California M Co	Washoe	O P Gordon	Nevada Block	2 00	Nov 15
Consolidated Amader	Cal	F B Latham	426 California st	25	Oct 9
Con Gold Hill Quartz M Co	Washoe	R Wegener	414 California st	25	April 17
Cots Virginia M Co	Washoe	A W Havens	Nevada Block	2 00	Novll
Comanche M & M Co	Nev	W W Traylor	Nevada Block	20	Oct 25
Empire M Co	Nevada Co	Cal D A Jennings	401 California st	2 00	April 11
Empire M Co	Sierra Co	Cal Chas Collishonn		50	Sept 26
Empire M & M Co	Washoe	W E Dean	414 California st	25	April 17
Imperial S M Co	Washoe	W E Dean	414 California st	25	Aoril 17
Leopard M Co	Nev	R H Brown	426 California st	50	Nov 15
Manhattan S M Co	Nev	J Crockett	419 California st	1 10	Nov 10
Northern Belle M & M Co	Nev	W Willis	309 Montgomery st	1 00	Nov 15
St Patrick M Co	Cal	D F Verdenal	409 California st	30	Mar 10
West Comstock G & S M Co	Washoa	Oliver G Wood	534 California st	50	Feb 24

Mining Share Market.

The advance in prices chronicled last week did not hold up this week as was expected, hnt a falling off hes been apparent, as a glance at our stock tahlee will show. On Tuesday an approach to a penio was felt at the informal eesion. At the outset a fnrious attack was made upon the bonanzas, nnder which California was forced down to $48¼ and Con. Virginia to $45⅞. These figures, however, were extreme, and were soon recovered from. The heaviest seller was McKenty, who offered Con. Virginia freely in lots to suit at $46. The regular bonanze supporls did not make themselves particularly prominent during the excitement. Suoh stocks as Ophir, Mexican and Best & Belcher sympathized with the bonanzas, eech falling heavily, and the latter touching $43¼. Justice aleo went off hadly. Before the board met a reaction set in, carrying California to $50 and Con. Virginia to $47, but they did not maintain these figures.

The feature of Wednesday morning's informel eession was a bad break in Ophir end Mexican, which declined to $42¾ and $22⅞ respectively. The honenzas were also off, and sold at very neerly the worst prices of the day previous. Chollar, Hale & Norcroes and Gould & Curry were a shade stronger. Otherwise there were hut small changes.

The manegement of the Niagara mining company have taken a new departnre and have invited the other stockholdere to meet with them at the office of the company, Friday evening, and talk over the sitnation. It seems that the last assessment was only ahout half paid up and the stockholdere have the choice of another aseesement, the olosing down of the mine, or the sale of the stock in the treasury.

The California mine turned out 2,810 tons of ore last week and sent 2,792 tone to the mills. All the ore hreasts continue to look well. The west drift from the C. & C. sheft is in 332 feet, and the ore vein is expected to be reeched ahont the 1et of January. The produot of the Consolidated Virginia mine last week was 2,925 tone, and 2,936 tone were sent to the mills. It will be two weeke before the 1700-foot level in thie mine is opened. The water in the C. & C. shaft continues strong and einking is slow.

Mining Decisions.

The Commissioner of the general land office in Washington, decided in the case of Bntte City, Montana, that patents may issue for town sites in mineral regions, bnt as all mining claime and posessions are by lew exclnded from the operation of patents, the title to them remaine in the United Stetes after a town site patent has been issned; that title to mining oleime can be only acquired nnder the mining act, nnd that patente may isene for mining claims situated within exterior boundariee of a town site, entry or patent. The decision reverses the decision previously rendered by the general land office, thet placer mining claims ocnld not be inclnded within the exterior boundsries of a town site patent.

The commissioner has also decided that in cases of appliostione for patente for mines on the Comstock lode, Nevada, hearings may be had to determine whether the mines in question have heen benefited or drained by the Sntro tunnel; bnt the Commiesioner of the General Land Office will not attempt to interfere with the right of mine owners to exeroise control and ownership over their mines, so long as they comply with the reqnirements of the law.

GEORGE WILSON, administrator of the estate of William Wileon, who was killed six weeks ago hy a falling cable in the Dayton mine, has bronght suit egainst the mine for $100,000 dameges. Deceeeed left a wife and five ohildren. The case came up hefore Jndge Rieing, who, after hearing the argnment on demurrer, sustained the demurrer to the damage claimed for mental distress, hnt ruled that the shift bose should have known the condition of the cable. The eetnal damage euetained will be a matter for a jury to determine.

R. B. WOODWARD, the proprietor of Woodward's gardene, it is eaid, hae inaugnrated negotiations for the purchase of a portion of the Shell Monnd Tract, in Berkeley, where he contemplates removing his gardens end materially enlarging them. The scheme on foot in the Board of Snpervisors to open a new street through the present locality of his gardens at Mission and Fifteenth streets, has impelled him to remove them.

WE cleared 36 wheat cargoes during the first 24 days of the month. The total for the month will probably be not less then 45.

WHAT IS A CAR-LOAD?—Nominally, a carload is 20,000 pounds. It is also 70 barrels of salt, 70 of lime, 90 of flour, 60 of whisky, 200 sacks of flour, 6 corde of soft wood, 18 or 20 heed of cattle, 50 or 60 heed of hogs, 80 to 100 head of sheep, 9,000 feet of eolid boards, 17,000 feet of eiding, 13,000 feet of flooring, 40,000 shingles, one-half lese hard lumber, one-fourth lese of green lumber, one-tenth lese of joist, scantling, and other large timbers, 340 hushels of wheat, 400 corn, 680 of oats, 400 of herley, 360 of flex-seed, 360 of epples, 430 of Irieh potatoes, 360 of eweet potatoes and 1,000 hushels of bran.

THE official *Gazette* at Calontta publishes a minnte of Sir Richard Temple, Lientenent-Governor of Bengal, giving the result of his visit to the districts of southeastern Bengel, whioh were devastated by the last cyclone. The minute confirme the previone estimate that 251,000 persons perished in the cyclone.

THE following are the new trustees of the Kentuok mine: Mark L. McDonald, Frank Swift, T. Day, D. L. McDonald and T. J. Shackelford.

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR

Grizzback Mine.—Amador *Ledger*, Nov. 25: This mine at present overshadows all others in the northeastern part of the county. It is in the vicinity of Mace's mill, a few miles above Volcano. The last crushing at Mace's mill averaged in the neighborhood of $100 to the ton. The rock now being taken out ranks among the richest ever seen in the county. Grizzback, the fortunate owner, was working for wages at $2.50 or $3 a day less than a year ago, but, by a sudden stroke of fortune, he has been placed in a condition of comparative wealth. He was offered $15,000 for the claim only a few days ago, which he refused, as he says the rock now in sight will yield at least that amount, without taking cognizance of what may be beyond.

Talisman.—Some weeks ago we recorded the prosecution of pumping operations at this mine with a view to drain the shaft, preparatory to the resumption of active mining. Since then important developments have been made. In grading for a mill site the workmen struck a ledge of great richness. We have not been able to learn the size of the vein, except that it is sufficiently large to raise the most sanguine expectations concerning value. To the north of the main shaft, over which the hoisting works have been erected, the same ledge has also been struck, equally rich. Mining experts, who have inspected the discovery, pronounce it a continuation of the same ore body now being worked in the Keystone. These developments have brought the Talisman into great prominence. It was well known that high grade ore existed in the shaft now being drained, but it was hardly surmised that the ore bodies were so vast as present appearances indicate. Meanwhile, the 10-stamp mill is being pushed ahead. The building is almost finished, ready for the machinery. It is to be run by water power. Sufficient ore might be extracted to keep the mill running steadily if it were completed to-morrow.

The Amador Con., of Sutter creek, has declared another dividend of 25 cents per share.

Montezuma.—Sinking operations were finished on this mine last week. The shaft is now down 150 feet, the ledge maintaining its character for size and richness. Drifting will be commenced north and south next week, the new level to be opened up 140 feet from the surface. Five hundred tons of rock are ready for crushing. One hundred and fifty tons have been hauled to the Kearsing mill, which will be started running immediately. Two hundred tons are to be taken to the Volunteer mill, which will commence crushing at an early date. Should the result of these crushings realize the expectations of the owners, a 10-stamp mill will be erected close to the mine, thereby avoiding the expense of hauling these miles to Jackson.

The Volcano Boers.—The Moyle company made a spurt to commence work on their projected tunnel to drain the Volcano basin. The sound of the hammer is no longer heard, work having been abandoned for reasons to me unknown. Meantime the Volcano gold gravel company, under the excellent management of Colonel Heath, are slowly boring into the heart of the hill.

Mineral Ground.—There is little doubt that quartz equal to any yet discovered exists on the line of the mother lode in the comparatively unprospected mineral country lying between Jackson and the river. The opening up of a paying mine between these points would be a greater stimulus to mining activity than anything else we know of. The ground is soon to be tested, with plenty of capital to back up the enterprise. Work will be commenced at once, and we expect ere long to be able to chronicle cheering news from this hitherto neglected region.

CALAVERAS.

Another Big Clean-Up.—Calaveras *Chronicle*, Nov. 25: This is essentially the era of big "clean-ups" in this section, especially so far as gravel mining is concerned. Several large amounts have lately been taken from the finmes of the various hydraulics in this vicinity, but it was reserved for John Veith, Esq., proprietor of the Excelsior claim on Tunnel ridge, to oversize the piles of dust of all his brethren of the mining fraternity. A run of about two months and a half resulted in the cleaning up of $7,200—a very handsome sum and greatly in excess of expenditures during the run. Mr. Veith has exhibited a good degree of energy and perseverance from the inception of the enterprise that is now proving so profitable, and has encountered and overcome obstacles that would have discouraged almost anybody. The richness and extent of the claim are now so well established that its permanency and value are assured, and Mr. Veith can count with certainty upon ample dividends in the future. $7,200 in two months and a half!

The Emerson Claim.—The work of extending the bedrock tunnel in the Emerson claim, Happy valley, to permit the laying of the flume in close proximity to the gravel bank, is approaching completion. Piping will be resumed as soon as the tunnel is finished with greatly increased facilities for washing.

Duryea Mine.—The debris of the cave that recently occurred in the Duryea mine has been removed and everything is all right again. The mill is running merrily.

Quaker City.—The water is being taken from the Quaker City mine, located near the Junction. It is not decided yet, we believe, whether work will be resumed in the mine or not.

New Hydraulic.—W. W. Cook, of this place, the well known hydraulicist, is about opening a new claim a short distance above Rich Gulch flat. A portion of the iron pipe to be used in connection with the claim passed through the town this week. It is expected to have the new enterprise in full operation in a few days.

Boston.—Favorable progress is being made at the Boston, near Buckeye. The mill is kept running with good results, although its crushing capacity is not so great as was claimed for it by its builders. The rock pays well, a recent clean-up considerably exceeding the expectations of the gentlemen owning the mine. A tunnel is being run into the hill, on the ledge. The vein shows well, so far as uncovered, and in fact the prospects of the mine are altogether encouraging.

INYO.

The Monoo.—Inyo *Independent*, Nov. 18: Agent Cowles, of the Cerro Gordo freighting company, informs us that the Modoc company have already shipped on the company's teams no less than 5,000 bars of bullion, the product of their two furnaces at Lookout, although they have been running but a few weeks. This bullion is said to be worth over $400 per ton on the average.

Lookout.—Cosо *Mining News*, Nov. 25: From a very reliable party from Lookout we learn that the Minnietta road to connect with the Panamint Valley road is completed beyond the point selected for the mill, and the work of grading the mill site was commenced Wednesday last. The Cerro Gordo freighting company's teams with the machinery of the Snnlse mill are expected to-day, and the erection of the mill will be begun at once. The road to the Minnietta ore dumps is being continued with a strong force, and will be completed in about ten days. Full supplies of lumber for the ore shutes have arrived. The mines are looking well at all points. Pipes to conduct the water from Snow's canyon to the mines is now on the road. Surveying parties have gone across Panamint valley to bring in a road from Wild Rose, over which will be transported coal and timber supplies; they will also bring in water from Narbee canyon for the accommodation of the Lookout country generally. Work has been commenced on the Little Mack mine, and the tunnel contracted for is being driven rapidly ahead, running directly upon ore, the face of tunnel looking extremely well, exceeding expectations of all who examined the property previous to much work having been done. From all appearances at present there is a grand future for the Lookout country.

MARIPOSA.

Operations on the Estate.—Mariposa *Gazette*, Nov. 18: We had the pleasure of a call at our office to-day by Mr. E. G. Burr, agent of the Mariposa land and mining company, and Mr. Wolberg, of the firm of Wolberg & Co., New York city. Mr. Wolberg is a stockholder of the company, and is here with a view of seeing for himself the landed estate and the extensive mines and mining operations thereon, which have given this estate a world-wide celebrity. From intimations received from these gentlemen, we believe the axle upon which the "Los Mariposas" grant stands is going to be lubricated with a will and determination of its owners that will revolutionize the business aspect of our county. The force at the river tunnel is soon to be doubled, and extensive machinery wherewith to drive the tunnel at much greater speed is soon to arrive. A shaft is to be sunk immediately upon the Pine Tree vein to the depth and level of the approaching tunnel. The Princeton and Mariposa mines are under consideration by the company. Operations in these valuable mines are expected soon to commence, on which a great amount of money is to be expended. Sunshine and prosperity is close to our doors. Let us be patient a little while longer, and all will be well with us.

MONO.

The Mines.—Cor. Inyo *Independent*, Nov. 18: The mines never looked better than at present. The Diana company has completed its hoisting works and is now sinking on the ledge, besides working about 30 men, who are taking out ore from all parts of the mine. The Kearsarge people have been engaged upon improvements so far, but are now ready to go ahead with mining operations, with every prospect of substantial developments. Various other mines, almost too numerous to mention, are turning out tons of the best black metallic substance, and the day is certainly not far distant when Benton will rank among the first mining towns on the Pacific slope—a rank gained entirely upon her own merit.

NEVADA.

Yuba.—*Foothill Tidings*, Nov. 25: The new 25-stamp mill of this mine started up last week, Wednesday, under very favorable auspices. The mine is sufficiently opened, it is thought, to keep the mill running without difficulty and on a fair grade of rock, which will, without doubt, soon turn this enterprise into a regular dividend payer.

Homewaen Bound.—News from this mine is very encouraging. The south drift shows a large ledge of good looking quartz, which is heavily charged with sulphurets and shows some free gold. The north stopes are turning out well, and a large pile of quartz now on the dump will be sent to the mill immediately. The general opinion of those who have examined this mine is that she hids fair to make one of the big mines of the district.

The Godfrey, a gravel mining enterprise on Alta hill, is down to the bedrock with its main shaft, and will soon have sump made, pump set and everything ready for drifting and taking out gravel.

Gravel mining is receiving renewed attention in all parts of the county of late. The big enterprises at North Bloomfield and at Blue Tent, in opening up the main channels of our ancient river beds and proving their richness, have given an impetus to this class of mining, and the Gold Spring company, near Nevada City, is, we learn, about to enter the list of paying mines. On and about Alta hill, near this place, are several new gravel mining enterprises, some of which are likely to give a good account of themselves soon. There's many a million dollars in gold lying in the Alta channel and its various tributaries, without a doubt, and persevering work will bring it to light.

Osceola.—New Mill.—We learn this week that a new mill and hoisting rig is to be put up at once on the Osceola mine, situated over on Squirrel creek, a couple of miles or so west of town. Over 20 years ago the Osceola ledge was prospected by E. W. Roberts and others, and a very rich pocket found, which turned out several thousand dollars' worth of solid specimens, besides several loads of rock, which, worked by mill process, gave a return of $225 per ton. Upon this San Francisco capitalists bought up a controlling interest in the mine, a 24-stamp mill was built, and, as the main body of the ledge failed to pay over $10 per ton in the crude mills then in use, and no other rich pocket was found—indeed no search was made for any, except by tunnel straight ahead into the hill—further operations were suspended, the machinery sold and taken away and the mine sold for debt. Ten years later Tew & Morgan became the owners of the mine and proceeded to open it up, but so far as we can learn the trouble has always been that though rich enough in the precious metals to pay—as shown by average assays of the rock—there was too large an admixture of copper sulphurets for ordinary mills to work. It is to be hoped that the present proprietors will proceed in a proper manner in the erection of the new mill, and that the Osceola may be made to yield up her ample treasures.

PLACER.

Mining Items.—Dutch Flat *Forum*, Nov. 23: The continued pleasant weather has afforded our miners an opportunity to push forward with their outside work, and they have taken advantage of it with a will.

Our ditches are running but little water. The South Yuba has about 1,200 inches, and the Miners' Ditch and Cedar Creek Co. about 400 inches each, all of which, however, is being utilized to the best advantage.

The Baker claim commenced washing through its shaft into the Yankee tunnel last Saturday, running water for a few hours on that day, and also each day since then. There is quite a strip of drifted ground, which must be removed by washing at odd spells, before the solid gravel can be reached, when continuous washing can be carried on. Opening a new claim is slow work, but in this one the superintendent has run an incline from the shaft to the rim rock, and has so arranged that the rocks removed by the derrick can from the start be thrown back out of the way, thus affording unusual advantages for opening. It will require about a month or six weeks' washing before the solid gravel that can be blasted is reached, after which time we shall expect big things of this claim.

The Elmore Hill, Southern Cross, Polar Star and Central claims continue washing at about the same rate as last week.

The Franklin and Summersett claims are being put in first-class order, and will both be ready for washing in a short time.

At Gold Run the North Star claim, belonging to the Miners' Ditch Co., has started up since our last issue. The Hoskin claim continues washing.

The Indiana Hill and Cedar claims are being put in working order as fast as possible, and everything in this district is in a very promising condition.

Yost Bet Mines.—The Nevada Hydraulic Mining Co., an extensive gravel mine, owned by Alvinza Hayward, of San Francisco, and run under the supervision of David Rose, embraces over 600 acres of mining ground, having an average depth of from 100 to 350 feet of gravel, is now fitted up to wash at four different points as soon as sufficient water can be had. They are running two streams of water at present, and have made two partial clean-ups, recently, with satisfactory results. The contract for running a bedrock tunnel, nine feet square and 2,000 feet in length, from Wilcox ravine, to tap the channel in this mine, was let to J. H. Bugbee, of San Francisco. He has over 200 feet completed, and is running three shifts per day. The contractor talks of having improved machinery erected in a short time, for hurrying its completion.

The Neece & West mine turned off the water about a month ago, and have since been busy making extensive preparations for the coming season, in running bedrock cuts, extending pipes and putting in new flumes. The work will be completed in about a week, when water will be turned on and washing resumed.

At the Waloopa mine the work of running a bedrock tunnel, 300 feet in length, is progressing rapidly and will be completed in one month, when the raising of a shaft and putting in new flumes will be commenced. They do not expect to be ready to do any washing in this mine for about two months yet.

The Red Dog mine being already fitted up for washing, the principal work being done at present is running powder drifts, which will be charged and exploded as soon as water can be had to wash.

PLUMAS.

New Company.—Pinmas *National*, Nov. 18: Last week we spoke of a foiaim having been located by a "gold finder," on the ridge north of Spanish ranch. We have since been informed that a company has been made up and operations will soon commence on a tunnel to open the channel. The tunnel will be 800 feet in length—mostly bedrock. Shares in the amount of $2,000 have already been taken. Many experienced miners have long predicted that the channel was rich, and we would not be surprised if the new company would strike it big.

Quartz Mine Discovered.—A short time since, Mr. Kline, of Taylorville, discovered a quartz ledge on Montgomery creek, a few miles east of Taylorville, which prospects well, and assays made show that the rock is worth about $60 per ton in gold. A company has been formed to open the mine, and work is already commenced. The strike created considerable excitement in Taylorville and extensions were taken up and locations made which cover nearly all the ground in the vicinity of the new discovery.

Eureka Contracts.—Last week the Eureka company let their contracts for wood, coal, timbers, spiling, etc., and the bidding was spirited. Mr. Meylert, of this place, got the wood contract for two years at $4.37½ per cord. W. W. Yeates got the contract for coal, timbers and spiling. The work of getting in the supplies for the present winter is about through.

SIERRA.

North Fork.—*Mountain Messenger*, Nov. 25: We visited Forest City a few days since and were somewhat surprised at the amount of work being done by the North Fork mining company. They have quite an extensive timber shed erected, and workmen are busy putting in place the timbers for a large dump about 300 feet long. Above the dump a large reservoir is being constructed by hlasting in the solid cement, principally. A flume is already finished to carry the water of the North Fork to the works. The company contracted for, and have on the way some 4,000 or 5,000 pounds of "T" rail, weighing 12 pounds to the yard. This company is spending a great deal of money and it all has to come out of the pockets of the stockholders as it is not in a position to take out any money, though a large body of paying gravel has been prospected. They still have about 800 feet of tunnel to run in new ground to get their works open in good shape. They hope to have everything in good working order by the time water comes in the spring.

Exchange Co.—David E. Williams, one-third owner in this claim, after much trouble and expense, has at last recovered all of his interest in the mine, and the owners will now proceed to put the property in first-class working order. They have recently struck an excellent body of gravel and the mine bids fair to prove one of the best in the county. It will be recollected that Mr. Williams sold his interest several years ago for $6,000, but by default of purchaser he was compelled to recover the mine at the end of a law suit.

La Porte.—This mining burg has yielded an immense amount of gold this year, with promise of doing as well next season, if there is anything like a good supply of water.

Strauck Gravel.—The Pioneer company at Grass Flat, near Port Wine, have struck gravel in their tunnel, but as to its richness we have not yet ascertained.

China Mining.—A China company is putting a wheel in the river just below our office to work the lot formerly owned by H. Spaulding.

Howland Flat.—Hunter's company are in light colored lava, and their tunnel is in about 1,500 feet, with 300 more to run before striking pay gravel.

Port Wine.—Monte Cristo mine, owned by M. Wolff, J. Robinson and C. Doray, is paying well. Most other claims here, only wages.

Gibsonville.—This old and historic mining camp now bids fair to equal if not eclipse the modern glory of our far-famed Forest City. The numerous mines there are yielding large returns this season, and the population is steadily increasing.

Soales' Diggings.—The noted mining camp is flourishing, with bright promise for the future. Large amounts of capital are now invested here, with every indication of bringing forth heavy interest to its lucky owners. Cleaveland & Siems hydraulic company are fixing up for winter, with fair prospects ahead; are rebuilding a reservoir, washed out two years ago, now nearly completed. Boyce Bros. have everything in good shape for water season, and are now employing about 15 men in their diggings. Union Hill company have been running a tunnel and cut in their mine, and raising out and blasting up their ground for the season, so as to be ready for the first rains. Poverty Hill claims are now all consolidated, and ready to be worked this season. They are now owned by San Francisco capitalists.

TRINITY.

Weaver Creek Flume.—Trinity *Journal*, Nov. 25: Only a few boxes will be added to this flume the present year, owing to the fact that the bed of the creek has to be left and the channel in which the flume will be set cut through solid bedrock a depth varying from 10 to 15 or more feet. This is made necessary by the main channel of the creek being so crooked that it would be difficult to make a flume follow its tortuous windings. A force of men have been employed steady for some weeks cutting through the rocky point, and they have probably broke into the channel of the creek above by this time. Another season's work will bring this enterprise into an excellent shape.

Miners hereabouts have very little water at present. Some of the claims manage to run about two hours a day.

TUOLUMNE.

Mining Accident near Columbia.—Tuolumne *Independent*, Nov. 25: On Wednesday, Nov. 22d, while Frank Sylva was engaged in digging a race across the lane leading from the Gold Spring road to Gen. Winchester's, a boulder, weighing probably half a ton, fell from the bank upon him, crushing and bruising his head and fracturing the skull back of the left ear.

We understand that a large portion of the Philadelphia gravel diggings have been sold to a San Francisco company for $10,000 cash.

VENTURA.

Petroleum Interests.—Ventura *Free Press*, Nov. 25: Oil interests are still looking upward, and the production is much greater than the demand. The big well of Adams, Thayer & Co. is producing about 60 barrels a day, and their other three wells are yielding about 20 barrels, while their tunnels, of which there are several, are producing about the same amount—making the aggregate production about 100 barrels per day. Of this amount the refinery here uses about 80 barrels a day, and outside parties, including several gas companies, are using about 15 barrels daily. The remainder of the production goes to waste, pending the enlargement of the refinery. Adams, Thayer & Co. have a lease of all the oil on the Ex-Mission lands for the term of 10 years, and claim that they can at any time increase their production to several hundred barrels a day, if necessary.

Nevada.

EUREKA DISTRICT.

Knocked Off.—Several miners have been recently discharged from the Eureka Consolidated mine. Superintendent Donnelly informs us, however, that the mine will be worked as usual during the winter.

New Superintendent.—R. W. Tully, of Nevada City, is among the recent arrivals from the west. He comes among us to locate permanently, having accepted the superintendency of the Geddes & Bertrand mine. We met Mr. Tully for the first time yesterday and found him to be a very clever gentleman. We welcome him to the Base Range and hope that his stay among us may be both pleasant and profitable.

HIGHLAND DISTRICT.

The Furnace.—Pioche *Record*, Nov. 22: From parties just in from Highland we learn that the furnace enterprise at that place is an assured success, that there is no doubt of it. The men employed are all old furnace men, and to judge from their deportment and general good spirits, if from nothing else, would be sufficient to inspire almost any one with confidence in the ultimate success of the enterprise. A supply of coal is all that is wanted to again start the furnace, which want will soon be supplied. It is of 20 tons capacity and when once under way, with a good supply of coal on hand, bullion will be turned out at a lively rate.

LAKE DISTRICT.

Mastodon.—Ward *Miner*, Nov. 20: From W. Crary, superintendent of the Mastodon mining company, in Lake district, we learn the following: This is a company of San Francisco capitalists organized for the purpose of developing this mine. There are 300,000 shares in the four mines. They started a tunnel in 1873 to tap the vein 200 feet below the surface. After getting in 25 feet struck a large cave; passed through this chamber of decomposed quartz and came to a lime rock formation; went 30 feet and passed through a quartz ledge 18 feet wide, then struck another cave about 50 feet in width. The distance to the main ledge is probably 70 feet further east. It is said to be free milling ore. They have been working under great disadvantage during the past three years, but are now firmly fixed. The ledge runs northwest and southeast and pitches to the east. While running the tunnel ore was found which assayed over $300 to the ton in silver. The croppings have assayed as high as $2,800 in silver and $252 in gold. Seven men are at work in the tunnel night and day, averaging from three to four feet every 24 hours. It is a slate rock formation on the east wall, and on the west wall, where the tunnel is being run, is lime. This company have secured water privileges and mill sites by U. S. patents and also patents to their four mines. The camp is abundantly supplied with wood and water. A road to White River valley is completed, passable for light teams, built last year by J. Ragsdale and other enterprising citizens of this county. Forty or fifty other locations in that district and on the surface of some of them paying rock has been found. This look substantial. This district joins us on the west.

LEEDS DISTRICT.

Watee.—Pioche *Record*, Nov. 24: We learn from parties just in from Leeds mining district that the owners of mines in that section are bound to have trouble in making the developments in their mines on account of water coming in on them. One mine that has already reached the depth of 55 feet is flooded so that work had to be suspended before going deeper, the owners contenting themselves with ohioriding above that level. The Virgin river flows near, and it is probable that other mines will meet with the same difficulty, and to work them it will require expensive pumping machinery. There is no travel now from any direction except from Pioche, and the only excitement is in Pioche in regard to the mines of Leeds district. There is no excitement there on the ground. A few houses are going up and only a few. There is no money in the country at present, and not likely to be until the mill is hauled down there and put up and gets to work. Miners that are now in that section with a view of prospecting find that the best chances have been located for a distance of 2 miles, and that there is no chance to get in on any of the locations except by jumping, which will eventually entail a lawsuit.

TUSCARORA DISTRICT.

Strike.—Elko *Independent*, Nov. 18: Justice Meacham has discovered the richest kind of gold diggings about half a mile west of the town of Tuscarora. The gold is free, and is found in what appears to be porphyry. The Chinese have been engaged in surface mining in the vicinity for several years, and the supposition is that there is a rich gold-bearing lead in the immediate vicinity.

WARD DISTRICT.

Running.—Ward *Miner*, Nov. 20: The furnace is running night and day, turning out from four to five tons of bullion per day. 1,350 bushels of charcoal used in a day, which costs 27 cents per bushel, and will continue to pay that sum until the 1st of March. There arrives 20 tons of ore per day from the Paymaster and 35 to 40 tons from the Defiance.

WASHOE DISTRICT.

Bullion.—Gold Hill *News*, Nov. 29: The main north drift and east cross-cuts on the 1400-ft level afford no new features whatever. The face of all the drifts on that level are in soft porphyry and ledge matter. The face of the south drift, on the 1500-ft level, is showing a fine character of lively quartz, with every indication of a large concentrated body in that portion of the mine. The north drift on the 1500-ft level being run for the double purpose of ventilation and prospecting the ledge, will in all probability complete a connection with the north winze to-day. The men in the opposite drifts were so near each other last evening that they could converse with each other with ease, so that the connection cannot long be delayed. The north drift on the 1700-ft level is steadily advancing, following the west wall of the ledge, and shows no important changes during the week. The porphyry in the face of the north drift, on the 2000-ft level, running through the Alpha ground, is becoming softer and carries streaks of quartz of a very lively character. The ventilation of the mine is gradually improving in every part. No trouble whatever has been experienced with the ventilation in the north drift on the 2000-ft level.

Con. Virginia.—Daily yield, 400 tons of ore. The ore breasts on every level from the 1400 down to the 1550-ft level are yielding rich ore and looking well at all points. There has been no delay with the mills for this month, and the yield of bullion up to the present time is over $100,000 in excess of that of last month at the same date. The final clean-up at the close of the month will probably increase the returns another $100,000 or more. We can add nothing to our former reports of the extent and richness of the ore on the lower levels. The west drift on the 1650-ft level of the C. and C. shaft is in a distance of 335 feet, the face in good running ground. With reasonable success this drift will reach the ore vein by or before the last day of December next. The north drift on the 1700-ft level has been put in the best of repair and is again advancing at a steady pace on the northward.

California.—Daily yield, 400 tons of ore, keeping the mills all running up to their full crushing capacities. The ore breasts are showing splendidly at all points. The yield of rich ore from the 1400-ft level is steadily on the increase as the stopes advance to the northward. On the 1500, 1550 and 1600-ft levels the ore stopes never appeared better or gave better promise for the fu-

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The Engineer.

The North Sea Canal.

This great engineering work, which, next to the Suez canal, is the largest undertaking of its kind in the world, was opened on Wednesday last by the king of Holland. Hitherto the only way to Amsterdam for vessels of more than five-feet draft was the North Holland canal, connecting that town with the Helder, or Nieuwe Diep. It was constructed in the reign of William I., is 51 miles long, very tortuous and narrow, and only available for vessels drawing 16 feet of water. The idea of joining Amsterdam with the sea by a direct communication had long been entertained and investigated by various committees, and though many were incredulous of its ever being possible to carry out such a work, a concession was given in 1861. In 1863 a company was formed, and in 1865 the well known firm of contractors, Messrs. Henry Lee & Sons, of Westminster, undertook the execution of the entire work for a sum not far short of £2,500,000 sterling.

Our English exchange, *Iron*, describes the new work as follows: This great enterprise may be said to consist of three parts: I. The shutting out of the tidal waters of the Zuyder Zee from the Lake Y (pron. I), situated to the west of Amsterdam. 2. The making of the canal proper. 3. The making of a harbor on the shore of the North sea at the entrance of the canal. The first part was executed by Messrs. Lee, in conjunction with and under the management of Mr. T. C. Watson, M. I. C. E., and to his ability and vigilance is due the successful completion of this part of the work in 1872. It consists of a sea-dyke, cutting off the waters of the Zuyder Zee to the east of Amsterdam, which is intercepted by large locks having three basins and a pumping station containing three powerful pumps. The sea-dyke is admitted to be the finest of its kind in the kingdom. The engines and pumps, constructed by Messrs. Eastons & Anderson, are the largest in Holland, being each 75-horse power, and discharging together over 74,000 cubic feet of water per minute.

The second part was in the hands of the late Mr. S. Freeman, M. I. C. E., but its completion is now intrusted to Mr. Watson. It consists of cutting the canal through the sand-hills or dunes near the North sea, and of the construction there of large locks with two basins, the bigger one being able to accommodate vessels 390 feet long, 59 feet wide, and drawing 27 feet of water. Nearly 8,000,000 cubic yards of sand have been removed from this part of the canal alone. It then passes through the Lake Y, where banks had to be made on each side and the channel dredged to its proper depth. This was done by Mr. Freeman in a very ingenious and quite novel way, by attaching centrifugal pumps to bucket dredgers, and by their means passing the sand through pipes to a distance sometimes of 400 yards and more. Five million cubic yards of dredging had to be done in this part originally, but on account of the company being continually called upon to sluice off the water by the North sea locks to prevent the flooding of Amsterdam, siltage was brought into the canal to the extent of nearly 3,000,000 cubic yards. The land on each side of the canal has been reclaimed and has fetched enormously high prices, amounting in some cases to £120 an acre. There are nearly 12,500 acres of reclaimed land, and by the concession they become the property of the company. The canal will, when fully completed, be 23 feet deep, 20 yards wide at bottom, and have a varying width of from 70 to 130 yards. Its length is 16 miles.

Mr. Darnton Hutton, M. I. C. E., has charge of the third portion, which consists of making a harbor on the coast at the entrance of the canal. This harbor is situated just half-way between the Hock van Holland (entrance into Rotterdam) and the Helder, or Nieuwe Diep, which are nearly 100 miles apart, and will form the only refuge for vessels between these two places along this barren and sandy coast. The canal and harbor were already so far advanced in the latter part of September as to allow of the passage of the iron-clad turret ship *Koning der Niederlanden*, the largest and most recent addition to the Dutch navy. Since then many other steamers and yachts have passed out of Amsterdam this way. This extensive work was planned by Sir John Hawkshaw. He and Mr. Waldorp are the consulting engineers for the company, and Mr. Dirks is the resident chief-engineer. Trade having been greatly on the decline of late years, the opening of this new waterway has raised great expectations in the mercantile community of Amsterdam, and great preparations were made for the due celebration of this important event.

Suez Canal.—The filling up of the Suez canal is an event that may now be considered indefinitely postponed. Last year between the two seas only 52,700 cubic meters of "stuff" were removed, and the canal was navigated with facility by steamers drawing as much as 27 feet, and over 400 feet in length. The bed of salt which forms the bottom of the Bitter lakes is gradually dissolving, so that this portion of the canal is being gradually but steadily improved, and with the increase of vegetation along the banks of the canal, there is a prospect of the production, in a not distant future, of a fertile and populous tract of country, out of a sandy waste.—*Journal of the Franklin Institute.*

The Eads Jetties System.

Chief Engineer James B. Eads, in the conclusion of his report, sums up the work thus far done on the jetties at the mouth of the Mississippi river as follows:

In 17 months after the passage of the act, and within 14 months from the commencement of the work, the jetties have solved the problem presented at the mouth of the river. In their unfinished condition they have withstood with but trifling injury two very severe storms, one surpassing in violence any known in that locality for many years; they have demonstrated the entire ability of the delta formation to safely sustain the works necessary to control the river discharge; they have not been overturned by mud lumps, nor swallowed up by quicksands, nor undermined by the river current; and although largely over 3,000,000 cubic yards of earth have been swept out from between them into the gulf, and the channel across the river has been deepened from eight or nine to 21 feet, no evidences of a re-formation of the bar have yet occurred to justify the belief that any extension of them will be necessary.

The resident engineer at the Mississippi jetties has reported to Mr. Eads, who is now in St. Louis, that the shoal above the head of South pass is rapidly disappearing in the channel, and claims that it is now evident that whatever volume of water is required in the pass will be completely under control. The submarine sill between the parallel dykes which form the entrance will be finished this week. The St. Louis *Globe-Democrat* predicts that within a few weeks the river will be thoroughly harnessed, and the commerce of the Mississippi valley opened to the world.

Railway up Mount Washington.—Taking the train for the Fabyan house at 7:20, we leave the cars at the Mount Pleasant house, prepared to walk to the base, there to take the Mount Washington railway to the summit. There are two routes to the base—one by a turnpike, and the other by the Mount Washington extension, six miles in length. This was opened early in July, and has been in successful operation since. This road, for the last half, carries the heaviest grade of any common railway—no less than 290 feet to the mile in the steepest parts. An engine built for the route, and a very light observation and baggage car, compose the trains. I never before realized any up-hill when walking a railroad, but it is quite noticeable here. Great credit is due Superintendent Dodge, of the Boston, Concord and Montreal railroad, for his energy in completing this road, so that passengers can now have uninterrupted rail communication between Boston and the summit of Mount Washington.

After a brisk walk of an hour and a half I have "covered" the extension and reached the proper mountain railway with its peculiar center rail. In regard to this rail I should like to correct an impression that may exist in the minds of some, as it did in mine until I saw the road face to face. Instead of the broad circumference of an ordinary flat cog-wheel straightened out, the rail better resembles a long, serpentine iron ladder, with strong rounds one and a half inches in diameter and four inches apart from center to center. Into these spaces the stout center cog-wheel of the locomotive plays—thus carefully clawing its way to the top without accident.

New Map.—The United States Centennial map has just been placed in the west end of the government building. It was prepared for the exhibition at the general land office, and is 17 feet in hight by 22 feet in length, and divided into nine sections, each mounted on a separate stretcher. The whole is enclosed in a massive frame of walnut, bird's-eye maple and ebony, and weighs 2,000 pounds. It shows the extent of all surveys, Indian and military reservations, land grants, railroads, canals, cities, and towns, and, in fact, every possible detail, from the most authentic sources.

St. Anthony Falls.—The government works undertaken for the protection of the Falls of St. Anthony will be completed about the middle of this month. The immense wall of solid concrete, which is to prevent the water from percolating the sand-rock and undermining the limestone ledge, is nearly finished. This wall is 1,875 feet long, extending across the river and running underneath the bank on each side. It is 40 feet high, 7 feet thick at the base and 4 feet thick at the top, where it connects with the ledge over which the waters of the Mississippi pluuge.

Kennebec River.—In the Kennebec river an engineering work for the improvement of navigation is going on, which is somewhat similar, though upon a smaller scale, than that at Hell Gate. "Dry Dock," near Richmond, is being removed under the direction of General Thom. In the neighborhood of this rock there is a strong tidal current. In one blast recently there were four holes drilled, 17 feet deep, and filled with vulcan powder. The mine was exploded by means of a battery, and the discharge was satisfactory.

An assay was yesterday made of some debris thrown up in excavating for the new Main street sewer in Gold Hill. The result was: Gold, $4.06; silver, $7.54; total, $11.60 per ton. The sample was picked up at random, without selection.—*Virginia (Nev.) Enterprise.*

Golden Gate Park.

During the week we enjoyed a ride to the Golden Gate park with Hon. William Alvord, a member of the park commission. We take particular interest in the progress of this enterprise because it affords city people a much needed opportunity for recreation among scenes of natural beauty, and because the commissioners, in their efforts to transform the sand dunes upon which the park is laid into groves of trees and sodded slopes, are solving questions of much practical importance in many of our coast counties.

The ride over the sounding roadways of the park shows what an excellent material the red shale is for road making in pleasure grounds and private landscape gardening in localities where water can be had for sprinkling the road. We are familiar with this red shale road from memories of one of the handsomest college grounds in the East, the campus of Hamilton college. It affords a most pleasant contrast with the green of the trees and sward, and does not tire the eyes beneath full sunshine as does a glaring white roadway. The commissioners have this material in abundance within their own lands, and it is a fortunate possession in the way they have used it.

A view of the park shows that the commission is achieving general success in their efforts in reclaiming the sands. They are greatly crippled in their work from lack of funds, and the work of propagating and setting proper trees and plants, which should now be pushed rapidly, is almost arrested by the withholding of needed money. This seems unwise, because a year of propagating and planting, now in the infancy of the undertaking, will be worth ten in the future, so far as the enjoyment of the park by the present generation is concerned. But, notwithstanding the limits which are placed upon present work, the growth which is being attained shows the wisdom of past efforts. One thing is demonstrated, and that is that when the transfer of property was made by which the city gained the title to the park, there was a richer inheritance gained than those who transferred it thought. The drifting sands are found to foster growth of tree and shrub and plant far better than was anticipated. The lupine, which was freely sown, obtained a good rooting, and a good idea of its progress can be had by contrasting the area of the park with the sand fields on either side, which have been left without efforts to reclaim. The shrub takes eager possession, branching low, and single plants are soon transformed into low mounds of verdure, effectually anchoring the loose sands beneath the circles. The lupine, although, of course, less handsome than smooth, swelling curves of green sward, still gives a pleasant color to the dunes and banishes the "barren wasteness," which is their normal characteristic. Besides the lupine there are other plants and shrubs which are being introduced, and many of them show signs of success.

Commissioner Alvord looks upon the reclamation of the sand dunes as the salvation of the city from the drifting sands which were rapidly progressing across the peninsula from the ocean to the bay. The tendency of the sands inward is easily demonstrated by observation, and it is indeed a salutary fact that the combat of the city with the sand should be conducted by the commissioners on the edge of the ocean instead of forcing future generations to fight it on our streets. We have spoken of the edge of the ocean; at this point the commissioners are now disputing the ground with the mild but persistent Pacific. They are constructing three lines of high brush fence, in parallel lines, above mark of high tide, and after thus inducing nature to raise barriers against itself they will build roadways upon the natural embankments and turn sea walls into boulevards. This is a very interesting feature of the present work of the commission, and its ultimate success is very desirable.

We were particularly interested in the growths, aside from lupine, which the commission are securing upon the sands. Some parts, under cover of trees and eminences which break the sand drift, are covered with a perfect sod, shorn like a lawn and beautiful with thickly matted grasses. Trees are succeeding admirably: acacias are in bloom and vigorous growth, pines and cypress and the different sorts of eucalyptus are thriving. In some favorable locations the trees have attained of 20 and 30 feet, and are growing rapidly. The disposition of these trees to grow on the open sands is now being determined, and they may be seen everywhere peeping up above the lupine. The prospect for their successful growth is very good. Pines, acacias and eucalypti are fresh and green even in the most exposed positions. The experiments which the commission is making in this direction are exceedingly valuable to our farmers in the coast counties. If they succeed there will be nothing to prevent the barren wastes upon the shores being transformed into profitable forests, not only beautifying the shores and furnishing valuable fuel, but serving to break the sweep of the trade winds and thus tempering the breezes to the thousands of dairy cattle upon our seaside pastures. The questions of experimental growth cannot be attempted except in a small way by individual farmers because of the loss which failure entails, but the results in this park can be acted upon by all who possess similar lands. Thus the park may become an experimental forest, and give us the growths which actual trial shows fitted for the peculiar conditions which prevail.

We trust this commission may be enabled to prosecute this useful work. Their roadways are excellent for the speeding of city horses, their grassy slopes and rustic bowers and flower plots will delight gensrations of city people. This is all good; but a matter we deem of more importance to the State at large is that of reclaiming drifting sands and transforming them into the forests we need so much. In this direction we hope to see the work prosecuted to the end.—*Rural Press.*

Mining Prospects in Inyo County.

The Coso *Mining News* says: Never, since mining operations commenced, has the prospect for a brilliant future been so good for Darwin as at present. We said to our readers, some time ago, that the attention of capitalists was directed to the big bonanza, or that many of the moneyed men had gone to the Centennial, and we could not expect them to pay any attention to "outside properties." The Centennial is about over, so is the election; and as for the big bonanza, it accommodates a few of the kings of California street. Now, however, the princes step in and in their desire to become kings, they commence where they think and believe there is a show to win, and consequently they are investing their money in Darwin, Lookout and Lee district mines. The stages now arriving are loaded with passengers, most of them of the class we speak of—moneyed men, who have heard of our properties and have come to examine them. In no instance, that we are aware of, have experts sent by them made any other than a favorable report—except one or two who were instructed and paid for doing otherwise. It is true, none of our mines are, as yet, dividend-paying, but it is not the *fault of the mines*. This we have endeavored to show heretofore, and believe we have done so satisfactorily to all who know anything at all about the management of our mining affairs. It is to be hoped that in course of time this difficulty will be obviated, and that we shall soon be able to report at least one dividend-paying mine.

Let us review the situation and see what can be counted upon for the mineral portion of Inyo county. We now have in operation the three mills at Independence, two furnaces at Cerro Gordo in full blast, with strong probabilities that the Swansea works will be started up soon; then there are the two furnaces of the Modoc company at Lookout running successfully, while here in Darwin we have the New Coso furnace running, and an order has been sent below for another water-jacket. The works projected, and which will be in operation within the next six weeks, are a ten-stamp mill for the Minnietta Belle mine at Lookout, a thirty-ton furnace for the Hidalgo, here at Darwin, the two furnaces of the Defiance company, besides a good probability of the Cuervo company starting their furnace.

Thus it will be seen that we shall have in active operation, and all running at the same time, four mills and nine, perhaps ten, furnaces in Inyo county within a few weeks, and all sending bullion to the front. This must certainly have a telling effect in San Francisco, and ere the spring opens we may look for an influx of capital to as great an extent as that ever experienced by any other mineral section in its primeval state.

The only drawback to their successful and continuous operation that we can see is the fact that their supplies of coal now lie in the mountains, several miles away, and unless teams can be had to get the coal out before the snow falls to a great depth, they will all have to shut down in the dead of winter. There is plenty of coal already burnt, but teams are scarce. We hope this will be attended to in time, so that Darwin may not have another setback.

Mining Enterprise in Calaveras.

We are glad to know, says the Calaveras *Chronicle*, that there are mining enterprises in view, in the upper country, that when carried out will materially enhance the prosperity of that section of the county. We have it from good authority that Mr. W. V. Clark, proprietor of the Railroad canal, intends to extend his ditch to Mosquito Gulch the coming summer. The proposed extension will take the ditch 10 miles through a section of mining country that has hitherto been unsupplied with water facilities, and cannot fail of resulting in the opening and successful working of a large number of claims. An extensive area of mining ground, as yet comparatively unprospected, will be covered by the proposed lengthening of the canal, and with low rates for water we look for an energetic revival of gravel mining in the upper districts. The ditch has already been extended as far as Independence, and Mr. Clark is urging forward preparations for the opening of two mammoth hydraulics at that place. Everything will be in readiness for the commencement of piping in a few days. We also understand that it is Mr. Clark's intention to erect a five-stamp quartz mill at Mosquito the coming season, more for the purpose of affording facilities for prospecting the numerous ledges in the vicinity than anything else. These mooted enterprises are gratifying evidence that life has not entirely died out of the upper country yet, and that we may confidently look for lively times in that direction with the opening of spring.

West Side Irrigation.

Reports come that the surveying party on the ground of the west side of the San Joaquin valley is pursuing its work and the character of their report to the governor is foreshadowed. From an engineer who recently left the survey of the West Side irrigation canal, now being prosecuted under the direction of Wm. Hammond Hall, chief engineer, the Stockton *Independent* learns some facts relative to the project. The estimated length of the canal from Tulare lake to Antioch is 185 miles. It will be navigable throughout the whole distance, as it is to be constructed to carry five feet depth of water. The present plan on which the survey is being made, contemplates a canal 126 feet wide on the bottom, with slopes of three feet horizontal to one in depth, on the outside, and one and one-half on the upper or in-side. The grade to be used will be three inches to the mile, giving, for the body of water, a current sufficient to run a large quantity without damaging the banks. For the first 10 miles from Tulare lake across the Summit lake divide, the average cutting will be 10 or 11 feet to the mile, growing lighter as it gets further out on the plains. It is thought the survey will be completed and the line finally located about the 1st of January, after which some months will be required to make up the estimates, plans, maps, profiles and report, the 1st of May being the time fixed for reporting to the governor of the State the result of the surveys. The party had reached a point opposite Hill's Ferry a week or more ago. The party is a very complete one, consisting of 23 men, with a full camping and transportation outfit. The line runs parallel with the San Joaquin and Kings River irrigation company's canal for about 40 or 50 miles, being from one to two miles distant from it, and about 30 feet higher in elevation. The scheme, as planned, is an immense one, and its final completion, if it is ever built, says the *Independent*, will be hailed with joy by every land owner in the valley. The vastness of its beneficial results cannot be fully realized or comprehended.

TEMPERED GLASS.—A singular instance of the behavior of tempered glass, says the *Times*, comes to us from Mrs. Nassau Senior, who writes to say that on the 11th of last month she furnished 12 gas burners with tempered glass globes purchased in London, and having the veritable label of M. de la Bastie affixed to each. Two of these globes were fitted on burners in her bedroom, and on the night of the 6th inst., after the gas had been extinguished for exactly an hour, one of the globes burst with a report and fell in pieces on the floor, leaving the bottom ring still on the burner. Those pieces which were, of course, found to be perfectly cold, were some two or three inches long and an inch or so wide. Curiously enough, they continued for an hour or more splitting up and subdividing themselves into smaller and still smaller fragments, each split being accompanied by a slight report, until at length there was not a fragment larger than a hazel nut, and the greater part of the glass was in pieces of about the size of a pea, and of a crystalline form. In the morning it was found that the rim had fallen from the burner to the floor in atoms. It is interesting to note these facts, as they indicate that the tempering process affects glass in a most peculiar manner. It would appear desirable that an exhaustive physical investigation should be made in respect of this singular material.

AMADOR COUNTY MINES.—The Amador *Ledger* says: The mining interests of Amador county continue in a very prosperous condition. This prosperity is especially noticeable in the northwestern portion of the county, in the towns of Amador, Plymouth and Drytown. Everything indicates a yield of bullion during the coming winter considerably in excess of the production of several years past. We are just entering upon a new era of mineral development, which promises as solid and satisfactory results as any previous period in the county's history. The only want we feel is capital to develop our auriferous resources. The small capitalists within our boundaries have the utmost confidence in the richness of the mineral belt yet to be explored. Outside assistance, however, is required to prosecute the work on a scale which its importance demands. The capitalists of San Francisco would do well to turn their attention to Amador county as a profitable field for the investment of money. We are safe in saying that the returns would be proportionately greater than those which attend mining operations on the other side of the mountains.

THE San Jacinto tin mines, between Riverside and Temescal, are pronounced by experts to be as rich as any in the world, and are the only tin mines discovered in the United States. We were informed that arrangements were being made with a German company to work the mines. Many European tin mines assaying only 4 per cent. prove good investments, paying well all the time. The San Jacinto ore assays 18 per cent., and the owners expect, reasonably too, large returns on their money. Silver has also been discovered in the same neighborhood, but not in paying quantities; we also heard of coal croppings.—*Anaheim Gazette.*

USEFUL INFORMATION.

Preservation of Timber.

The *Building News* gives the following valuable information: Presuming the timber has been felled at the proper time and stacked with care, and is delivered in a good state ready for the builder, the means employed to preserve it are various, and must depend in a great measure upon the nature of the work for which it is to be employed. For instance, if it is for external work of a common character, the best preservative is to well paint it, and, while still wet, strew it with sand, and, as soon as the paint has perished, repaint it. For posts and piles exposed to the action of moisture in a great degree, the best means is to char the wood, as it then in a measure becomes incorruptible. Semple advises scorching the wood all over, and, while still hot, rubbing it with linseed oil and tar; the scorching can be effected by passing over the timber a powerful flame produced by coal gas and a blow pipe. As a preservative against worms nothing can be done better than to saturate the wood with any of the oils. As to the patent methods for the preservation of timber, there is one by Kyan, patented in 1832, which consists in impregnating the timber with corrosive sublimate, and another of a similar kind patented by Payne in 1841. The best preservative for timber I can recommend is (after having obtained the best seasoned, and when worked for the various purposes required), for it to be well rubbed with oil, and, when framing it in its place in the carcase of the building, taking care to keep it as much as possible from the masonry, and allowing the circulation of plenty of air without being liable to action of the weather, and when the carcase is complete, allowing it to stand as long as possible before the timbers are covered in, so that they may have, as it were, a second seasoning.

Wet and dry rots are two forms of decay which attack timbers exposed to the action of the weather, and the cause of both may be said to be heat with moisture. Confined air and evaporation cause dry rot, and imperfect evaporation wet rot. As a preventive against these rots the timber should be well seasoned, and if used where liable to be under the influence of sun and rain, should be well painted. If not painted they must be impregnated with linseed or oil of tar; but the best preventive is to allow a free circulation of air around the timbers, and the walls to be allowed to dry thoroughly before the introduction of the timbers. Should the timbers have taken either of these rots very little can be done to preserve them. If the rot is perceived to be at the end of beams only—and here it generally commences—the best way to preserve the rest of the timbers would be to cut away the decayed portion and scarf with sound. Should this not be practicable, the wood should be scraped and cleaned of all fungus or extraneous matter, and then impregnated with any of the oils, or some of the patent methods referred to above.

ETCHING IRON AND STEEL.—The fact has been demonstrated quite satisfactorily of late that much information is obtainable as to the chemical composition and physical character of iron and steel by etching it, and noting the changes which take place during the operation and the appearance of the surface after it is completed. In this connection the most valuable etching substance is found to be a mixture of equal parts of hydrochloric acid and water, to which is to be added a trace of chloride of antimony, one drop to the quart of acid. The latter substance, it is said, seems to render the iron less inclined to rust, so that after washing thoroughly in warm water and applying a coat of varnish, the etched surface may be preserved quite clean. The smooth surface to be etched is first surrounded with a ridge of wax an inch high, and the water poured into the disk thus formed at a heat of 55 deg. to 65 deg., Fah. The time required is until the texture is visible. When the etching is finished, the wax is removed, the iron washed first with water containing a little alkali, then oleen water, followed by brushing, drying and varnishing.

CENTENNIAL FIGURES.—The following are the official figures concerning the exposition:

Month.	Days.	Paid.	Total.	Receipts.
May.....	19	378,980	613,496	$189,490 36
June.....	26	695,666	932,177	347,833 40
July.....	26	635,518	906,447	318,192 26
Aug.....	27	908,084	1,175,314	415,659 26
Sept.....	26	2,130,991	2,439,689	928,056 00
Oct.....	26	2,334,530	2,663,879	1,160,811 50
Nov.....	9	918,956	1,038,391	453,700 00
Total..	159	8,004,326	9,789,392	$3,813,749 76

A recapitulation of the above shows the following:

Number of days open	159
Paid admissions	8,004,325
Free admissions	1,785,067
Total admissions	9,789,392
Grand total of receipts	$3,813,749.75
Average daily cash admissions	50,341
Average daily total admissions	61,568
Average daily receipts	$13,915.85

TO REMOVE PUTTY.—A block of iron about two and a half inches long by one and a half inches square, flat at the bottom and drawn out for a handle with a wooden end, like a soldering iron, is an excellent implement for removing old and hard putty from sashes. When hot (not red hot) the iron is placed against and passed slowly over the putty, which becomes softened by the heat and is rendered easily detachable from the wood.

Spontaneous Combustion of Oily Refuse.

Mr. J. J. Coleman, of Glasgow, has recently transmitted to the *Societe Industrielle* of Mulhouse, France, a memoir on the spontaneous combustion of oily refuse, and on the relative inflammability of the different oils employed for lubricating purposes. He describes a series of experiments upon fragments of cotton, linen, jute, and woolen waste, saturated with oils of different natures. The materials were placed in a box of tin, having a double bottom, in which steam entered, so that the part which received the refuse could be maintained at a temperature of 180 deg. Fah. A thermometer was inserted in the oily substance so that the variations of temperature occurring therein could be noted.

The results obtained show, first, says the *Scientific American* in a summary, that any vegetable or animal oil inevitably takes fire after a few hours, under the above conditions. On employing cotton waste the mass burns quickly and with flame, in contact with the air. Wool refuse is slowly transformed into a black carbonaceous mass. Second, the addition of mineral oil—known as lubricating mineral oil—serves to retard the spontaneous combustion of vegetable or animal oil if mixed in small quantity. If a large amount be added, inflammation is entirely prevented. The mineral oil used by Mr. Coleman is a very dense product (density 890), having great viscosity and emitting no inflammable vapors, even in contact with an ignited body at any point below 338 deg. Fah., or in other words, remaining safe at temperatures at which mixtures of less dense mineral oil or colza oil burn. The addition of 40 per cent. of mineral oil is sufficient to prevent spontaneous combustion. Twenty per cent. doubles the time necessary to determine conditions favorable to the same. Spontaneous combustion occurs most quickly when the cotton is soaked with its own weight of oil.

PORTLAND CEMENT ON WOODWORK.—Portland cement has many uses in the garden and elsewhere, not generally apparent. Some of them are enumerated by the *Garden* as follows: When made into a thin solution like whitewash, this cement gives woodwork all the appearance of having been painted and sanded. Piles of stone may be set together with common mortar, and then the whole washed over with this cement, making it look like one immense block of gray sandstone. For temporary use, a flour barrel may have the hoops nailed, so as not to fly apart, and the inside washed with a thin paste of Portland cement, and it will serve for a year or more to hold water. Boards nailed together and washed with it make good hot water tanks; and it is of use in so many ways that it may be regarded as one of those peculiar things in a garden which it is always good to have at hand.

GOOD HEALTH.

Diphtheria.

This fatal disease is now making sad inroads among the children in many parts of our State. All information concerning the disease is of the greatest importance. We find a long essay on the subject in the *Physician and Pharmaceutist*, by Dr. R. Tauszy, from which we quote as follows:

We have herewith, I hope, conclusively proved the correctness of the following propositions:

1st. That diphtheria is dependent upon minute vegetable organisms, which invede the system through an abraded skin or an abraded and inflamed mucous membrane.

2d. That bacteria are easily distinguishable, microscopically, from detritue, fat or albumen, by the glycerine, acetic acid and heating test.

3d. The contagion of diphtheria is not a gaseous substance.

4th It is most assuredly first a local disease, and, after existing a certain time, becomes general.

5th. Catarrh, nasal and pharyngeal, one or both, always precedes it, or may be regarded as its first stage.

6th. That croup and diphtheria are not identical diseases; croup exudations never enter the circulation; croup always remains a local disease, and kills only by mechanical obstruction, of the larynx for instance.

A few words as to treatment. Dr. Jacobi's suggestions in this respect are so good that I will copy most of his remarks bearing upon this point as deserving to be adopted generally. Dr. Jacobi says: "With the local attendance the large majority of cases will recover; without it, they will die." How can we imagine an emuiform poison to lodge on a tonsil, or the soft palate? Is this not more apt to enter the lungs, and through it the circulation? Dr. J. further says: "There is no infectious disease that can be more readily and more satisfactorily managed than diphtheria. A case of diphtheria, mild or severe, ought to be attended at once, without loss of time. Many a case of diphtheria I have not attended, because I believe I have prevented it."

Dr. Jacobi suggests: "Isolation, nasal and pharyngeal catarrh must be cured; hypertrophied tonsils must be resected at a time when no diphtheria prevails. Avoid all bloody operation. Chlorate of potash one-half ounce to a drachm, internally taken during 24 hours. Disinfection is our main reliance, our sheet-anchor." The Doctor's warning is very appropriate, where he says: "In children, especially, the tendency to month catarrh, caries of teeth, pharyngeal and nasal catarrh, congenital and acquired enlargement of tonsils, exposure to cold air, inhalations of dust, cauterization, are just as many invitations to the diphtheritic poison." Dr. Jacobi speaks highly of perchloride of iron as an astringent and disinfectant. He gives in diphtheria 15 drops every half or every hour. In croup, which very wisely is considered a separate disease by Dr. J., not at all identical with diphtheria, he recommends ice externally, emetics as required, lime inhalation for the purpose of dissolving the membranes. In fever, washing, bathing, ether, wine, brandy, camphor, musk, ammonia. In nasal diphtheria inject the nostrils with two to four grains of carbolic acid to the ounce of water every hour.

Salicylic acid is now used in preference; from two to four grains every hour, or every two hours, according to the severity of the symptoms, should he given to a child between five and ten years old; smaller and larger children according to their respective ages. It is best to give salicylic acid in powder. It thus comes in closer contact with the bacteria, which it kills, than when given in a liquid form. The permanganate of potash, grain x to the ounce of water, of which a teaspoonful is mixed with a usual tumbler of water, may be used as a mouth-wash even during health as a prophylactic.

Signs of Health and Debility.

Dr. Reginald Southey, in one of his lectures on "Individual Hygiene," sums up the signs of sound health and debility as follows: A sound constitution depends upon a body well constructed both inside and out, and upon a balance of functions, circulation, respiration, innervation, digestion, sanguification, each well, all unconsciously fulfilled; upon a temperature well maintained all the body over; and last, but by no means least, upon good habits of life. A man, as Celsus said, is not to live too much by rule; he should be the master, not the slave of his body.

The state of health is a state of very perfect hæmatosis, in which the tissues of the body are neither too moist nor too dry. Flabby muscles and hydræmis of the intercellular tissue are suggestive of debility if not of actual disease. There appears to be a maximum of solidity, a ratio between weight and night and girth, which coincides with that period of life when the energy or vigor is greatest, when each individual is capable of his greatest feats of strength and endurance; it is better marked in males than in females, and happens at or about the 30th year of life. This is the quality of body which the hygienist aims at prolonging.

The following signs may be accepted as evidence of sound health: 1. Individual adaptability: the capacity in man to adapt himself to extremely opposite conditions of existence without suffering insnergy. 2. Endurance: the capacity of supporting considerable bodily or mental labor without suffering from fatigue, or of repairing the latter quickly. 3. Self-command: the capacity of controlling the emotions, blunting as well as sharpening the sensations of will. 4. Resistance to morbific influences: the capacity of eliminating all poisons quickly by dint of sound organs of excretion.

The following signs of debility ought to be enumerated as well: 1. Deformity, obesity, leanness: bad construction of the skeleton or of its clothing. 2. Personal inadaptability: liability to disturbance of either mind or body upon slight provocation, such as change of food, clothing, climate, or any interruption of the ordinary habits. 3. Lack of endurance: small staying powers, requiring long rest to repair fatigue. 4. Small emotional control: the persons who are quickly provoked to anger, or are speedily moved to tears or laughter, exhibit feeble nervous system, and are prone to nervous disorders. 5. Proclivity to morbific influences: those whose organs of sanguification or of elimination are damaged; who, although equal to ordinary calls upon them, exhibit their inefficiency by succumbing to every contagion, miasma, or poisonous influence that they encounter.

SEA WEED FOR OBESITY.—A writer in the Paris *Medical* recommends the administration of sea water in the treatment of obesity, the dose prescribed being a small glassful three times a day, in a little fresh water or milk. Considerable attention has also been recently given to the gulf weed, *Sargassum bacciferum*, which has been recommended by physicians for the same purpose. The fluid extract manufacturers, always on the lookout for "novelties," have recently introduced a fluid extract of sea weed, under the name of *Fucus vesiculosus*. It is asserted, however, by some physicians who have used this extract, that it is worthless, and that an infusion, or "tea," made from the weed, should be used. The peculiar virtues ascribed to sea weed are doubtless due to the presence of iodine, though it would seem that the quantity present would be too small to produce any marked effect.

ANTIDOTE FOR MUSHROOM POISONING.—Prof. Schiff has recently demonstrated that muscarina, the poisoning principle of mushrooms, may be promptly and efficaciously counteracted by the administration of atropine or daturine, but particularly by the latter.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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San Francisco:
Saturday Morning, Dec. 2. 1876.

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Improved Portable Hoisting Engines. Hawkins & Cantrell, S. F.; Machine and Model Works, I. A. Heald, S. F.; Eagle Quicksilver Mining Co.—Sals.

THE AMERICAN JOURNAL OF MICROSCOPY.—The experiment of a msgazine wholly devoted to microscopio atudy and literature has proved a success. The publication which we have named above has completed its first volume. It haa begun in a small way to be sure, charging but 50 cents a year, but even a child of this size has taught the oldest scientific msgazine in this country a lesson, aud exploded what seems to have been a deliberate fraud perpetrated through its columns in name and form of science. We refer to the so-olaimed discovery of ooe "Prof Wilsou" that silica in the shape of diatoma entered from the soil to the straw of grain, and ou the strength of this claim endeavored to swindle the farmers of the country by selling them diatomaceous fertilizers. This awindle was expoaed by the *American Journal of Microscopy* aud it has earoed the honor which its vigorous youth now bears in scientific circles.

JAMES E. GORDON, importer and dealer in hardwnre, and manufaoturer's agent, has moved from 359 Market street, oppoaite to 254 and 256 Market. The new premises also front on Nos. 8 and 10 Front street. Mr. Gordon haa moved three times auce his establishmeut in business, but the old adage of "the rolling stone gathers no moss" is not spplicable in tbia case, as he has moved each time in order to get more room to keep pace with an increase in bnsiuess.

The Government and the Mines.

Within the comparatively brief space of a quarter of a century our people have opened up to settlement a larger area of territory, valuable as a source of supply for nearly all the necessities of man, than has ever before in the world's history been brought withiu the limits of civilization in so short a time. Twenty-seven years ago California, Arizona, Colorado, Montana, Idaho, Washington Territory, Oregon, Utah and Nevada—occupying more than one-third of the entire area of the United States—were regions chiefly known to trappers and traders; traversed and occupied for the most part by tribes of barbarous Indians. That this extraordinary advance, with all its accompanying reaalts to the trade and the commerce of the world haa been achieved by the discovery and developmeut of our mineral resources, no reasonable man pretends to dispute. The steady progress of our history speaks for itself and the facts are patent to all.

It seems somewhat singular, considering the millions of treasure thus added yearly to our national wealth, the vast range of industry opened to our people, the wonderful impulse given to agriculture, commerce and manufactures, that of all our great national industries the business of mining has had the hardest struggle to enlist the favorable consideration of our government. Not only has the government paid little official attention to it, but outside of the borders of the States where mining is carried on, very little is known concerning this industry by the people.

The immense production of what are known as the bonanza mines baa probably attracted more attention to the subject than anything arising for years. The government is also soon likely to have very important questions concerning the mining industry brought before it for official action in the coming suits between the agriculturists and hydraulic miners with regard to tailings. But it is only when some unusual circumstance brings the subject prominently forward that anything connected with it is noticed by the government. A mining commissioner, with a very limited appropriation to work with, has been authorized by Congress to collect statistics for several years past, but this office is to be, or has been, abolished, and the collection of statistics left to the direc or of the mint. With the duties he now has, this official will he unable to do much in a new direction, so that there will hardly be any more official reports on the mining industry of the United States west of the Rocky mountains.

The reports previously published have not been up to the proper standard, simply for want of funds. A large amount of the matter contained in them was furnished gratuitously, and the commissioner has been unable to get out a report which would be a credit to himself and the nation. Moreover, such a very limited edition of the report was published that only a few of them found their way to this coast, when they should have been in the hands of every miner as the agricultural reports are in the hands of the farmers.

The mining industry, however, though by no means fostered by the government, has continued to flourish and proved its title to recognition by facts in the shape of good hard dollars. It will still continue to do so, even though the government pays so little attention to it that it does not consider it worth while to keep a single official whose duty it is to collate information and statistics on the subject. The fact is to be deplored, however, that no pains have been taken to establish a national mining college; to gather practical information of use to miners; to exchange experience with older countries officially; or, in short, to take any interest whatever in the mining industry in an official manner.

Cooling Air in Mines.

In many mines the normal temperature of the air is often so great that it is impossible for workmen to remain any great length of time in them unless some means for refrigeration and ventilation are used. In some of the mines of precious metal, for instance, the temperature is reduced by the use of ice that is carried down into the shafts and levels and placed in close proximity to heated places, where a mixture of water and ammonia is poured over it to assist the process of cooling; but this method only produces a partial effect and is attended besides with much discomfort and inconvenience to the workmen, for the vapors arising from the melting ice produce an atmosphere more or less humid, and the presence of the ammonia act free in the evaporation adds to this disagreeable condition of the air.

To overcome these difficulties Mr. Robert H. Lucas, of this city, has patented through the MINING AND SCIENTIFIC PRESS Agency an apparatus and method of dehydrating and refrigerating air. The invention not only relates to the art of preserving substances by surrounding them with cold air, but also to the production of an atmosphere or a column of air of an exceedingly low temperature, which may be caused to displace the heated air in mines, to reduce the temperature so that mines can be worked in a more rapid manner and with greater comfort and safety.

Two conditions are necessary in order to properly preserve animal and vegetable substance by the refrigersting process: first, the air must be cold, and second, it must be dry or free from moisture. The improvement in question provides for accomplishing both of these conditions simultaneously in a simple and effective manner. It consists in surrounding the pipes through which a refrigerant gas is conducted with any deliquescent salt, in combination with an air-forcing mechanism which will cause the air which is to be dehydrated and cooled, to come in contact with the salt.

The inventor finds that by forcing the air to be cooled, over and in contact with pipes which are surrounded by a deliquescent salt, such as chloride of sodium, chloride of calcium, caustic potash, magnesium or other equivalent deliquescent substance, and through which a refrigerant gas is caused to flow, he can not only cool the air to an exceedingly low temperature, but also extract the moisture from it, so that it will be better adapted to breathing purposes. The action of the refrigerant gas within the pipes is to reduce the temperature of the air which is blown over them, while the deliquescent salt extracts the moisture from the air, leaving it dry and cold. As the deliquescent salt removes the moisture it gradually dissolves and must therefore be replaced. In order to retain the salt in proper proportion around the pipes a netting or wire gauze tube is constructed of larger diameter than the pipe, and this tube is supported by suitable means around the pipe. The space is then filled in between the pipes and the surrounding perforated gauze, with the deliquescent salt. Chloride of sodium—common salt—is the most convenient for this purpose.

It will be evident, then, that if air be forced against and in contact with the pipes the cooling agency of the contaiuing circulating refrigerant gas will reduce its temperature, while the salt will extract the moisture, thus producing an atmospheric condition which is highly valued, not only as a breathing medium, but which is indispensable in properly preserving animal and vegetable substances in a fresh condition. Various methods of arranging the pipes for conducting the gas and any volatile substance such as is used in ice machines for producing a refrigerant effect can be used in connection with the improved method. These can easily be supplied and arranged by any person familiar with such machinea in general.

Items of Interest from the Mines.

We give below items of interest from prominent mines, most of which are collated from letters of the respective superintendents on file at the offices in this city. Considerable of this news is later than that procured from the interior journals:

Advices from the Manhattan mine state that the average of the orea worked during the past week is $193.57 per ton. At the Front shaft the stopea above the 500-foot level are now turning out a better quality of ore than usual, and continue to yield the desired quantity. The 500-foot east drift continues in fine ore. This drift is now in a distance of 100 feet and baa been run in rich ore the entire distance, which shows that the chimney is increasing in width (that is, lengthwise on the vein) as we go down.

The Eureka (Grass Valley) letter of the 25th says: Our clean-up for the last six days' run, of 10 stamps, 12 hours per day, is 270 ounces of amalgam. In cross-cut from No. 3 shaft we have had a very hard bar of ground to go through, but the drill has worked very well and made 16 feet in five days.

The Belcher is shipping 200 tons of ore per day to the mills. The water in the incline has been so far overcome as to let them go on sinking.

Chollar letter of the 25th says: Operations at the Company's mine for the week ending to date give the following results: Number of tons of ore extracted, 748; number of tons forwarded to milla, 832; average assay value of ore mined, $30.50 per ton. Main incline has been sunk 22½ feet. Pump worked 17⅞ hours. Shipped to-day three bars of bullion, value, $7,811.91.

The California is turning out 40 tons of ore per day from the 1400-foot level. The ore breasts on the 1500, 1550 and 1600-foot levels are looking very well and yielding the desired quantity of rich ore.

Water continues very strong in both the Consolidated Virginia and California mines. Savage has lots of it too.

Last letter from the superintendent of Raymond & Ely says: There is no material change with character of development in the mine since my last report. The west drift on the 11th level has been extended 26 feet during the week, making its total length 185 feet. The raise from west drift eighth level, did not show anything of value and I have discontinued the work.

In the Crown Point mine they found it absolutely necessary to retimber a large portion of shaft and incline in order to keep them in proper condition for working the mine; with that view they are now putting in about two sets per day. The expense will be less by doing it now than if allowed to run longer without making these repairs. No ore being extracted.

In the Comanche it is reported that there is a vein of ore in the stopes about a foot wide which will average about $100 per ton. The stopes above the 550-foot level are running more into sulphuret ore every day and gradually improving.

California Petroleum.

At the meeting of the California Academy of Sciences last Monday, Mr. C. D. Gibbes, described the oil region in Tulare valley, west of Tulare lake. Mr. Gibbes discovered these springs as long ago as 1854, while surveying for the government; and in 1865, with another party, purchased 200 acres on which are 12 or 15 oil springs, extending in a line for a distance of about half a mile. They are named the Naphtha oil springs, and are located in the valley at the eastern base of a hill or spur of the main range of mountains.

Mr. Gibbes describes the geological formation in which the petroleum or crude oil occurs in this portion of the State as shalea and sandstonea on each side of calcareous fossiliferous rock, filled with shells of a species of *Turritella*. These shells by attrition formed the mud which in process of time became limestone and is now so hard that it requires repeated blows of a hammer to break it. This ledge of limestone rock is at least 50 or 60 feet thick, or rather consists of a series of layers of different thickness from three to six feet each, constituting one immense wall or ledge, with a slight dip to the east. In some places it crops out widely and can be traced for miles, forming the crest of the ridges or spurs from the main range of mountains; these spurs have a trend to the southeast. Mr. Gibbes calls this ledge the oil producing stratum, for although no oil can be found in it, yet it is a good indication, as the oil is found making its appearance on the surface on both sides of it, although not always close to the main ledge, nor continuously, but occasionally where it can find a vent.

On the trip made in September last, when these examinations were made, Mr. Gibbes also located two other oil springs, one on the east or upper side of the ledge, and the other on the west, or under side, for he thinks this stratum of fossiliferous rock underlies the Tulare basin and will be found cropping out on the east side at the foothills of the Sierra Nevada. The spring he located on the west side (samples of the product of which were exhibited) is at least 500 feet from the main ledge, yet the limestone rock containing fossils is found here also, but does not crop as bold as what is called the main ledge, which is as well defined as a stone wall fifteen or twenty feet above the surface. Whether this shell rock is 500 or 600 feet in thickness will have to be determined by a more careful examination.

To the east of the main ledge, at a distance of about 600 feet, is a stratum of infusorial earth from 80 to 100 feet thick, the space between them being principally occupied by sandstone. Still further east two other species of shells are found in different ledges twenty or thirty inches thick, cemented together by sand and sometimes mixed with petroleum; one is of the sub-order *clypeastroidea* (cake urchins) and the other the *arca*. The gypsum belt lies still further east and in it are found fossil bones and teeth of sharks; also marine shells of different kinds.

These springs are situated 12 or 15 miles west of Tulare lake, on which a small steamer makes three trips a week from the western shore to Kings river, or a landing near Mussel Slough. The best mode of transit for the oil would be to carry it through pipes to a reservoir at the lake, where it can be shipped in barrels on a barge towed by the steamer up Kings river to where the railroad will cross it.

The crude oil can be extracted from the petroleum at the wells; the coke is expected to produce fuel enough to run the furnace, and the burning and lubricating oils can be refined at some establisbment here or elsewhere. It will be seen from Mr. Hanks' analysis (which we append) that this crude oil contains a large percentage of the heavy or lubricating oils of the finest quality, which is more valuable than the burning oil and not to be obtained from the Pennsylvania wells.

Mr. Hanks' report is as follows: "I have made an analysis of a sample of this crude petroleum and the following is the result: One hundred parts, by measure, was placed in an iron still and all the volatile part driven over by the application of heat. The result was the residue or coke left in the still and the crude oil. This, when separated from the water, was found to be 45 per cent. by measure. This sample of oil has a specific gravity of 921, equal to 22° Beaume's hydrometer.

"The crude oil was returned to the still and submitted to a careful fractional distillation, of which the following is the result:

	Sp. gr.	Deg. B
1st, 25 per cent.....Sample 8.....	.8374.....	37 deg.
2d, " " ..... " 4.....	.9142.....	23 deg.
3d, " " ..... " 5.....	.9464.....	18 deg.
4th, " " ..... " 6.....	.9505.....	17 deg.

One hundred parts by weight of the original sample would yield:

Coke, sample 1.....	17.61
Crude oil, sample 2.....	83.39
Total.....	100 00

"Sample 3 is a light oil and might be suitable for burning. By treatment with sulphuric acid and potash and redistillation a much lighter product would result. Samples 4, 5 and 6 are heavy oils, suitable for lubrication. It might be advisable to mix them to produce an equal grade for machine oil. There can be no doubt of the value of this product as an article of commerce. If found in sufficient quantity, it must prove a source of wealth to the owners and a great addition to the mineral wealth of the State."

Industrial Education.

"Industrial Surveys and Experiment Stations."

On Friday of last week Professor Hilgard delivered a lecture at the University of California on "Industrial Surveys and Experiment Stations," the following being a synopsis of the speaker's remarks:

The speaker opened his lecture by alluding to the several eloquent appeals that had been delivered at the University in behalf of industrial education. He said: I do not propose to repeat what has been so well said and so truly. My object is rather to address to you a few supplementary remarks, regarding some of the practical applications of that education, and industrial science.

A Course for Students.

The course which I hope some of you will choose to go through here, when completed, will have taught you the why and the wherefore of agricultural and technical operations. You will all, I hope, come out ahead of that undesirable "muddle-headedness," which makes a little knowledge so dangerous. Common sense is as indispensable in scientific pursuits as in the most ordinary affairs of life.

Object of Technical Courses.

Scientific reasoning is but the logic of common sense, strictly and systematically carried out in the most comprehensive manner. In the technical course here, our primary object is, after a modicum of general education, which is an indispensable prerequisite to teach youth principles upon which you should work, exemplifying the application to practice as much as possible by examples taken from actual life and practice. It is teaching you the principles, and not handicraft alone, that we prepare you for the exercise of your chosen profession. Not in one spot or limited circle only, but anywhere in the world. The great majority of your fellow citizens are of necessity so situated as to be obliged either to learn from costly experience or resort to professional advice in any case of difficulty. It has long been acknowledged that parallel with the duty of the State to provide educational opportunities, not supplied by private enterprise, runs the other duty of enabling the whole population to avail themselves of the advantages offered by the progress of modern science, at least to the extent of an examination by competent hands of the native resources of each State. Such examinations have been carried on under the national and State governments from the early part of this century.

Geographical Surveys.

Since geology was not only the first in order of time to follow geography, but is of some fundamental importance in determining the features of a country, those explorations have generally received the name of geographical surveys. New York took the lead in enlarging the scope of inquiry in instituting her "Natural History Survey;" and the act organizing this work is a page in her history of which New York may well be proud.

Many mistakes have doubtless been made by those to whom the management of State surveys has been entrusted. It could hardly be otherwise when we consider that there are probably no two States in which, were the work conducted to the best possible advantage, the order and manner of proceeding should be precisely alike. I know from my personal experience it is impossible to satisfy all critics.

Prof. Whitney's Surveys.

I do not stand here as a special advocate of Prof. Whitney's order of procedure; but I do wish to say here, as an expert, that whatever he has ordered to be done was work that needed doing, and it has been well done as far as it goes. The scientific groundwork has been laid, and well laid. It now remains to work out its practical side; and right here, unfortunately, the survey has been stopped. Where is the settler or immigrant to go for authentic information regarding the lands of this State? Now, it is precisely this kind of information that is wanted by every farmer, immigrant or investor—an authentic, systematic, intelligent and scientifically accurate account of the important features of a State and its natural subdivisions. It is just this class of facts that a State survey should primarily furnish. While it would be a waste of material to omit the publication of the record of purely scientific observation, which must be the groundwork, there must be a portion of the report written especially for the industrial classes, in the plainest language possible, giving the facts and conclusions that interest them directly. This portion of the survey report should, in other words, be the text-book from which every one interested in industrial pursuits could at once call the facts that are of interest to him.

Experiment Stations.

There is another feature which is at once suggested by the many practical questions arising in the discussion of observations made, and of experience collected in the course of an industrial survey. This is the desirability of a number of so-called experiment stations, located at suitable points in the different agricultural or industrial subdivisions of the State, for the purpose of testing on a scale sufficiently large those practical observations which can only be decided *in loco*, while the physical and chemical examination of soils, for example, can convey highly important suggestions in regard to the best and cheapest method of maintaining or restoring productiveness; yet the indications will, as a rule, require the test of experiment before they can be confidently recommended for general acceptance. The agricultural grounds and laboratories of the University already constitute one of these experiment stations, but common sense teaches that such stations should be numerous, on account of impossibility of producing in any one locality all the various circumstances that would influence the results of experiments made in the regions specially concerned.

European Experiment Stations.

Already in Europe, and especially in Prussia, these experiment stations are scattered broad cast over the land. To them are referred for decision by the most practical and reliable hands all the practical problems which no individual farmer could be expected to settle in such a manner as to render the results generally useful. Experimenting is rarely remunerative at best. Few private individuals can afford to undertake to carry out consistently a series of experiments such as are ordinarily required to settle agricultural questions. And now finally some of you may ask, *cui bono?* Why should all this trouble be taken, and this expense gone into?—are we not doing splendidly? Well, yes, California is doing splendidly; and with her delicious climate, fertile soil, there is every reason that California should do well. There are some who seem to imagine that our State is a world to itself; that the natural and social laws in force elsewhere do not necessarily hold good in California. One of these most important and varying lessons is that improvident and exhaustive culture, such as is now too prevalent in this State, will surely, and with our improved implements perhaps more rapidly, bring about the insolvency of any agricultural commonwealth. The South suffered terribly for not making this provision.

What Our Legislature Ought to Do.

Shall California follow the example of improvidence set by her older sisters, until the same ills which now weigh on them shall become generally felt? Her soils are rich but not inexhaustible. Let us not consider it too early to take measures for the prevention of such a disconsolate condition of things. Foremost among the means of prevention is the diffusion of the knowledge of the principles of rational agriculture, and of their application under the varied circumstances of soil and climate existing in this State. From the position you will, I hope, occupy among the rising generation, on account of the superior educational advantages you have enjoyed, many grave responsibilities will rest upon you, students of the University. Among these responsibilities, few will be graver than that of the influence which you may exert in behalf of progressive agriculture and industrial education, whether as legislators or educated leaders of public opinion.

Broad Winged Buzzard.

The usual range of the broad winged hawk (depicted on this page) seldom extends far west of the Alleghany mountains; but in Virginia, Maryland and the States eastward it is by no means a rare species. Its nest is about the size of that of the common crow and is usually placed on large branches, and near the stem or trunk of the tree, being composed, externally, of dry sticks and briers, and internally, of numerous small roots, and is lined with the large feathers of the common fowl and other birds.

The flight of this hawk is easy and performed in circles, when high in the air, it often closes its wings for a moment, and glides gracefully along. It seldom pursues other birds of prey, but is itself frequently teased by the little sparrow hawk, the king bird, or the martin. It attacks birds of weak nature, particularly very young chickens and ducklings, and during winter feeds on insects and various small animals. Except during the winter season, it flies singly. After eating, it rests for hours upon the top of a small tree within the forest. Like other birds of its tribe, when wounded, it throws itself on its back, opens its bill, protrudes its tongue, utters a hissing sound, erects the top feathers of its head, and with its talons grasps any object presented to it, insomuch that it may be carried by means of a stick thus clutched as long as its muscular power continues. When feeding, it holds its prey with both feet, and tears and swallows the parts without much plucking. In its stomach have been found wood frogs, portions of small snakes, and the hair of small quadrupeds of several species.

THE BROAD-WINGED BUZZARD.

ACCIDENT AT SILVER MOUNTAIN.—A miner named Thomas P. Floyd was saved on and almost instantly killed in the Exchequer mine, at Silver mountain, Cal., on the morning of the 22d instant. Mr. Floyd was at work with his partner, Arthur Peirce, on the 400 foot level. The rock was hard, and while trying to split it, with a gad, a large body of rock, weighing from ten to twelve tons, suddenly gave away, crushing Floyd beneath it. Peirce fortunately escaped almost uninjured.—*Gold Hill News.*

Mechanical Ore Concentration and Separation.—No. 12.

[Written for the PRESS by FRANCIS M. F. CAZIN, M. E., Santa Fe, New Mexico.]

Where mechanical concentration has been discredited by failure notwithstanding the apparatus employed were such as were accredited in the trade, and the management a skilled one, it has invariably been in the treatment of silver ores proper. The cause thereof is evident, in a fact not generally known or not properly appreciated. This is:

Silver Ores Proper

Or silver in all mineralizing combinations is more apt to change its mineralogical character, that is, to lose its proper cleavage and specific gravity by atmospheric influences or by corrosion than all other metals in their combination with metalloids. Thus surface ore may contain galena in a sound mineralogical state, but all accompanying silver ores proper will be found in that corroded state which the miners of the Rocky mountains invariably call "sulphurate," although most commonly they are what they are by the replacement of sulphur by oxygen. In greater depths also reached this corrosion is found common with silver ores proper, where galena, copper and iron pyrites are found sound and natural.

In the corroded earthy state these silver ores lack all the qualities on which mechanical separation can be based, and therefore

Cannot be Dressed Mechanically,

Not even with the best appliances out for the treatment of slimes. But invariably they will go with the slimes, and thus be collected in a shape where by roasting and amalgamation the silver can be cheaply recovered. Therefore in all similar cases mineral dressing is not by necessity discarded but confined only to what it legitimately can be applied, supplemented by any other system necessary to accomplish the work.

Mineral dressing is

Not a New Trade.

As early as 1812 Schroll wrote a treatise, "Contribution to the Art and Science of Mineral Dressing." Since then, at short intervals, Stifft, Karsten, Villefosse, Russegger, Rittinger, Gaetschmann and Kuestel have written books on the subject; and what weighs better with the practical men of the West, since then wealth has been produced by the millions every year in Europe by mineral dressing, where in no other possible way a cent could have been made.

In stating the fact that sand-rock carrying one per cent. of galena and the clean galena with 14 ounces of silver only has been worked by the help of mechanical mineral dressing and the company so doing to be to-day one of the richest and most influential in mining matters on the European continent, I run the risk of being looked upon as exaggerating for the benefit of the method I recommend, but the facts are true and of public notoriety.

It has particularly been proven by three years' operation, that in the Middle States of this continent, two and one-half per cent. of galena, worth four cents a pound, and no silver, will cover the costs of mining and mechanical dressing, the higher percentage coming in for a margin. What may be done on the Pacific coast may thereby be calculated. Unfavorable circumstances may considerably augment cost and even prevent profitable work with tenfold the yield, but there are certainly many mining localities on the coast where circumstances may be found as favorable as anywhere in the Middle States, or nearly so.

Thus far, speaking of practical results, I can, all in all, only refer to

Wet Concentration,

To the action of wet jigs and slime tables. In this is my excuse for not treating further on the dry process. Whatever allowance may be made in theory for the dry process of mineral dressing, no practical results can, as yet, be shown up by it. I do not thereby wish to contest against some figures published, concerning single tests of dry mineral dressing, but speak of results influencing business and national wealth, as can be cited by the hundreds in favor of wet concentration, which has been and is a part of national industry and economy in European mining districts, and of late in the Eastern and Middle States of this union, and of equal importance as smelting. Dry concentration is, with all that, nothing new. It has been largely experimented upon and practically tried in Belgium long years ago, but has been dropped and has been lost sight of in real practice, until revived lately by Krom and others, for whose success I wish well, but which, as yet, is not available in practice and business.

BULLION SHIPMENTS.—Since our last issue shipments from prominent mines have been as follows: Arizona, Nov. 19th, $2,467; Con. Va., 21st, $106,375; Leopard, 23d, $5,101; Ophir, 24th, $25,912 82—total to date, $50,022.66; Northern Belle, 23d, $12,001.90; California, 24th, $65,653 72—total to date, $715,883.20; Con. Virginia, 24th, $97,914 45—total to date, $443,090.90; Manhattan, 24th, $12,209.46—total for the week, $23,569 57; Modoc, 24th, 232 bars—total to date, $77,384; Challar, 24th, $9,707.68; 25th, $7,511.91—total to date, $42,619.88.

Cement Wine Casks.

The following investigation, which we find in an exchange, will interest some of our readers, who, if we mistake not, have made similar experiments: M. Bollert, near Zurich, in 1871, attempted to substitute casks made of cement for the usual wooden ones for storing wine, his cellar being moist and destructive to wood. The success of the experiment was such that all the wooden vessels have since been thus replaced. Among the advantages ascribed to the cement casks in additon to diminished cost of construction, are great economy of room, great solidity, without expense for repairs, diminished loss of the contents, and lightening of the work in the cellar. New wine is filled into them without hesitation, as no injurious effect is noticeable. The general plan of construction was first to coat suitably selected portions of the cellar walls roughly with cement mortar, and then with the best pure Portland cement, and to form the other portions of the vessels by pouring the material into suitshly constructed wooden molds. He succeeded in rendering the finished vessels deceptively similar in external appearance to the wooden ones. After the interior was sufficiently hardened, they were filled with water for ten days to ascertain whether they were tight, and also to extract the caustic ingredients of the cement. The latter object was not, however, fully accomplished in this way, as the wine lost almost all its acidity in a few days, but soaking with a solution of carbonate of ammonia and subsequent rinsing with water proved much better, and the objection on this account was ultimately removed. Others have also employed them since then, and their introduction to the wine growers on the Mosel is also contemplated.

UNPATENTED MINES.—The following from the La Plata *Miner* is sensible: It seems to us that a great deal of time is being wasted by persons who own valuable mines, in not getting them patented. We might mention several men who supposed that their mines were safe, as far as interfering claims are concerned, who have got into either expensive lawsuits or serious trouble, not from any discrepancies in their compliance with the law, but by some supposed informality whereby a shadow of right was given for some one to "jump" the claim or locate adjacent ground. The manifest remedy is to secure a patent as soon as possible, and thus prevent any such interferences, for if a mine is once patented, it is impossible to lay any conflicting claim on any part of its ground. We notice that around Mineral Point a great many mines are being patented, even those not considered first-class. This is as it should be. If a mine is worth working the first assessment, it is worth patenting, and if it is for sale this will increase its value at least 100 per cent.

PREPARATION OF PLATINUM BLACK WITH GLYCERINE.—If platinum chloride is heated with glycerine to the boiling point, it becomes dark red from the formation of chloride, a black precipitate of finely divided chloride following shortly after. On washing and drying, the precipitate has a grayish hue. This platinum black has little value, but if caustic potash is added in the preparation, an excellent product is the result. The best method of preparation is to heat together 15 cubic centimeters glycerine (25 to 27 degs. Beaume), and 10 cc. solution of potash (1.80 sp. gr.), and drop in 3 to 5 cc. solution of platinum chloride as soon as ebullition begins. The strength of the latter solution is that commonly used as a reagent. The operation occupies only a few minutes. The black precipitate is first washed with dilute hydrochloric acid, and finally with pure water.

SHIPMENTS OF BRITISH COAL TO SAN FRANCISCO.—The shipment of coal to this city from Great Britain, is said by a correspondent of the London *Times* to exceed anything hitherto known. Including that on the way from Australia the total quantity of coal due at San Francisco within the next four months is not less than 131,000 tons. The large fleet of grain ships coming from England carry coal as ballast, and dispose of it at a small profit when they reach this port. The effect will be partially, if not wholly, to close up the coal mines of this State, as they cannot produce coal at $5.50 or $6 per ton, the price asked for the imported article.

THIS is the style of newspaper puffs prevalent in the Black hills just now: "The superintendent of the Scalp Lock mine will accept our grateful acknowledgment of the receipt of a buckskin sack full of a superior quality of gold dust, the cleanest dust, we may truthfully assert, that has been sent to this office since the late rains, indicating that the mine is now paying much better than it did when the affable superintendent last spring sent us a carpet-sack full of sulphureted quartz and $17 gold dust. We wish the owners of this mine increased good luck in the future."

STATUE TO OERSTED.—A statue has just been inaugurated at Copenhagen to Hans Christian Oersted, as the first discoverer of the electro-magnetic power. Oersted has been dead more than 20 years. The statue, the work of the Danish artist, M. Jerichau, is placed on one of the boulevards surrounding the town, and represents the discoverer leaning against a pillar, holding in his hand a telegraph wire, against which he points a needle.

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We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents or purchasers of patented articles, can often receive advice of importance to them from a short call at our office.

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Several first premiums received for quartz mill Screens, and perforated sheet metals of every description. I would call special attention to my SLOT CUT and SLOT PUNCHED SCREENS, which are attracting much attention and giving universal satisfaction. This is the only establishment on the coast devoted exclusively to the manufacture of Screens. Mill owners using battery Screens extensively can contract for large supplies at favorable rates. Orders solicited and promptly attended to.

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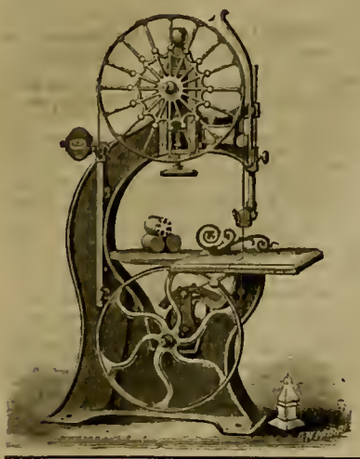

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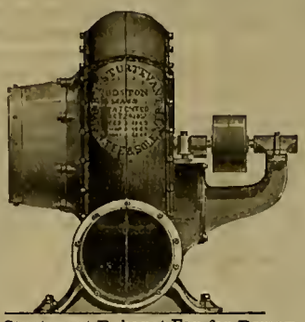

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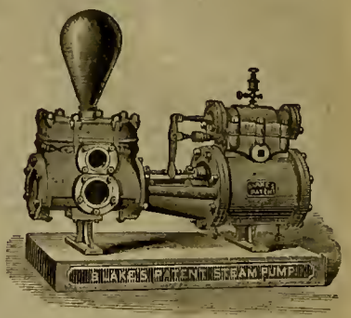

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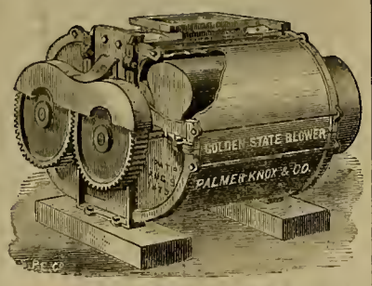

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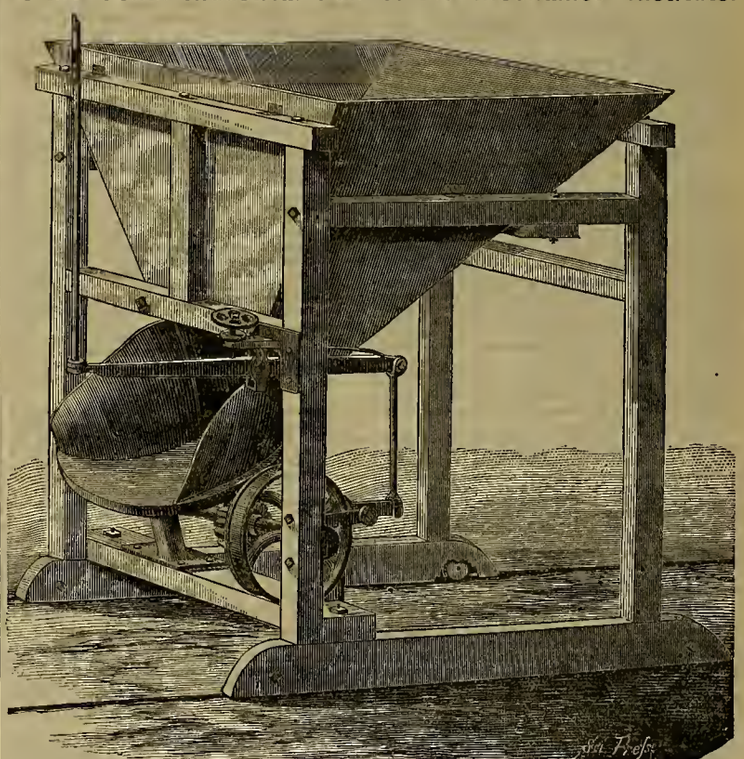

It may be considered as now fully demonstrated, by careful and long-continued experimentation, that the plan upon which a perfect ore feeder must be constructed is that of the *carrier*, and not that of the shaking table. Uniform and accurate feeding is not possible upon the latter plan. The ore must be evenly carried, upon a steadily advancing plane, or table, to the line of discharge, and there simply *dropped* Spasmodic or jerky contrivances will not answer the purpose.

REFERENCES.

A letter received from the Julian Mill, Newcastle, says, of the Carrier Feeder: "It is the most perfect Feeder we have ever seen; don't see how any mill can do without them."——A letter from Mr. O. C. Belding, of Amador County, speaks in the highest terms of them.——Two of the machines were shipped to the Bunker Hill Mill, also Gover Mill, Amador County.——Mr. Stevenson, of Boston Mill, Gold Hill, Nevada, says they are the best Feeder he has ever seen.——Soulsby Mill, Tuolumne County.——California Company, Nevada City.——Omaha Gold Mining Company, Grass Valley.——St. Patrick Mill, Placer County.

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We warrant the machines to give perfect satisfaction, and to be a better and more durable Feeder than any other in the market, and will sell them as cheap as any other of its class.

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Continued from Page 365.

ture than at the present. On the 1650-ft level the rich ore is still widening ont to the eastward, seeming almost houndless in that direction. On the 1650-ft level the face of the south drift running through the center of the ore vein is still in ore of a fair quality. The mine, in fact, is showing well at every level, and has every prospect of aa rich or hetter returns for a year or more to come than it has ever yet afforded in the past. Sinking the C. & C. shaft ie making good headway, the hottom still in hard blasting rock. The flow of water is strong, hut it is now kept well under control with the pumps.

BELCHER.—Daily yield from 200 to 220 tons of ore. The ore hreasts and stopss are showing fully as well as usual and the pulp assays indicate a much better yield of bullion for the amount of ore crushed for the present month than has heen made for several months past. Sinking hoth the drain and air shaft and the main incline is making good progress. Thia is especially the case with the drain shaft, which has heen sunk a distance of 22 feet during the week. In the main incline the flow of water has heen very strong for several days past, giving considenble trouble on account of the great heat. At the hottom the thermometer standa at 130 to 136 degreee. The prospecting drifts on the 1600-ft level are all being pushed steadily forward, without change of intereet in any portion. Everything ie in fine working condition in and about the mine.

YELLOW JACKET.—On Thursday last a downcast was made of the south compartment of the shaft and all the air of the mine waa turned into the Imperial mine through the connecting drift on the 1940-ft lsvel. This necesearily created so much heat that all work had to he suspended on the lower levels for several days. It is now rapidly cooling off, and the starting of a draft of air through will no doubt greatly henefit both mines. A winze has been started on the north line on the 1740-ft level to cut a favorable seam of ore recently found in the east crose-cut on the same level. Sinking the new shaft ie making splendid progrssa, the bottom being in good sinking ground, and the work pressed ahead with great energy. It is now down 114 feet, and well timbered to the hottom

LEVIATHAN.—Cross-cut No. 1 has been started eastward from the main north drift on the 600-ft level to out and proopect the ore vein. This drift is now penetrating the black clay on the foot-wall of the ledge. The foot-wall has a pitch of 35 degrees to the eastward. The character of the material through which this drift is passing certainly warrants the helief that the ledge will not only be strong when cut, but that rich paying ore will be found.

JUSTICE.—Daily yield, 260 tons of ore, keeping the mills all running up to their full crushing capacity. The ore stopes extending from the 400 down to the 800-ft level were never yielding richer ore or showing better than at ths present time. The ore is extending both north and south on the 700 and 800-ft levels, and is richer in the hottom of the winze helow the 900-ft level than at any point on the levels ahove. The south drift on the 1000-ft level is making excellent headway, the rock in the face gradually getting softer, with every appearance of a near approach to the ledge. No change in the face of the north drift on the 1000-ft level.

WARD.—Sinking the shaft is making good progress, the bottom still in good hlasting ground. The flow of water is light and gives but little trouble. The face of the south drift from the Julia, on the 1600-ft level, running to connect with the bottom of the shaft when it shall reach that depth, is in quartz of a fine deecription.

NORTH CON. VIRGINIA.—Sinking the shaft is going ahead with all possihie energy, the bottom in soft ledge material. The pumps are all in, down to the 1100-ft station, at which point a sta ion is being opened, ready, when everything ia in readiness, to commence drifting for the ore vein.

SUCCOR.—The erection of ths new pumping engine is progressing splendidly. It is now confidently expected to turn on steam hy a week from to-day. The pumps and pump columns are hsing placed in the shaft, and are nearly all ready for use.

SILVER HILL.—Sinking the main incline shaft is making about two feet per day, the rock in the bottom being extremely hard and tough to hlast. The north drift on the 444-ft level is advancing at the rate of four to five feet per day, the face in ledge material. This drift is now within about 160 feet of the Justice South line. The flow of water from this drift is very slight. The water in the hottom of the main incline also gives but little trouble.

SIERRA NEVADA.—The flow of water at the hottom of the shaft is still quite strong, hut it is kept under good control hy the pumps. The north and south drifts on the 1700-ft level are each steadily advancing, without any important change. The prospecting drifts on the third, second and first station levels are all advancing at the usual fair rate of apeed, there heing no changes worth noting in any of them during the week.

CHOLLAR-POTOSI.—Daily yield, 100 tons of ore, the assay value of which is $30 per ton. Sinking the main incline shaft is making stsady progress at the rate of two and a half feet per day. The rock in the bottom blasts ont finely and the flow of water gives but little trouble. Sinking the combination shaft is making splendid progrcs, the rock in the bottom working well. The erection of the new pumping machinery is rapidly approsching completion.

SUTRO TUNNEL.—Face of header in hard porphyry, with frequent small seams of quartz and clay. The drills are working to very good advantage in this material. Total length of tunnel, last evening, 14,107 feet.

UTAH.—Sinking the main shaft is making vigorous progress, the hottom in good hlasting ground. It ie now down 665 feet hslow the 400-ft station. The water gives no trouble whatever.

CALEDONIA.—Sinking the shaft is making good progrcse. The north drift on the 1100-ft level ie passing through favorahle ledge matter.

KOSSUTH.—The prospects of finding a large body of good paying ore in the north drift on the 600-ft level are daily hrightening. The prospects of the mine are ahowing hett-r every day.

TROJAN.—The ore body on the 300-ft level has been opened on a width of 30 feet, and is of a fine character. Stopes are now being opened on the ore body for milling purposes.

UNION CON.—The face of the north drift on the 1300-ft level ehows no change of value. The ledge material in the face of the west cross-cut from thia drift is showing less favorahle.

PHIL. SHERIDAN.—Sinking the shaft is going forward in good earnest. The bottom is still in ledge material. The water gives but little trouhle.

AMAZON & GLASGOW.—The combination joint shaft is down a distance of 430 feet, the hottom in vein material of a fine character. Every foot that the shaft is aunk the ledge shows improvement.

GOULD & CURRY.—The new pumping engine is hsing placed on its bed ready for services. The old pumps have all been taken from the shaft, the shaft repaired and the pump stations put in order for the reception of the new pumps. Everything is being put in order on the 1700-ft level for some live work in a very short time.

BEST & BELCHER.—All parts of the mine are being put in the heet of working condition. Things are assuming a business look on the lower levels, and the appearances are that if there ie anything to he developed in that portion of the mine, it will not hs a very great while before it will he found.

LADY BRYAN.—The stone foundatione for the new pumping machinery are complete, and the placing of the machinery has heen commenced. The large new hoisting works building is finished and ready for the storms of winter. Work at all points is being pushed with great energy.

IMPERIAL CONSOLIDATED.—Slnking the north winze below the 2000-ft level is making fair headway. The east crosecnt on the 2000-ft level is advancing rapidly, the face of the drift in very favorahle ledge material. The north drift on the 2136-ft level is making good progress. No change.

OVERMAN.—Sinking the main shaft is making splendid progress. The north and south drifte on the 1200-ft levels are each steadily advancing, with very favorable prospects of ore developments ahead. The erection of the new pumping engine is making excellent progress.

ROCK ISLAND.—The old pumps and columns have all heen taken out of the shaft and the works shut down until the new pumps are ready to place in position. Preparations for the erection of the new machinery are going ahead at a very favorable rate.

WEST BELCHER.—During the past week the main drift at the 300-ft level has been running into a fine deposit of high grade ore, with no weet wall as yet. Assays of from $50 to $600 are easily obtained, and milling the ore will be commenced next week.

PROSPECT.—Very good headway has been made with the main drift west at the 400-ft level, and it is in to-day 152 feet. The material in the face of the drift shows still more favorahle indications of being near the ledge. No water coming in aa yet.

CROWN POINT.—sinking the main incline is making excellent headway, the rock in the bottom blasting out well, and the Burleigh drills doing splendid execution. Retimbering a portion of the shaft is also being carried forward at the aame time.

COSMOPOLITAN.—The various stopes and ore breasta continue yielding their usual good quantity of ore. The north drift from the incline, hslow the main adit or tunnel level, continues in good ore, and the south drift at that point shows improvement.

SAVAGE.—The pumps have heen kept hsay during the week with varying success. Sometimes the water wenld rise or apparently gain on the pumps, while at other times it would recede for a number of feet. The gain is steady though slow.

ALTA.—Sinking the shaft is making splendid headway, the rock in the hottom being much softer than it has heen for eome time past. The flow of water ie light, and the prospects for striking the ledge are growing better every day.

BUCKEYE.—The north drift on the 350-ft level is being pushed forward, the face of the drift being still in ledge material mixed with quartz and occasional streake of good ore. Nothing doing in any other portion of the mine.

LADY WASHINGTON.—Main drift east croee-cutting the ledge is now in 172 feet from the 850-ft station. Streaks of low grade ore are making their appearance in the face of the drift, indicating very near proximity to the ore vein.

MEXICAN.—The prospecting drifts on the 1465-ft level continue to show a steady improvement. There is no change worth noting in the west cross cut on the 1300-ft level.

WHITE PINE DISTRICT.

MINING INTEREST SOLD.—White Pine *News*, Nov. 25: We are informed that the owners of the Boston mine, situated but a short distance from Hamilton, on the north side of Treasure hill, have sold one-half of their valuable mining property to Jack Gilmer, of the stage firm of Gilmer & Salisbnry. The old owners of the mine were unable to develop it for want of capital, and concluded to eell a portion of it and have the mine developed. We understand that a contract will be immediately let to sink a shaft 200 feet deeper than the present workings. The company, as now formed, will have an abundance of capital for all practical purposes and will develop a mine that has long had the reputation of being one of the best properties in the district. The Boston was formerly the Virginia, but was relocated nearly two years ago. The San Francisco company who originally owned the Virginia mine took ore from it which yielded them many thousands of dollars, and it has heen a wonder to many why they abandoned the mine and allow it to be relocated.

Arizona.

KIT CARSON.—Arizona *Miner*, Nov. 17: Christman & Co., we learn, are down some 30 feet on the Kit Carson mine, and find no difference in the character of the vein matter between it and the Silver Flake, which it adjoins, and think the one is a continuation of the other. They are taking out good pay ore in considerahle qnantities. The ledge has become sufficiently solid as to require hlasting. Report says the ore taken to Agua Fria furnace from this mine, has run all the way from $600 to $1,200 to the ton.

BULLION SHIPMENT.—On Satnrday, Dr. Goodfellow, superintendent Aztlan mill, sent to the office of the Peck mining company the result of four days' run with five atampe, for account of Anders & Rowe. There were six hars of silver hullion from Peck ore, weighing in the aggregate 8,446.30 ounces. Assay value, $10,-865.06. Average fineness, 994.

THE Accidental mine, on Lynx creek, continues to turn out gold bullion in paying quantities. The Thunderholt mill, which works the ore from this mine, is a steam engine driving arastras, and though hut little haa been said ahont it, it is helieved that throughout the season it has, perhape, paid as well, in proportion to the capital invested, as any property in the Territory.

MR. MORRISON, snperintendent; S. M. Weesels, foreman; John Rohinson and Mr. Nash, brick-layers, are in from Walnut Grove, and report the Pinal company's furnace about ready to start np. They are now only awaiting the delivery of charcoal and ore, which will probably be on the ground within a week, when we shall hear the result of their first run on Crescent ore.

Idaho.

A NEW BONANZA.—Owyhee *Avalanche*, Nov. 25: W. J. Bolin made a discovery a few days ago near his ranch, about five miles from town that he thinks will ultimately make a millionsire of him. He stumbled on a very rich lead which he says is a continuation of the chain of ledges near Wagontown. It ahows up, however, much better than any of those ledges, being unusually prolific in silver. He had a sample of the croppings assayed and the result is very satisfactory.

THE BELLE PEOR.—Work is heing vigorously prosecuted at this mine and with the most promising prospects aa usual. Stoping is going forward and winzes are heing sunk. The rock taken out recently shows np richer in gold than any of the installments from the B. P. during its most palmy days. Next week a large quantity of the ore will be forwarded to the Shoemaker mill for crushing, and the owner of the mine, Mr. Peck, whose judgment is very correct in such mattere, predicts that the clean-up will surpass in richness any of the previous products of this famous mine.

Montana.

NEW MILL.—Butte *Miner*, Nov. 14: The boiler and engine and some other machinery for the 10-stamp mill of Mr. A. J. Davis arrived on the ground last week. Mr. Davis informe us that the works will be in operation hy Christmas without doubt. He has about 20 tone of salt now in store here, and 100 tanks of quicksilver in transit, which will arrive in a few days, so that any delay for want of these articles is out of the question. Also 700 cords of woods have been contracted for.

WE are informed hy a reliable party that Mr. T. H. Manning has leased the Centennial mill for an indefinite period, and he will have entire control of its workings. Mr. John How departed for the East this morning, we understand, to hs absent for several weeks.

FROM Mr. McDermott, who for some time has been in the employ of Supt. Masten, of the Monroe silver mining company's works, at Dewey's flat, we learn that the new mill was started up a week ago last Friday, on ore from the company's leads. Everything moved off as smooth and regular aa clock work, and the people over there are much elated with the prospects for a lively and prosperous camp in consequence.

Proceeds of Comstock Mines.

We append the table showing ths net yield of the minss of ths Comstock which lie in Storey county, for the qnarter ending September 30th, 1876. The tahle was published in the Gold Hill *News*, and taken from the returns of Rohert Gracey, Connty Assessor. The yield of the mines will be greatly increased during the current quarter in both departments, as the Consolidated mill has heen completed and is running to its full capacity, and the Omega mill, in Six-Mile canyon, is kept constantly employed on tailings:

ABSTRACT STATEMENT

From the Quarterly Assessment Roll of the Proceeds of the Mines of Storey County, Nev., for the Quarter Ending September 30th, 1876:

MINE.	No. of tons extracted.	Value per ton.	Gross yield or value.	Total cost.	Amount deducted by law.	Net yield or value on which taxes are levied.	Total amount of tax.
Belcher	30,336	$18	$568,376 10	$568,418 00	60 per cent.	$113,395 22	$2,778 18
California	53,001	97	5,156,023 84	1,445,468 43	80 per cent.	8,710,658 41	72,356 39
Con. Virginia	16,600	97	1,638,308 54	1,145,136 64	60 per cent.	613,323 45	11,999 81
Gholler-Potosi	6,720	19	129,939 47	217,047 88	80 per cent.	25,999 59	605 59
Crown Point	4,763	53	254,516 35	170,000 60	80 per cent.	13,116 27	321 81
Con. Imperial	6,911	312	2,214,971 35	1,483,533 60	..... per cent.	61,623 61	1,207 33
Ophir	6,011	85	963,095 72	601,897 00	60 per cent.	385,838 94	7,563 92
Overman	27,358	25	11,393 46	72,858 44	80 per cent.	2,278 69	53 83
Total	439					$5,013,841 92	$99,151 51

The assessor also makes an abstract statement of the proceeds of the tailings works in the same county for the same qnarter:

Bossel Bros. worked 390 tons; value per ton, $7; gross yield or value, $2,730; total cost of redncticn or sale, $2,875; amount deducted as provided by law, 90 per cent.; net yield, $273.

J. C. Courser worked 78 tons; value per ton, $13; gross yield or value, $1,061; total cost of reduction, $1,092; amount deducted, 80 per cent.; net yield, $212.20.

Express mill worked 3,460 tons; value per ton, $8; gross yield, $29,118; total coet, $25,-982; net yield, $3,136.

Andrew Elholm worked 200 tons; value, $9 per ton; gross value, $1,870; total coet, $2,200; amount deducted, 90 per cent; net yield, $187.

G. N. Jennings worked 72 tons; valne per ton, $13; gross yield, $677; total cost, $868; amount deducted hy law, 80 per cent.; net yield, $195.

C. C. Stevenson worked 480 tons; valne per ton, $5; gross yield, $2,400; total cost, $1,920; net yield, $480.

Railroad mill worked 5,600 tons; yield per ton, $8; gross yield, $45,677; total cost, $41,-742; amount deducted, 90 per cent.; net yield, $4,567.

Watson & Co. worked 80 tons; yield per ton, $15; gross yield, $1,200; total cost, $1,120; amount deducted, 80 per cent.; net yield, $240.

REPORT OF CHIEF OF ENGINEERS.—The annual report of the Chief of Engineers has been completed. Among the estimates for appropriations which he earnestly recommends are the following: For completing the defeusive works at Fort Point, San Francisco harbor, $60,000; fort at Lime point, $80,000; Fort Alcatraz, $50,000; fort at San Diego, $50,000; Fort Stevens, Columbia river, $20,000. Of the amount of appropriations for public works on the rivers and harbors for the next fiscal year, certain allotments have been made in compliance with instructions from the Secretary of War. Among them were the following: Improvement of Oakland harbor, $35,000; Upper Willamette river, $30,000; Lower Willamette and Columbia rivers, $20,000. The report itemizes detailed accounts given by various officers of the river and harbor improvements now in progress under their respective managements, together with the statements of the amounts which these officers estimate can he profitably expended during the next fiscal year. Among theee items are the following: For the improvement of Oakland, California, $250,000; Lower Willamette and Columbia rivers, Oregon, $150,000. In transmitting the statements of his subordinates regarding the two latter amounts, Humphreys makes no recommendation of his own concerning them.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING NOVEMBER 21ST, 1876.

FLOUR BOLTS.—Henry C. Hurd and Geo. Simpson, Redwood City, Cal.

COPY HOLDERS.—Harrison H. Hendrix, San Jose, Cal.

BALING PRESSES.—Allen D. Miller, Sacramento, Cal.

PROCESSES AND APPARATUS FOR RENDERING ORES.—Wm. H. Sterling, S. F.

COUPON NIPPERS AND TICKET PUNCHES.—Frank Walkar, Santa Barbara, Cal.

FRUIT BOXES.—Chas. W. Weston, S. F.

SPRING BEDS.—Chas. Curtis Allen, S. F.

ENDLESS ROPE RAILWAYS.—ASA E. Hovey, S. F.

VEHICLE SEATS.—Frederick Oppenheim, S. F.

———*The patents are not ready for delivary by the Patent Office until soma 14 days after the date of issna.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time poesible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Notices of Recent Patents.

Among the patents recently obtained throngh Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

FEEDER FOR THRESHING MACHINES.—William Hutohings, Fresno, Fresno county. This invention relates to an improvemsnt in that olass of feeders for threshing machines in which reciprocating bars or arms are used, thess arms being provided with teeth or projections, and having a reciprocating or curvilinear motion within the trough or shute which leads to the threshing oylinder, so as to force the straw forward to the cylinder. The invention oonsists in the use of four slides, which are secured together in pairs, having spikes or fingers upon their upper surfaces. These slide forward and back upon the floor of the incline, one pair upon one side and the other on the opposite side of the inclined trough, thereby feeding the straw by a series of alternate movemente at one side and the other of the trough, which is the most important feature of the improvement, as it renders the feeder a snocess over those which simply employ a series of hars extending across the trough and moving alternately. The bars pass through a vertical partition in the rear, and are connected with operating oranks from the rear, so that the floor is not perforated and will not waste grain. In combination with this device Mr. Hutchings employs a series of arms which project from a horizontal shaft just above the month of the machine, and these arms are arranged in a spiral form about the shaft, so that one end of the spiral will enter the mass of straw and assist it forward while the slides at that side are being withdrawn, while the other end of the spiral will operate as the other pair are withdrawn. The operation of this feeding device is as follows: The straw is fed into the trough, where the slides with their fingers force it forward, the pair on one side serving to move it downward while the other pair are being drawn back. The action is a vibrating one, the mass of straw being pushed forward at one end and then at the other. The fingers, from their horizontal positions, are easily withdrawn when the slides are drawn hack, and never pull the straw hack or stop it; and the rotation of the spirally arranged arms is so fixed that those on each pair of slides will take hold of the straw when the slides are drawn back, thns assisting in the feeding. By the method of operating the slides in two pairs the straw will be easily fed forward, as there is no necessity of pulling it apart and separating the fibres, as would he the case if a system of slides were used and every alternate one moved forward while the others moved hack.

IMPROVED "GAG RUNNER."—William M. Blain, Salinas City, Monterey county. This invention relates to a novel construction of a gag rnnner and a hrow band loop for harnessing in one piece, which may have an ornamental rosette attached to it or not as may be desired. The check-rein passes through a metallic loop at the inner end, which loop is gradually flattened out, and at the end of this flattened portion a loop is turned np to receive the hrow hand. These loops are all made in one piece, of malleable iron, and may he used without any additional part. If, however, it is desired to attaoh a plate to the device, the plate may he made with projecting flanges, between which the flattened portion slides and is held in place by means of a shoulder upon its hack. By this means the inventor is enabled to form the two loops in one piece, and when the plate is used it may he made without the usual loop, which is to he soldered or otherwise made fast to it.

FRUIT KNIFE.—George Tarleton, San Jose. This consists of a novel attachment to knife blades, the object of which is to out out and remove the parts of such stoned frnit as peaches, prunes, etc., at the same time that the knife blade cuts the fruit in halves. The pitting attachment for the knife hlade consists of a semi-circular steel or other metal blade, the convex side of which is secured at its middle

to the cutting edge of the knife blade about two and a half inches from the handle, so that it forms two narrow curved blades, one of which extends upon each side and projects in front of the cutting blade. To pit the fruit the knife is taken in one hand and the fruit to be cut in the other. The operator then cuts through the fruit with the ordinary blade in the crease which surrounds all stoned fruits, commencing near the depression at either end, and after the blade has been inserted until it strikes the stone it is drawn towards the operator until the curved blade enters and partially surrounds the stone or pit. The fruit is then rotated, allowing the blade to follow the crease until the fruit has been cut to the pit entirely round its circumference. During this operation the transversely curved blade follows inside of the fruit, cutting around the pit, as the large blade cuts the meat, so that when the fruit is cut in halves the pit is entirely free. The inventor says this cutting blade could be attached to a circular knife and the circular knife rotated around the fruit and thus a machine can be made that will automatically halve and pit fruit; but for ordinary work the knife itself, operated by hand, is sufficient.

WATERPROOF SIGNALING APPARATUS AND KEY.—William Lundberg and Daniel F. Leahy, Portland, Oregon. The improvement comprises a novel signaling apparatus and key, which are intended to be used by fire companies in order to establish a speedy communication from the engine along the line of hose, or by sub-marine divers, or in any other place where a line of signals must be established speedily from place to place. It consists in the employment of an elastic tube which contains one or more insulated wires. This tube is wound upon a reel from which the necessary connections are made between the wires and battery, and the opposite end of the tube has attached to it the waterproof key by which communication may be made with the engine at will. The peculiar key consists of an enlarged extension or ball, secured to the end of the hose. Within this tube are placed two metal plates, and one of the wires is secured to each plate so that they do not touch. Opposite to these terminal plates is another plate, which is connected with a button upon the outside of the ball. When this ball is compressed by pressing upon the button the plates are forced into contact with both plates, thus completing the connection. When the pressure is removed the elasticity of the tube breaks the connection.

TABLE NAPKIN HOLDER.—Benjamin F. and V. A. Hardy, S. F. The object of this invention is to provide a convenient implement for attaching one corner of a table napkin to the neck of the wearer, so that the napkin will be kept across the breast of the person using it at the table, to prevent the clothing from becoming soiled during the meal. The usual and most common way to do this is to tuck a corner of the napkin down under the collar, but in this case it sometimes falls into a plate of soup, and otherwise behaves in a disagreeable manner. The device in question consists of a clamp and hook combined in one implement, so that the corner or edge of the napkin can be gripped or held by the clamp, and the hook passed over the neck-band of the article of clothing, thus effectually attaching the napkin so that it can be spread across the breast and confined in any suitable manner.

SPARK EXTINGUISHER.—J. W. Donaldson and Allen C. Miller, Fairfield, Solano Co. The improvement relates to a novel means of extinguishing the sparks and cinders which escape from the furnaces of engines, and by its use the danger which arises from fire in harvest fields and other places is avoided. The invention consists in the application of a jet or spray of vapor within the smoke-stack or chimney through which the sparks escape, and by this means they are all extinguished before leaving the chimney.

STUMP PULLER.—J. B. Forbes, Clympia, W. T. This machine for pulling stumps consists of a sled frame which is provided with adjustable wheels, which can be raised or lowered when desired, so that the machine will rest upon the wheels. A capstan or windlass is mounted upon the frame and convenient methods of sinking the devices are supplied. This machine is quite simple and can be used for various purposes besides stump pulling. By ingenious means plenty of power is supplied for the work it is required to do.

MECHANICAL POWER.—Henry G. Gastmann, Eureka, Humboldt county, Cal. This invention relates to a novel improvement in mechanical process which the inventor calls the "diamond lever power," and it consists in the combination of levers, which form a series of parallel lever movements having a gradually increasing stroke. This mechanism is connected with one main lever, and is operated by a pitman from a crank upon a driving wheel.

WINDOW SASH BALANCE STOP AND LOCK.—B. M. Whiting, Los Angeles. This is an arrangement of coiled springs inside of boxes, which are inserted inside of the window casing for raising and lowering the window instead of the ordinary sash cord, weight and pulley. A small attachment to the same device serves to lock the sashes in any position to which the sash is raised, either up or down. The device is quite simple, inexpensive, neat and convenient.

General News Items.

THE STATE OF Daniel Webster, in New York, was unveiled on Saturday last.

DISASTROUS freshets have occurred between Panama and Aspinwall.

THERE are 18,000 Israelites in San Francisco, five synagogues in the State, and three in the city.

THERE will be about 22 whaling vessels in the Pacific next season, to take the place of the fleet lately abandoned.

Two criminals were publicly whipped and exposed in the pillory at Newcastle, Del., on the 25th inst., receiving from 20 to 40 lashes each.

SUBSCRIPTIONS in Petersburg and Moscow alone, to the loan of 100,000,000 roubles, authorized by an Imperial ukase of November 18th, exceeds that amount.

A TELEGRAM from Columbus, Ohio, announces the death, on Friday, on the train, of Commodore Paul Shirley, U. S. N. Deceased was en route to Memphis to visit his sister, Mrs. Rice.

PLOWING WITH DYNAMITE.—The agents of M. Nobel, the well-known inventor of nitro-glycerine, have lately found a novel use for dynamite in grape culture, which suggests further possibilities. The mechanical way, literally to "shake up" the earth, and allow the free percolation of water and the access of air to the roots of the vines. To this end holes were made in the soil about ten feet in depth, and at points where no roots were likely to be injured. Then cartridges of dynamite were introduced and exploded, and the result was that for the entire depth noted the earth was made loose and friable. The ground, in fact, was not only rendered in better condition than could have been effected by plow and harrow; but every phylloxera, so the writer says, on roots of the vines was killed. The quantity of dynamite used is not stated, but it is likely to have been but small, just enough to shake the soil without blowing up the vines.

KNIGHT'S American Mechanical Dictionary is a book for all persons who make, buy, sell, use, or want to know anything about tools for machines, or are curious as to the history and development of mechanic art. It is a descriptive word-book of tools, instruments, machines, chemical and mechanical processes; civil, mechanical, railway, hydraulic and military engineering; a history of inventions; general technological vocabulary; and digest of mechanical appliances in science and the industrial and fine arts, etc. For circulars or price address or apply to A. Roman & Co., wholesale and retail booksellers, 11 Montgomery street, San Francisco.

SULPHUR BATHS three cents. The beneficial results of sulphur baths are too well known to require comment. The effects of GLENN'S SULPHUR SOAP in the bath are identical, completely deodorizing offensive accumulations, and thoroughly purifying the entire surface of the body. Sold by druggists, 26 cents.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

METALS.

[WHOLESALE.

WEDNESDAY M., Nov. 29, 1876.

American Pig Iron, ₱ ton	32 00	@	— —
Scotch Pig Iron, ₱ ton	31 50	@	32 00
White Pig, ₱ ton	40 00	@	50 00
Oregon Pig, ₱ ton	31 50	@	32 50
Refined Bar	— —	@	— 4¼
Soller, No. 1 to 4	— —	@	— 5¼
Plate, No. 5 to 9	— —	@	— 5½
Sheet, No. 10 to 14	— —	@	— 5½
Sheet, No. 16 to 20	— 5¾	@	— —
Sheet, No. 22 to 24	— 6	@	— —
Sheet, No. 26 to 28	— 6¾	@	— —
Horse Shoes, per keg	7 00	@	8 00
Nail Rod	— 10	@	— —
Norway Iron	— 8½	@	— 9½
Rolled Iron	— 4	@	— —
Other Irons for Blacksmiths, Miners, etc.	— —	@	— 4¼
COPPER.—			
Copper Tin'd	— 37	@	— 40
Sheathing, ₱ ℔	— 24	@	— 40
Sheathing, Yellow	— 21	@	— 22½
Sheathing, Old Yellow	— 10	@	— 11
Composition Nails	— 21	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ₱ ℔	— 20	@	— 25
Anderson & Woods' ordinary sizes	— —	@	— 15
Drill	— —	@	— 16½
Flat Bar	— 16	@	— 20
Plow Steel	— 8½	@	— 9
TIN PLATES.—			
10x14 I C Charcoal	11 00	@	— —
10x14 I X Charcoal	13 00	@	— —
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	— 21	@	— —
Australian	— 25	@	— —
ZINC.—By the Cask	— —	@	— 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₱ ℔	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 12½
do do 8x4 ft, No 11 to 10	— —	@	— 12
NAILS' Assorted sizes	3 60	@	3 75
QUICKSILVER, per ℔	— —	@	50 —

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, Nov. 28, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 91¾ to 92¼. Silver 87½@87.

GOLD in N. Y., 103.

GOLD BARS, 880 to 890. SILVER BARS, 12@20 per cent. discount.

EXCHANGE on N.Y., 50@55-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, 6 per cent. discount.

LONDON — Consols, 95⅛; Bonds, 102¼

QUICKSILVER in S. F., by the flask, per ℔, 55c.

GENERAL MERCHANDISE.

WHOLESALE.]

TUESDAY, M., Nov. 28, 1876.

BAGS.			
Eng. Stand Wht	9¼	@	10
Neville & Co's	—	@	—
Hand Sewed, 22x36	9¼	@	10
24x36	10½	@	11½
23x40	11	@	12
Machine do 22x36	9¼	@	10¼
Flour Sacks 4s	9	@	11
" " ½s	8	@	7
" " ¼s	4½	@	5
Hessian 60-in	11¼	@	12
do 45-in	9½	@	10
do 40-in	8½	@	9
Wool Sacks, 3¼ ℔s	45	@	50
do 4 "	50	@	52½
Stand. cannikins	11½	@	12
Bean Bags	7	@	8
CANNED GOODS.			
Asst'd Pie Fruits in 2 ℔ cans	2 75	@	3 60
do Table do	3 75	@	4 25
Jams & Jellies	4 25	@	—
Pickles ¼ gl	—	@	3 50
Sardines, qr box	65	@	1 90
do hf boxes	3 00	@	— —
COAL—Jobbing.			
Australian, ₱ ton	8 00	@	8 25
Onus Bay	— —	@	8 50
Sellingham Bay	— —	@	8 00
Castle	— —	@	8 00
Cumberl'd	14 00	@	16 00
Mt. Diablo	5 75	@	7 75
Lehigh	— —	@	22 00
Liverpool	8 50	@	10 00
West Hartley	— —	@	14 00
Scotch	8 00	@	10 00
Scranton	13 00	@	16 00
Vancouver's Isl.	10 50	@	12 00
Charcoal, ₱ sk	75	@	—
Coke, ₱ bbl	—	@	60
COFFEE.			
Sandwich Island	—	@	21½
Costa Rica per ℔	21	@	—
Guatamala	20½	@	21½
Java	—	@	—
Manilla	20	@	21
Orouud in os	25	@	—
Chloorv	27	@	—
FISH			
Sso. Nry Cod, new 5	—	@	6½
oases	6	@	7
do honeless	8½	@	10
Eastern Cod	8	@	8½
Salmon in hbls	6 50	@	7 25
do ½ hbls	3 75	@	4 00
do 2℔ cans	2 65	@	—
do 1℔ cans	1 80	@	—
do Col. R. ½ b	4 25	@	4 50
Pick. Cod, hbls	22 00	@	—
do ½ bbls	11 00	@	—
Mack'l, No. 1, ½ bls	11 00	@	—
" Extra	—	@	12 00
" in kits	1 12½	@	25
" Ex mess	3 50	@	4 00
" Ex mess. ½ bs	—	@	2 00
Pio'd Herr's. bx	3 00	@	3 50
Scer. Sm'k'd Her'g	40	@	50
LIME, ETC.			
Lime, Sta Cruz, ₱ bbl	2 00	@	2 25
Cement, Rosendale, do	2 75	@	3 50
do Portland do	4 75	@	5 50
Plaster, Golden Gate Mills	3 00	@	3 25
Land Plaster, ₱ ton	10 00	@	12 50
MISCELLANEOUS.			
Pulu	—	@	7½
NAILS.			
Assorted size, keg	3 25	@	4 00
OILS.			
Pacific Olne Co			
Neat F't No. 1	1 00	@	90
Pure	—	@	—
Castor Oil, No. 1	1 25	@	—
Baker's A A	—	@	1 10
Olive Plagniol	4 85	@	5 00
do Fossel	4 45	@	4 50
Palm ℔	9	@	—
Linseed, raw	—	@	65
do boiled	—	@	70
Cocoanut	—	@	60
China nut in os	—	@	70
Sperm	2 00	@	—
Coast Whales	60	@	65
Polar, refined	—	@	60
Lard	1 15	@	1 17½
Diaophine	—	@	37
Devoe's Brill't	38	@	39
Nonpareil	42½	@	—
Eureka	32½	@	33
Barral kerosene	32½	@	—
Downar Kerosa's	45	@	—
Elaine	—	@	42
PAINTS.			
Pure White Lead	9¾	@	10¼
Whiting	—	@	1¾
Putty	4	@	5
Chalk	—	@	1½
Paris White	—	@	2½
Ochrs	—	@	3½
Venetian Red	—	@	3½
Averill Chemical Paint, per gal.			
White & tints	2 00	@	2 40
Green, Blue & Ch Yellow	3 00	@	3 50
Light Red	3 00	@	3 50
Metallic Roof	1 30	@	1 60
RICE.			
China No. 1	5½	@	8
Hawaiian, ₱ ℔	7	@	—
Carolina, ₱	10	@	—
SALT.			
Cal. Bay, per ton	10 00	@	14 00
do Common	6 00	@	7 00
Carmac Island	12 00	@	15 00
Liverpool fine	13 50	@	16 50
SOAP.			
Castilo ₱ ℔	10	@	10½
Common brands	4½	@	6
Fancy do	7	@	8
CANDLES.			
Grant's	16	@	16¾
Mitchall's	18	@	20
SPICES.			
Cloves ₱ ℔	45	@	47½
Cassia	23½	@	26½
Citron	20	@	22
Nutmegs	95	@	97½
Whole Pepper	14½	@	14¾
Pimento	16	@	17½
Grnd Allsp'ce	—	@	12
do Cassia	—	@	1 50
do Cloves	—	@	1 50
do Mustard	—	@	1 60
do Ginger	—	@	1 00
do Pepper	—	@	1 00
do Mace	—	@	2 00
Sowen's Pure Ground ₱ ℔	—	@	50
SUGAR, ETC.			
Cal. Cube per ℔	—	@	13½
Cal. Loaf crushed	—	@	13½
Powdered	—	@	13½
Fine ornshed	—	@	13½
Granulated	—	@	13
Golden C	—	@	11½
Hawaiian	10	@	11
Cal. Syrop in kgs	—	@	72½
Hawaiian Molasses	25	@	27½
TEA.			
Oolong, Canton ℔	19	@	25
do Amoy	28	@	50
do Formosa	40	@	80
Imperial, Canton	25	@	40
do Pingsuey	46	@	80
do Mooyna	80	@	1 00
Gunpowder, Cant.	75	@	1 00
do Pingsuey	50	@	90
do Moyune	66	@	1 25
Yng Hy, Canton	28	@	40
do Pingsuey	40	@	70
do Moynne	65	@	85
Japan, ½ chests, bulk	30	@	76
Japan, lacquered boxes ½ and ¼ ℔s	45	@	67
Japan do, 3 ℔ bxs	45	@	90
do pl'n bx, ½ ℔	35	@	65
do ½ & 1 ℔ paper	30	@	55
TURPENTINE.			
Eastern	50	@	55

LEATHER.

[WHOLESALE.]

TUESDAY M., Nov. 28, 1876.

ole Leather, heavy ₱ ℔	25	@	25
do do light ₱ ℔	20	@	22½
Jodot, 8 Kil., per doz	48 00	@	50 00
Jodot, 11 to 13 Kil., per doz	68 00	@	70 00
Jodot 14 to 15 Kil., per doz	82 00	@	84 00
Jodot, second choice, 11 to 16 Kil. ₱ doz	57 00	@	74 00
Cornellian, 12 to 16 Ko	57 00	@	67 00
Cornellian Females, 12 to 13	63 00	@	67 00
Cornellian Females, 14 to 16 Kil	71 00	@	76 50
Simon Ullmo Females, 12 to 13, Kil	58 00	@	62 00
Simon Ullmo Females, 14 to 15, Kil	68 00	@	70 00
Simon Ullmo Females, 16 to 17, Kil	72 00	@	74 00
Simon, 18 Kil., ₱ doz	61 00	@	62 00
Simon, 20 Kil. ₱ doz	65 00	@	67 00
Simon, 24 Kil. ₱ doz	72 00	@	74 00
Robert Calf, 7 and 9 Kil	35 00	@	40 00
French Kips, ₱ ℔	1 00	@	1 15
California Kip, ₱ doz	40 00	@	60 00
French Sheep, all colors, ₱ doz	8 00	@	15 00
Eastern Calf for Backs, ₱ ℔	1 00	@	1 25
Sheep Roans for Topping, all colors, ₱ doz	9 00	@	13 00
Sheep Roans for Linings, ₱ doz	5 50	@	10 50
California Russett Sheep Linings	1 75	@	4 50
Best Jodot Calf Boot Legs, ₱ pair	5 00	@	5 25
Good French Calf Boot Legs, ₱ pair	4 00	@	4 75
French Calf Boot Legs, ₱ pair	4 00	@	—
Harness Leather, ₱ ℔	24	@	32½
Fair Bridle Leather, ₱ doz	48 00	@	72 —
Skirting Leather, ₱ ℔	33	@	37½
Welt Leather, ₱ doz	30 00	@	50 00
Calf Leather, ₱ foot	17	@	⅛
Wax Side Leather, ₱ foot	17	@	—

Superior Photographs.

To be sure of a good picture, you have only to patronize G. D. Morse's Palace of Art, at No. 417 Montgomery street, S. F. The publishers of this journal have patronized Mr. Morse for many years, and do not hesitate to say that his pictures are not excelled by any we have seen produced in this or any other country. No one can ask for a better man to patronize than Mr Morse. He is affable and respectful to all.

WOODLAND, CAL., Aug. 8th, 1876.

MESSRS. DEWEY & CO.—*Gents:* Your letter containing the patent for my Centennial churn has come duly to hand, and you will please accept my many thanks for the prompt manner in which you attended to the business intrusted to your care, and I will take great pleasure in recommending you to any one having anything to attend to in your line. I am having a number of the churns put up, which will be ready for sale in a few weeks. Yours truly, JAMES ROOT.

GIVE YOUR FULL ADDRESS when you communicate on business to this office, especially in returning newspapers. The fact that your name is on our subscription list is of no assistance to us. Without sending your post office address we should have to look over thousands of names to find yours.

BOUND VOLUMES of the MINING AND SCIENTIFIC PRESS from Jan. 1st, 1864, are for sale at this office at $5 per volume, two volumes a year. Unbound at $3 per volume.

SEWING MACHINES.—We have a first-class machine we wish to dispose of on favorable terms. Apply at this office.

To Mining Secretaries.

An amendment to Section 336 of the California Code, taking effect July 1st, 1874, provides that in addition to the regular publication, daily or weekly, of the assessment and sale notices as heretofore,

PERSONAL NOTICE

Must be served as provided in the following quotation from the law:

"The notice must be personally served upon each stockholder, or in lieu of personal service, must be sent through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where the principal office of the Corporation is situated."

The above refers to the ASSESSMENT NOTICE only. Advertisers in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assessment notices printed on slips suitable for serving personal notice under this law at short notice.

DEWEY & CO., Publishers.

GOOD PRINTING INK.—We prefer Chas. Eneu Johnson's printing inks, having used them on this paper for the past four years. H. S. Crocker & Co., printers, stationers, blank book and paper dealers, are Johnson's S. F. agents.—DEWEY & Co., Publishers.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

Office Cascade Blue Gravel Mining

Company—NOTICE:—A meeting of the stockholders of the Cascade Blue Gravel Mining Company will be held at the office of the company, 311 California street, rooms 3 and 4, second floor, San Francisco, Cal., on Monday, November 20th, 1876, at two o'clock P. M., for the purpose of disposing of the company's stock, and authorizing the sale of the entire property of the company, with any other business that may come before said company. R. F. KNOX, President.

J. M. BUFFINGTON, Secretary.

San Francisco, Oct. 13th, 1876.

Eagle Quicksilver Mining Company.—

Location of principal place of business, San Francisco, Cal. Location of works, Santa Barbara Co., Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 9), levied on the 30th day of September, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names	No. Certificate.	No. Shares.	Amount.
Colburn, T W	unissued	3	$760 00
Hawley, E R	unissued	1	250 00
Watson, Wm. H	unissued	1	200 00
Paine, Geo	unissued	5-18	78 12½
Paine, Orlando	unissued	6-18	78 12½
Erskine, Laura	unissued	4-18	62 50
Erskine, Laura Paine,	unissued	2-16	31 25

And in accordance with law, "the articles of agreement of said company," and an order of the Board of Directors, made on the 30th day of September, 1876, the whole or such undivided part of each delinquent share in said mines as may be necessary, to pay said assessment upon each, will be sold to the highest bidder, at public auction, for cash in United States gold coin, at the office of the company, rooms 6 and 6, No. 302 Montgomery street, San Francisco, Cal., on Monday, the fourth day of December, 1876, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. WM. H. WATSON, Secretary.

Office, Rooms 6 and 8, No. 302 Montgomery street, San Francisco, Cal.

Golden Sun Gold Mining Company.—

Notice is hereby given that the regular annual meeting of the stockholders of the Golden Sun gold mining company will be held at the office of the company, No. 302 Market street, (up stairs,) San Francisco, Cal., on Monday, the 11th day of December, A. D., 1876, at one o'clock P. M., for the election of Trustees of said company for the ensuing year. The transfer books will be closed on December 4th, 1876, at three o'clock P. M., and remain closed until after the meeting. By order of the President.

JOSEPH PENTECOST, Secretary.

Mariposa Land and Mining Company

of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the ninth day of November, 1876, an assessment, No. 8, of one dollar per share was levied upon the capital stock of the corporation, payable immediately, in United States currency, to the Secretary at the office of the Company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office, No. 9 Nassau street, New York, N. Y.

Any stock upon which this assessment shall remain unpaid on the 11th day of December, 1876 will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the eighth day of January, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

By order of the Board of Directors

LEANDER LEAVITT, Secretary.

Office, Room No. 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal.

Cerro Bonito Quicksilver Mining Com-

pany. Location of principal place of business, San Francisco Cal. Location of works, Cerro Bonito mining district, Fresno county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors held on the 13th day of November, 1876, an assessment (No. 1) of four dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, 418 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 18th day of December 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the eighth (8th) day of January, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors

J. W. CLARK, Secretary.

Office, Room No. 2, 418 California St. San Francisco, Cal

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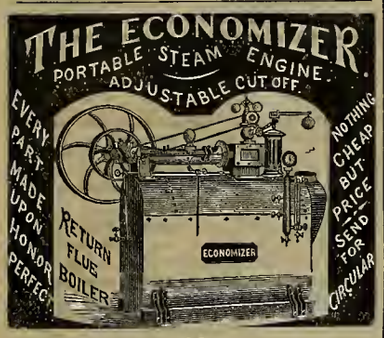

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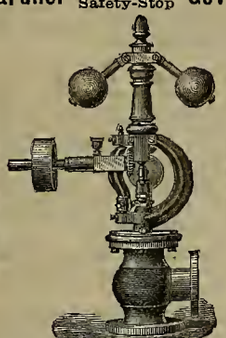

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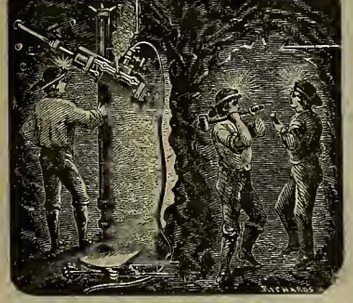

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Yours, respectfully, I. L. HEALD.

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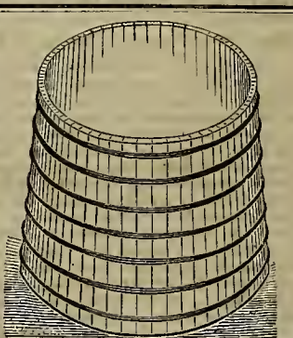

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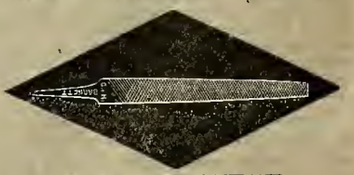

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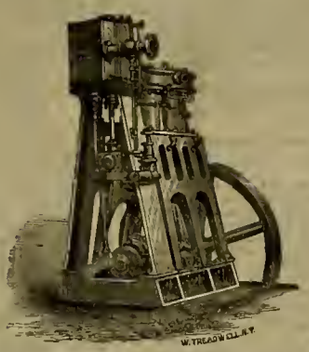

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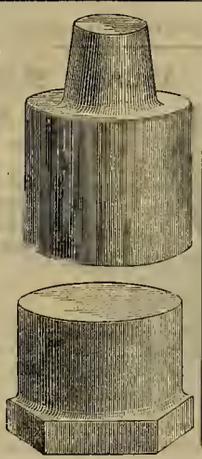

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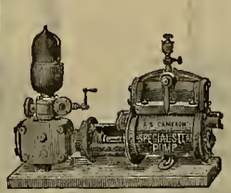

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A Practical and Interesting Journal.

To this end, we aim, through the constant watchfulness of onr editors and correspondents, to sieze npon everything new in the way of mining and the various processes connected with the saving and separating of the precious metals, and place the same before our readers at the earliest day. It has been well said that

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Through which men look ont npon all that is going on in the world. Our window is a special one, so placed and arranged as to bring within the scops of its vision all that is going on

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Able List of Correspondents,

Through whom we are able to promise to our readers so much that cannot be collected in the mere routine of office work. By the aid of snch help our editors will be able, dnring the coming year, to do more than ever in furnishing information which shall be

Fresh, Novel and Interesting,

And which shall comprise all that is known of the latest and best means for saving gold and silver, and for economizing labor and cost in that direction.

Our Illustration Department

Will still continue to form an important feature, and no effort will be spared to make it of the greatest possible local and general interest to onr readers. The important matter of

Home Manufactures and Inventions

Will also largely occupy the attention of the publishers and editors, and will be constantly encouraged, as an important means of furnishing employment to those who are seeking our shores, and adding to the wealth of the Pacific coast.

The Large and Increasing Circulation

Of a journal thus devoted exclusively to useful and practical information, speaks more in our behalf than anything we could say of ourselves, and is an encouragement to its further increase, especially in these times of trifling and trashy journalism.

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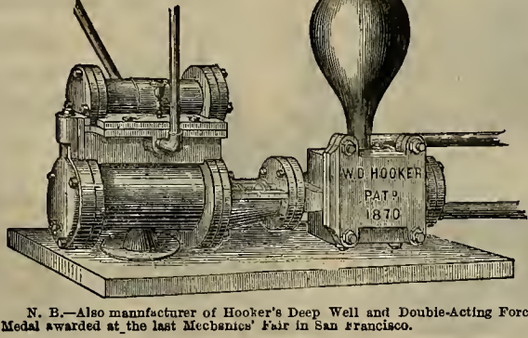

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"SPEAKS WELL," ETC.—We would return thanks for an exchange and back numbers of the MINING AND SCIENTIFIC PRESS, published by Dewey & Co., of San Francisco, Cal. It is a well edited, interesting, and valuable journal, and speaks well for our Pacific neighbors.—*U. S. Milling and Manufacturing Journal.*

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, DECEMBER 9, 1876.

VOLUME XXXIII. Number 24.

Items of Interest from the Mines.

We give below items of interest from prominent mines, most of which are colleted from letters of the respective snperintendents on file at the offices in this city. Conseiderehle of this news is later thsn thst procured from the interior journals:

The tnnnel at the Electric is going ahead night and dey.

Letter of the 4th from the Savage says: For the last 24 hours the pnmp lowered the water 2 feet; pump ran yesterday ou the morning shift 12 honrs at 6¼ strokes per minute, and on the night shift 11 hours at 7¼ strokes and 1 hour at 1 stroke.

A fine body of qnartz was struck the other dey in the east drift of the Ledy Washington, 180 feet from the shaft.

The Jnetice continues to ship 300 tons of ore per dsy to the mills.

The west drift of the Raymond & Ely mine is now in 1,852 feet, and in more favorahle gronnd. An assessment of $1 per share has been levied on this stock.

Operations at the Chollar for week ending December 2d are as follows: No. of tons of ore extrected, 587¼; No. of tons forwerded to mills, 654¾; average assay valne of ore mined, $30.50.

The water coming into the Hele & Noroross mine continnes strong; the pump hes done good execution the pest week, having lowered the weter in the incline 28 feet, and is now nine feet helow the 1900-foot level.

The hoisting works and mechinery for the Indien Queen mine hes arrived. The mill is still rnnning.

Letters of the 3d from Sevege says: For pest 48 honrs the pnmps gained on the water 10 feet, water now stands 321 feet helow the 1700-foot level, being a totel gain of 237 feet.

Telegrem of the 4th says: Pnmps running well, water 323 feet below 1700, and well below 1900 station.

The principal pert of the mechinery of the Comenche hes arrived at the mine.

Letter of the 2d from Empire (G. V.,) seys: The ledge in No. 5 north, No. 8 and 9 south is still very small, good milling ore, hnt very hard gronnd. No change whatever in 10 and 11 south, ledge a good size hut low grade ore. Everything is running aloug es usnal at mill and mine.

The lining of air compartment of the shaft of the Gould & Cnrry mine has greatly aided the ventilation of the mine. At points where the thermometer registered 102 degrees, it now ranges from 70 to 80 degrees.

The lest cleen-up of the Eareka (G. V.,) for five deys' run of 10 stamps, 12 honrs per dsy, is 255 onnces amalgem.

The Modoc (Inyo connty,) furnace is rnnniug steadily, and furnece No. 2 hes probahly heen started np by this time.

Eureka Consolideted letter of the 29th says thst the mein west drift from the 9th level is improviug, with good indications and every prospect of comiug npon a vein of ore. The ground is more fevorahle for working and progress more rapid. The connections hetween the 9th level drifts and the west winze from the 8th level will give hetter ventiletion throughout the 9th level. The engine pleced on 9th level is working well. Have commenced drifting from hottom of north winze, 100 feet helow the 9th level.

The Leoperd contiuues to yield the usual amonnt of ore.

Advices dated Nov. 28th from the Menhettan state that during the week, euding Setnrdey, 25th, the mill reduced 120¾ tons of ore, the assey velue of which is $25,145.73, which will prodnce in hnllion ahont $22,631.15. The mill wes delsyed several times during the week by breaking of the cem sheft, and hy necessary repairs in the pen room.

An applicetion hes heen mede to the San Francisco Stock and Exchange Board to allow the name of the Segregated Gold Hill miniug company to he chauged to the Golden Stete mining company.

H. H. Granice, who killed Edward Medden, has heeu convicted at Merced of mnrder in the second degree. It is thought that his counsel, Jndge Terry, will carry his case to the Snpreme Conrt.

Mining in Mendocino County.—Mr. A. O. Cerpenter, of Ukiah, writes us thet the ditch bringing water from the Green creek into the mines ahout Calpella is being prosecuted with vigor, 45 men now being engeged iu the work. An old resident of this neighborhood formerly honght $800 of dust, takeu from this gronnd with rockers, and avers thet the color mey he obtained from the dirt thet will cling to a hunch of grass pulled up almost enywhere on the gronnd segregated for working, which emounts to several hnndred acres. The gold is very fine scele, and muet he worked with csre to he remunerative. A new hotel aud meny dwellings have been hnilt at Celpella, on the strength of this discovery, or rether its systematic working. Lively times are looked for there, end here too, as the diggings are only six miles from Ukiah.

The misery in Belgrade is said to he terrible.

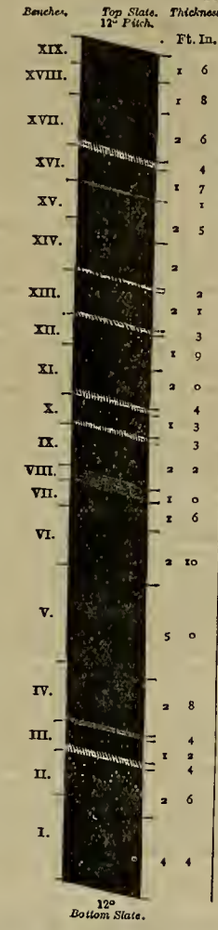
Mammoth Coal Vein Section.

The monumental column of enthracite coal in the center of the trophy recently exhibited in the government huilding at the exhibition, wes cut from the Mammoth vein at the Plauk Ridge colliery in Schnylkill connty, Penn., et a distance of ahout 160 feet helow the surfsce of the grouud. As pleced it shows the totel thickness of the vein and the alternations of coel and slate, which are given in detail in the accompanying teble anc section.

SECTION OF THE MAMMOTH VEIN AT PLANK RIDGE COLLIERY, NEAR SHENANDOAH.

Philadelphia and Reading Coal and Iron Company.

Scale 8 feet per inch.


Benches.
Top Slate. 12° Pitch.
Thickness.
Character.
Ft. In.
XIX. 1 6 Coal, hard and bright
XVIII. 1 8 " " " "
XVII. 2 6 " " " "
XVI. 4 " Bony " Coal.
1 7 Coal, hard and bright
XV. 1 Slate.
XIV. 2 5 Coal hard and bright.
2 " " " "
XIII. 2 " Bony " Coal.
2 1 Coal, hard and bright.
XII. 3 " Bony " Coal.
1 9 Coal, hard and bright.
XI. 2 0 " " " "
X. 4 " Bony " Coal.
1 3 Coal, hard and bright.
IX. 3 " Bony " Coal.
VIII. 2 2 Coal, hard and bright.
VII. 1 0 Slate.
1 6 Coal, bright and glassy.
VI. 2 10 Coal, very rough, called the "charcoal" bench.
V. 5 0 Coal brightest and best bench in the vein.
IV. 2 8 Coal, hard, bright, and glassy.
III. 4 Slate.
1 2 Coal, hard, bright, and glassy.
II. 4 " Bony " Coal.
2 6 Coal, hard, bright, and glassy.
I. 4 4 " " " "
12° Bottom Slate.

The nonumental column of enthracite coal in the center of the trophy recently exhibited in the government huilding at the exhibition, wes cut from the Mammoth vein at the Plauk Ridge colliery in Schnylkill connty, Penn., et a distance of ahout 160 feet helow the surfsce of the grouud. As pleced it shows the totel thickness of the vein and the alternations of coel and slate, which are given in detail in the accompanying teble anc section.

It wss of course impossible to ohtsin such a section as this in a single piece. It wes therefore cut out with great care in benches, corresponding to the numhers given on the section, No. 1 being at the hottom. The column is ahout three feet sqnare, and has a total weight of shout 18¾ uet tons. Eech of the 19 blocks was securely cesed and two platform cars were reqnired to transport them from the miue to the exhibition.

The ennexed sectional diagram shows the memmoth vein end the three veins lying below it, the intermediate speces heing occupied hy conrse and fine sandstone shsles. The shaft of the colliery is indicated at *B* aud the point at which the coal was taken at *A*.

This interestiug column, says the *Engineering and Mining Journal*, is the contrihution of the Philsdelphia and Reeding coal end iron compeny, through Franklin B. Gowen, Esq., the Preeident of the company. Much credit is also due to Gen. H. Pleasants and Joseph Herris, the mining engineers of the company, eud to the Snperintendent of the colliery. As it was impossihle to sustein snch a high column without a rigid framework, application was mede to Semuel J. Reeves, Esq., the President of the Phœuix iron works, who supplied the heantiful iron pletform and tower which supported the coal. This tower is constrncted wholly of the Phœnix tubular column and the girders menufscture at that establishment. For greater security the coal is sustsined upon three separate floors, one ahove the other, so thet the weight of the entire colnmu does not rest upon the lower lnyers of the cosl.

The hese of the trophy is formed hy grouping large masses of merhle, iron, copper and zinc ores, nickle ore, phosphorite, etc., together with hales of cotton, sheeves of cereels, tohecco and other prodncts of the soil and miue.

The greatest credit is due to Prof. W. P. Bleke, who has charge of the collectious of the Smithsonian Institute et the exhibition, not only for secnring this fine representation of our anthrecite cosl heds, hut for the admirehle collection of economic minerels aud their products, which occnpy so worthily a large space in the United Sates Governmeut huilding. Throngh the indefatigehle efforts of Prof. Blake, guided hy his wide acqneintance with the mineral districts of the country and his knowledge of the requirements of such a collectiou, are we indehted for this creditahle illustration of the mineral wealth of the country. Had it not heen for the Smithsonian Institute, and for its fortunate selection of an executive officer, the minerels of the United States would heve hed hut a very indifferent representation.

SECTION SHOWING VEINS WORKED AT PLANK RIDGE COLLIERY (P. & R. C. & I. CO.)

Scale 600 feet per inch.

NOTE.—*A*, Point from which column of coal was taken; *B*, Plank Ridge Shaft.

It will he seen that hard, bright coal, of a snperior quality, alternetes with what is called hony coel end slate. The good coel, however, very largely predominates, being in the aggregate 40 feet 11 inches thick; while the hony coal is hnt one foot eight inches in all; and the slate, which, thongh often highly carhouized, is carefully separated from the coal hefore sending to market, is one foot five inches in thickness, meking the totel thickness of the vein, end consequently the hight of the column of coel, 44 feet.

Bullion Shipments.—Since our last issue shipments from prominent mines have been as follows: Ophir, Nov. 29th, $11,810.91; Manhettan, 28th, $12,300—total for the week, $24.200, for the month, $96,500; Leopard, 28th, $4.500; Modoc, 233 hars—totel to dete, $86,684; Northern Belle, 26th, $18,005.19; Chollar, 28th, $7,445.05; K. K. Con., 27th, $3,750—totel this month, 1st to 27th inclnsive, $50,000; California, 29th, $122,319.48—totel since dividend, $838,202.68; Northern Belle, Nov. 28th, $12,005.79; Comanche, Nov. 28th, $6,326.46. Northern Belle, 30th, $12,001.09; California, Dec. 2d, $83,324.03—totel since dividend, $921,526.71; Con. Virginia, 1st, $151,841.84—total since dividend, $683,239.72; the 2d, $47,291.98 — total since dividend, $730,531.70; Modoc, Nov. 30th, $6,040; K. K. Con., 28th, $3,750; 30th, $3,000—to dete for month, $56,750; Ophir, Dec. 2d, $36,368.04—total to date, $98,201.61; Tyho Con., Nov. 27th, $8,698.10—totel to date, $43,549.38. Chollar, Dec. 2d, eight hers, velued at $22,186; Modoc, 2d, 235 hers; totel for Dec., to dete, $12.100; Menhettan, Nov. 30th, $12,300; total for month, $96,500; Arizonn, Dec. 3d, $3,547.88; Leopard, Dec. 5th, $9,800; Northern Belle, 3d, $18,002.76; K. K. Con., 2d, $3,750.

Col. J. A. McDonald, Captain of the Scottish rifle team, which recently visited the United Stetes, has been appointed Solicitor-Geuerel of Scotland.

General Crook's expedition against the Indiana has left Fort Reno.

Concentrating Works.

The Colorado *Miner* has the following description of the new works of Matthews & Co.: As the development of our mines progresses the amonnt of low grade ore which may be profitably treated by concentration increases proportionatsly, and in the near fnture the business is destined to assume an importance which even its warmest advocates have not foreseen nor predicted. The concentrating mills now in running order at Georgetown, Silver Plnme and Brownville can handle 150 tons of ore daily, and it is safe to assume, will treat 100 tons in each working day of the year hereafter. The crnde ore of this character will average abont 25 oz., and the loss in handling will not exceed 20 per cent. At the lowest estimate, 2,000 onnces of silver daily, or nearly a million dollars per annum, will be added to the product of Clear Creek county, while these mills are in successful operation. As the value of our millingfore, outside of concentration, is now somewhat above two millions per annnm, and as the crude mineral carrying 25 to 40 oz. silver had had no market value whatever, the importance of this industry may be appreciated at a glance. Bearing the above facts in mind, Messrs. Mathews & Co., proprietors of the Rocky Mountain sampling mill, determined to add concentrating works to tbeir plant and have just completed an extensive mill, capahle of handling 20 tons daily, of which we shall give a brief description.

The mill building proper lies north of and adjacent to their sampling works, and is 60 feet in length, 33 feet wide, and 38 feet high, including the cupola. Advantage has been taken of the elevated road built for the sampling works, to receive ore on the upper floor and thus allow it to proceed through the various mechanical operations mainly by its own gravity. On the upper floor, where the crude ore is received, stands a Blake crusher, No. 2 size, of the latest patent, and below it a pair of 10-inch rolls, made by Fraser, Chalmers & Co., of Chicago, who have also constructed all the iron work and machinery employed in the mill in their usnal thorough and efficient style. After passing tbrough the crusher and rolls, a sample having been taken antomatically from the ore as it leaves the rolls, the ore is conducted by an elevator to the top of the tower, where it is dropped into a water sizsr and all dust drawn off in the form of slime. The ore passes thence into revolving screens, four in number, of 10, 20, 32, and 60 mesh wire, respectively. All coarse ore which is caught by the first is returned to a pair of finishing rolls, and sent back by the elevator. The slimes mentioned above are conducted to a settling tub, where they are deposited, and drawn off into a dolly tub over the Frue vanning machine to be used when required. The finest screen also discharges directly into the tank over the Frue machine, but the intermediate sizes from screens Nos. 1, 2, and 3 fall into the three jigs on the second floor. Tbese jigs are essentially the same as those employed by the Silver Plume Consolidated company, except that they have three instead of four compartments, and are five feet wide by nine and ten feet in length. A water sizer at the discharge of each separates any slime which has remained with the ore, and leads it into large settling tanks, whence it may be removed at pleasnre.

The tailings fall into square boxes below the jigs, and, after being tested, find their way into the creek, and the headings, or concentrated products, are removed from the jigs in the usual manner. Up to this point, the operations described have been snch as our mill-men have nsed for years, bnt for the treatment of the finest ore and slimes it is claimed by Messrs. Mathews & Co., and many others, that the Frue vanning machine excels in many respects any slime-table or other device ever practiced on Colorado ores. This machine needs to be seen to be understood. It is a large frame, 13 feet long and five feet wide, in which runs on rollers a heavy rubber helt, 27 feet long and four and one-half feet wide, turned up on the sides so as to prevent the ore and water from washing off. One end is abont six inches lower than the other, and the ore and water are fed from above, near the top and against the rise, in snch a manner as to be distributed evenly over the whole width of the belt. Tbe belt revolves toward the feed, moving about 110 inches per minute, with a lateral or horizontal motion of 180 strokes per minnte, and is arranged so as to be easily regulated to suit the character of ore under treatment. The two movements combined produce a result similar to the vanning or pan motion, making a complete and immediate separation of the rock and mineral. The rock is washed down the incline by the running water and swept off into a tailings-box. The mineral being of greater specific gravity clings to the belt, and is carried over into a tank at the head of the machine, where it is washed off by passing under the surface of the water. The fine mineral which is held in suspension by the water is caught by settling-boxes into which all the water used on the machine is conducted. The amount of water used is very small, not exceeding three gallons per minute. Perfect sizing and an even motion are required, but with these secured, the machine seems capable of giving better results than any now in use in Colorado.

Careful records will he kept of its workings, which we shall pnblish in a subsequent issne, but the practical tests which have been made go to demonstrate all that has been claimed for its economy and efficiency of concentrating fine material. Water for all uses in the mill is supplied from a never-failing well by a large Blake pump, which forces it into a tank seven feet high and six feet in diameter, on the upper floor. Tbis tank is heated by exhaust steam, and as the mill is protected by a double sheathing, filled in with sswdust, no trouble can result from the coldest weather. Two engines and boilers combined, of 40 horse-power, drive all the machinery of the concentrating and sampling works. The crushing floor will hold 100 tons of ore, and is connected by an elevator with an ore-house adjacent to the mill, which has a storsge capacity of 600 tons additional. The present crowded state of hins and ore-house shows that business has begun nnder favorable auspices. A drying-house, assay-office, and other buildings have been added, and the comfort and convenience of employees consulted in all essentials. Conrad Hanson, the well-known contractor, has constructed the buildings, built the wood-work, jigs, etc., and has done all his work in a thorough, skilful and conscientious manner worthy of his high reputation. Tbe credit of the inception of the works and their erection according to the latest and most approved plane, belongs almost entirely to D. Ernest Melliss, Ph. D., whose courage and enterprise have never faltered in the face of many discouragements. We congratulate the members of this firm on the completion of a mill which we believe will advance their own interests as materially as it will aid the mining indnstry of this district.

The Wheeler Expedition.

Now that the work of that portion of the Wheelsr expedition which has been operating in our immediate vicinity, says the Virginia *Enterprise*, is drawing to a close for the season, it will be of interest to our readers to know what has been done and what is proposed to be done next season.

The portion of the expedition known as party No. 3 of the California section, under Lieutenant T. W. Symons, of the Corps of Engineers, left the rendezvous camp at Carson, August 28th, and proceeding to the Carson river, just bolow Sutro, made camp and proceeded to the work of laying out a base line. A very oonvenient place was found on a straight portion of the old emigrant road through the valley, which is now very little traveled. Monuments covered with white cloth were bnilt at each end of the base and its development commenced by occupying and building monnments on tbe prominent snrrounding mountains. At these stations angles were very carefully taken to all the prominent peaks around the horizon, from whicb the work was taken up and carried on by the outlaying parties of the expedition.

At each of the stations occupied by these parties barometric, thermometric and psychrometric observations were taken to determine the altitudes. Angles were also very carefully taken to determine their position, and sketches made showing the general topography, leaving it for the meander parties to complete the details. At several stations azimuths of the various linea were taken and the whole connected for latitude and longitude with the astronomical monument on tbe divide between this city and Gold Hill. Among the stations occupied in the base development were Mounts Davidson, McClellan, Tibbie, Emma, Raw, and others.

After a sufficient number of points had been occupied the party separated, Dr. Kampf and Mr. Seckels, with three assistants, remaiuing at Sutro to measure the base, the apparatus for which has already been described in these columns. Lieutenant Symons with Mr. Anton Karl and Mr. Cameron came to Virginia and established a camp at Biddleman's ranch and commenced operations with the view of makiug an accurate contour map of all the country about Virginia, Gold Hill, Silver City, Empire, etc., in fact, of all the country embracing the mining and milling interests of the Comstock. Four plane table sheets have been filled in, two to a scale of 500 feet to one inch and two 1,000 feet to one inch. The general *modus operandi* is as follows:

The position of a sufficient number of points for each sheet was accurately determined by triangulation and computation by Lieutenant Symons, those points when laid off on the sheet forming the foundation for the detailed work done by Mr. Karl. At each station occnpied by the plane table and at many others, snch as raviues, canyons, road-crossings, etc., barometric observations were taken by Mr. Cameron, and lines were run with the level to get the data for contouring. On the 20th of October Dr. Kampf bad finished measuring the base and the party at Sutro had broken up. Dr. Kampf, after determining the azimuth of his lines at the astronomical monument on the divide, went to Washington to work up his results in the office of the survey in that city.

The plane-table work has been frequently tested and checked by the occupation of points with the transit and by cross-sights, and the idea and aim throughout has been to attain the greatest accuracy possible. Every mountain and hill will be shown in its proper shape, and every road, flume, canyon, ravine, reservoir, mine, mill, etc., be located with the utmost care.

The party will soon leave for Carson, there to disband and retnrn to Washington for its winter work. It will require nearly all summer to complete the field work laid out by Lieutenant Wheeler for the party, and then a map will be constructed which will be a delight to the eyes of every resident of Storey county, and every citizen of the United States interested in the Comstock. It will be of immense valne and of unquestionable accuracy.

Of the importance of such a work to us here on the Comstock it is scarcely necessary for anything to be said. The time has come when an inch of some of our mines is a small fortnne yielding a liberal income per month. Many of the outside localities are rapidly increasing in importance, and how soon tracts now comparatively worthless may be of immense value cannot be told. Disputes over land and mining claims have been fruitful of bloody contentions in the past, and are so to-day in too many instances. If such things are ever to cease, it will be when the means is at hand for determining unmistakably and to an inch the exact rights of respective land and mine claimants. The necessary data will be furnished for this by this survey, and from the work done by this party on and along the Comstock. This, outside of the great and important general work done, should be sufficient reason for continuing the survey.

But all this depends on the action of congress at the approaching session. If the necessary appropriations are made the work will be pushed forward to an early completion. If, however, the spirit of a mistaken economy is allowed to prevail to such an extent as to stop all such necessary work, it will have to be laid aside. It is sincerely to be hoped that this desirable, this necessary work may be allowed to go on to an early completion, and to this end we ask all the friends of Nevada and Washington to stand by our representative in congress and aid in securing the requisite appropriations that this work, so necessary for us here on the Comstock, may be continued.

The expedition here has been characterized by the most rigid economy and a total absence of all sinecures. The employees have shown a sincere devotion to the work and a determination to attain perfect accuracy as a result. These have been the leading characteristics of the exploring expedition under Lieutenant George M. Wheeler, and certainly if any government work deserves support and to be continued it is that under this young officer, who has already attained a reputation which has crossed the ocean and of whom the United States ought surely to be proud.

Oregon Silver Mines.

The reported richness of the Camp Creek silver mines has created so much excitement and aroused the curiosity of the people to such an extent, consequent on the contesting parties who are contending for the property, that a little history of the discovery may be of general interest. The mines are situated on Camp creek, a tributary of Crooked river, in Wasco county, distant about 300 miles from Albany and 190 from The Dalles, surrounded by elegant ranches and in the midst of the most luxuriant grazing country in the world, where bnnch grass abounds and stock revels in the richest pastnres. Some four weeks ago Messrs. White, Ross and a negro, all of East Portland, were on a cattle hunting expedition in the country just named, when their attention was attracted by tbe appearance of a number of boiling springs. They remained for some time examining them, and remarked upon the soapy substance that exuded from their summits. Finally Ross picked up a piece of quartz, and remarked that it bore a striking resemblance to the argentiferous rock in the White Pine district. They agreed to bring some with them to Portland and have it assayed.

On their return they related their adventure to a Mr. McCann, and he, as a matter of course, told others. The assay was richer than their wildest dreams had imagined and increased the excitement already existing. The original discoverers started on their return to the mines to pre-empt their claims, but the party to whom McCann recounted the discovery determined to reach the goal ahead, if possible, as "possession was nine points of the law." They took the Albany train, and, on their arrival, hired the fastest horses they could find, changing them when tired ont for fresh animals. As may be imagined horse flesh wasn't regarded worth much when contrasted with the end in view. Suffice it to say they arrived in advance, located and recorded their claims and felt well pleased at the success of their trip. In the course of time White, Ross and his friends reached the scene, and by virtue of their right as discoverers drove off the McCann party by threats and the free display of arms. They then organized a mining precinct, elected Mr. Cunningham, of East Portland, recorder, staked off and recorded 1,500 feet of the lead on which are situated five of these boiling springs, and are determined to hold it at any and every cost. As there are two sides to every story, it is but justice to give the other. The McCann claimants say that the discoverers had no idea of the valne of the springs and the knowledge of the matter contained therein, and it was elucidated in this wise: The negro seeing the soapy appearance of tbis substance issuing from the springs wished to test it as a laver. He washed his handkerchief with it and the result answered his expectation. He filled some yeast powder cans with the material and on his arrival at the Dalles had one of them stolen. The parties taking it mixed it with borax as a slag and subjected it to intense heat, which produced small globules of the purest silver. The discovery caused the rush, excitement and contortion which have since taken place.

The vicinity is evidently rich, but thns far no well-defined ledge has been struck. The hill is covered over with argentiferous black qnartz mixed with sulphates and chlorides of silver, imparting indications of the greatest richness. The lode is in the range on which is situated the one that was bonded to Mr. Samuel Parrish, and the rock partakes of the same character. The region of the discovery is one of the most favorable that could be found, as it affords every facility for the cheap working of the mine. Mr. Ross and Sorr and the negro left this morning for their claim, prepared to defend tbeir interests, should snch a course be necessary. The probabilities for a war are very favorable, as both parties are large, well armed and equally determined to maintain possession. We shonld not be snrprised at any time to hear of blood being shed. We would counsel a peaceful compromise and amicable adjustment of the unpleasant affair, if at all possible, before either party proceeds to extremities.—*Portland Standard.*

On Graft Hybrids.

The following paper by Thos. Meehan, Germantown, was read before the American association for the advancement of science, at Buffalo, August, 1876: Of late years an impression has prevailed that hybrids may be obtained by grafting as well as by seeds. Sachs makes no mention of this in his text book, but it has had place in the literature of horticulture for over a hundred years. Bradley says that a variegated jasmine grafted on a common-green stock infused the variegation through the whole plant; and there is an idea among some horticulturists that an intermixture in apples can be obtained by uniting two halves of different buds and grafting them together. Thousands of people have laughed at these notions. No one has tried them. But only a few years ago it was found that Bradley was right; and we have in cultivation new variegated forms of *abutilon*, as well as some other things originated by the graft process.

During the past few years it has been asserted that new varieties of potatoes have originated in this way: a tuber is taken and all the eyes cut out. A wedge with an eye of another kind is then inserted into the eyeless mass and planted. The results are said to be true hybrids. Many of our best physiologists doubt this. I have not seen these cases; bnt I must say the evidence offered is much stronger than much of that on which some popular theories have been built. I tried the split and grafting process, not believing it would result in a hybridity. I merely wished to test the popular notion. I am pleased to be able to say now that it is correct. New varieties can be obtained in that way. I took the Rhode Island Greening and the Red Astrachan—two very distinct varieties of apples in every respect. The grafts with a single bnd were split as near through the center as possible, and a piece of each kind fitted together so as to appear one complete scion. Twelve of these were grafted; three grew; two of these have fruited; neither are Rbode Island Greening, and the two are unlike each other; one of these has a flower like the Rhode Island Greening, and the flower of the Red Astrachan is rosy and in many ways distinct from the large white one of the Rbode Island Greening; but the fruit is, in many respects, similar to that of the Red Astrachan.

The second variety has the flower similar to that of the Rnode Island Greening, and the fruit somewhat the color of the Red Astrachan, ripening about the same time, but is but half the size, very much flattened, and with a slender stem near two inches long, and as much like that of a Siberian Crab as can be. There is no doubt but two varieties, distinct from their parents, and distinct from each other, have resulted from this graft process. Some may suppose that the union of a Red Astrachan and a Rhode Island Greening apple should result in producing an exact intermediate, and that the union of buds in several graft cases should each produce identically the same, and therefore the two distinct varieties from the same process be a surprise. But no two children of the same parents are exactly the same; and this is the experience of plant hybridists. Our fellow-member, Mr. W. Saunders, of London, Ontario, crossed the American gooseberry (*Ribes Cynobasti*) with the Red Warrington, an English variety, but both with hairy fruit. The hybrid product has smooth fruit, thus introducing a character not extant in either parent. And as regards variety, I have myself, from one single berry of a fertilized fuchsia, produced several score of plants, among which no two were alike. I do not know that there is any pomological value in the new varieties of apples I have raised, but I am delighted with the scientific results, proving that hybrida by bud-grafting is more than a popnlar delusion.

Steel Iron.—A German firm—Asbeck, Osthaus & Co., is manufacturing a substance they term steel iron, in five different varieties, so they can furnish steel upon iron, iron between two layers of steel, steel between two layers of iron, steel core and iron skin, or iron core and steel skin. It is made in an iron shell, divided into two compartments by an iron plate. Before melting, both the steel and malleable iron are cleansed from any substance which would impede their welding. In the casting, they are run at the same moment into the shell, in such a manner that the separating diapbragm serves to weld the two metals together, which form an inseparable mass when cooled. The process is recommended for rails, anvils, armor plates, etc. The process is said to have been known some time since in France,

Scientific Progress.

The Missing Link.

M. Herman Fol, a Swiss naturalist, has recently contributed a memoir to the Geneva society of physics and natural history on the *Appendiculaires*, a family belonging to the class of animals known as *Tuniciers*. In this article he confirms the near relations that several authors have established between these animals and the vertebrates, and proposes them as the trunk from which the latter were developed. On this point the editor will, perhaps, be pardoned a few necessary observations. It seems evident at a glance, whatever may be our views on incidental questions, that the spinal column that distinguishes vertebrates could only have originated in aquatic habits. In fishes, for instance, it serves the function of an axis of motion extending from the head to the tail, the central canal being occupied by a tissue having the function of conjunctivity, and the muscles being arranged in such a manner as to act from a central osseous axis. Of the various types of motion observed in aquatic animals, the vertebrate appears to be that most conducive to rapidity of movement combined with flexibility as respects direction. Accordingly, in land animals, so long as the perfect integrity of the spinal column continues, as in reptilians, the type of motion continues to be substantially the same as in fishes; and, in the course of their fœtal development, all vertebrates pass through a spinal type that has its homologue in fishes. That this is an original type of motion, and one not fairly derivable from another or lower type, seems evident from the fact that no satisfactory link can be found to connect it with other forms. The extinct ornithic reptiles furnish a clear link between birds and reptilians. So, again, the mammalian type of motion can be readily traced to the aquatic type presented in fishes. Our conclusion, therefore, I think, in the present state of the facts, must be that the vertebrate type of motion had its origin with aquatic animals as a simple and primitive type, springing directly from the primordial necessity in such animals for a type of motion dependent on, and involving the development of, such a longitudinal axis as that which is exhibited in fishes in its simplest and most perfect form.

Crystal Finding.—The use of rock crystal in the manufacture of optical instruments has led to the development of the curious and interesting profession of crystal finding. It is, however, an old occupation in the Swiss Alps, where not only the knowledge of the crystal finder, but his nerve and endurance, are often put to a severe test. The rock crystal—pure silica, or crystallized quartz—is found in pieces of different size, color and fineness, sometimes separately, sometimes in groups. The strahler—as the crystal finder is called—is equipped with a bar of iron four feet long, bent up at one end, a shovel, a hammer, a hack, a strong cord and a leather sack, and starts for his work early in the morning. He is nearly always alone, as the Swiss are not fond of "going shares" in any piece of good fortune. He crawls along the flanks of the hills bours together, along the most perilous paths, looking out anxiously for any indication of a vein. This may be a long way above him, and he tries to reach it as best he can, being not infrequently compelled to cut his steps in the rock. His first act, on reaching his find, is to strike it with his hammer, his ear telling him whether the crystals are attached to the walls, separate or mixed with sand. The most celebrated find of large crystals is the recent one made at St. Gothard. A hundred feet above the snow limit, an apothecary, a resident of Berne, saw, one evening, a vein of quartz, 60 feet long, and four to 12 feet thick. A guide was with him, and the two resolved to ascend for an investigation. This, however, had to be deferred till the morning. The would-be finders passed the night in a hut, and rose early to make the ascent. Unfortunately, the morning was misty, and threatened to cut off their retreat. They descended in haste, and were unable to renew their attempt until the following year, when the spring had melted the winter snows. The day at length arrived when they were able to begin work, and, by mining the vein, they pierced into its inner chambers, and collected 300 cwt. of crystals, the largest of which were bought up by scientific institutions, and the fragments by opticians and instrument makers.

The Microscopical Study of the Brain.—Dr. Walter H. Kempster, physician and superintendent of Northern hospital for insane, Oshkosh, Wis., briefly outlines the progress made by recent investigators in studying the pathological histology of the brain in insanity, as follows: 1. The importance of microscopic observations of the several cerebral membranes, to determine their pathological condition, and the relations that the various pathological states hold to the forms of mental aberration. 2. The abnormalities in arterioles and capillaries, including the various deposits on the walls of the vessels; engorgement and its consequences; the several changes observed in the coats of the vessels; occlusion from minute thrombi, and embolism; alterations in the course of the vessels, and the effects these conditions have upon the surrounding brain tissue. 3. Miliary aneurisms and miliary hemorrhages: the effect they have in the production of brain disease. 4. The peri-vascular sheath, and peri-vascular canal, as they are found in cases of insanity, were considered in their relations to adjacent brain tissue. 5. The various alterations in structure and form noted in nerve cells and nerve fibers, in the several forms of insanity. 6. The abnormalities in the cerebral gia, and the conditions called "miliary sclerosis," and "colloid degenerations," were described, and the influence each condition has in impairing normal cerebral action was discussed. 7. The various pathological conditions found in the microscopic examination of the brain in a number of cases of insanity, were illustrated by means of photo-micrographs, made from fresh and prepared specimens. The pathological states observed were considered with reference to the mental symptoms noticed during the course of the various forms of insanity.—*Virginia Medical Monthly.*

A New Route from Europe to China.

Should further explorations of the route from Europe to China via the Arctic ocean and the Yenesei river, across Siberia, as laid down by Professor Nordenskjold, of Sweden, prove its entire practicability, a great stride will have been made both in commercial and in geographical science. The distance from England to Volgino, at the mouth of the Yenesei river, is about 3,000 miles, and from Volgino to Peking, in a direct line, about 3,000 more. The present route from England to Peking, via the Mediterranean sea and Suez canal, is about 12,000 miles. The Yenesei river has its source in the Altai mountains, which form the boundary between China and Russian Siberia. It flows almost due north into the sea of Kara, which is distinguished from the waters of the Arctic ocean merely by the islands of Nova Zembla and the capes of the main land, which appear to partially inclose it. The distance between the headwaters of the Yenesei and the sources of the Amoor river, which flows into the gulf of Tartary and the Japan sea, is about 150 miles. The navigation of these rivers would have to be done by light draft steamers, while the short overland route of 150 miles might soon be "all rail" and resonant with fast trains. As the route lies through Russian territory that country, of course, is master of the situation. At present a large proportion of the Russian and China tea trade is carried on overland by caravans, which the new route, if developed as suggested, would render obsolete. In a political point of view, the proposed route is of much importance in its bearing upon the Russian and English possessions in the distant East, and may introduce new sources of trouble between those powerful rivals.

The Eye of Man in the Past.—Science gives us interesting details about what the human eye has been and what it may become. The Vedas of India, which are the most ancient written documents, attest that in times the most remote, but still recorded in history, only two colors were known, black and red. A very long time elapsed before the eye arrived at the perception of the color yellow, and a still longer time before green was distinguished; and it is remarkable that in the most ancient languages the terms which designated yellow insensibly passed to the signification of green. The Greeks had, according to the received opinion now, the perception of colors very well developed; and yet authors of a more recent date assure us that in the time of Alexander, Greek painters had for fundamental colors only white, black, red and yellow. The words to designate blue and violet are wanting to the Greeks in the most ancient times of their history, they called these colors gray and black. It is thus that the colors of the rainbow were only distinguished gradually, and the great Aristotle only knew four of them. It is a well known fact that when the colors of the prism are photographed, there remains outside the limit of the blue and violet in the spectrum a distinct impression, which our eyes do not recognize as a color. According to physiologists, a time will come when the human eye will be perfected, so as to discern this color as well as the others.

Industrial Application of the Sun's Rays. M. A. Mouchot presents to the French academy a small "solar alembic" easy to set up and to remove. The mirror is 50 c. m. in diameter; the boiler contains one liter of wine, which is brought to a boil by half an hour's exposure to the sun. The vapor of alcohol enters a tube placed in the center of the boiler, traverses the foot of the mirror, and descends into the worm, where it condenses. The foot of the mirror is a gas-tap fitted with a groove and a set-screw, which permit the boiler to be always turned to the sun. If the boiler is filled with water, and if a receptacle full of leaves or odoriferous flowers is interposed between it and the worm, all the essences procurable by distillation may be obtained.—*Chemical News.*

Association of Racial Types.—Herbert Spencer, in *Popular Science Monthly*, says upon this subject, that "throughout the animal kingdom the union of varieties that have become widely divergent is physically injurious; while the union of slightly divergent varieties is physically beneficial. Some facts seem to show that mixture of human races extremely unlike produces a worthless type of mind. Natures respectively adapted to slightly unlike sets of social conditions may be expected, by their union, to produce a nature somewhat more plastic than either. The best genius of England resulted from a union of Celts and Anglo-Saxons."

Mechanical Progress.

New Nomenclature of Iron and Steel.

The following is the report of the international committee appointed by the American institute of mining engineers on the nomenclature of iron and steel:

Whereas: The recent production of soft, cast, malleable compounds of iron by the Bessemer, the Siemens-Martin, and the crucible steel processes appears to demand a new nomenclature of iron compounds, for the following reasons:

1st. The term "steel," by which these soft products are commercially and professionally designated in England and in the United States, does not completely distinguish them from previously existing "steel" which would harden and temper.

2d. A nomenclature recognized in all languages seems desirable, as well for commercial as for scientific purposes, especially as lawsuits, already commenced, depend on the meaning of the term "steel."

3d. Although homogeneity, due to fusion, is usually recognized and is by this committee recognized as the most definite characteristic of both hard and soft steel, this quality may be equally well expressed in other terms, thus leaving the old term "steel," to define the malleable compounds of iron which will harden and temper:

Therefore resolved, That this committee recommends the following nomenclature:

I. That all malleable compounds of iron with its ordinary ingredients, which are aggregated from pasty masses, or from piles, or from any forms of iron not in a fluid state, and which will not sensibly harden and temper, and which generally resemble what is called "wrought iron," shall be called "weld iron" (German, *schweisseisen*; French, *fer soude*).

II. That such compounds when they will from any cause harden and temper, and which resemble what is now called "puddled steel," shall be called "weld steel" (German, *schweiss-stahl*; French, *acier soude*).

III. That all compounds of iron with its ordinary ingredients, which have been cast from a fluid state into malleable masses, and which will not sensibly harden by being quenched in water, while at a red heat, shall be called "ingot iron" (German, *flusseisen*; French, *fer fondu*).

IV. That all such compounds, when they will from any cause so harden, shall be called "ingot steel" (German, *fluss-stahl*; French, *acier fondu*).

Signed, I. Lowthian Bell, P. Tunner, A. L. Holley, Dr Hermann Wedding, Richard Ackerman, Thomas Egleston, L. Gruner.

New Glass Machinery.—The *Iron Age* says: Messrs. Thomas Wightman & Co. have now in successful operation a new glass melting furnace at their works on the South Side, Pittsburg, which has many advantages over the furnace now in general use, and which promises to exercise a healthy influence in giving an impetus to that branch of Pittsburg industry. It was invented and patented by Mr. Evan Jones, and the principal improvement is in the construction of the pots, which are much wider and shallower than those now in general use, being made in such proportion that they require but one filling to make a melt, in place of the three fillings of the old plan, saving much time and fuel. The construction of the furnace is such that the blower can make 90 cylinders to the melt, against 60 from the old furnace, and there only being a reduction of the depth of glass in the pot of about nine inches in making 90 cylinders, it is much easier gathered. The furnace is worked without the assistance of a blowing furnace. On the old plan but from five to six melts could be made per week, making, say, 360 cylinders. The new furnace works at the rate of from 10 to 12 melts per week, or, say, 1,080 cylinders, thus doing three times the amount of work and (on account of the shape of the pots and furnace) with an actual saving of two or three hundred bushels of coal. The shallowness of the pots are much in their favor in resisting the pressure of the melted glass. The furnace has been in operation for a week and is giving perfect satisfaction.

A Canal Steamer.—A steam tug invented by Hugh Stevenson, of Oshkosh, Wisconsin, is exciting attention among those interested in canal navigation. The boat is 55 feet long, 16 feet beam and 4½ feet deep. Attached to the main shaft, in the center of the boat, are 2 large shafts, 14 feet long, incased in beams 15 inches in diameter, which shafts connect with shafts which turn driving wheels. These driving wheels, 2 feet 4 inches in diameter, double flanged and very heavy, run on an iron rail laid along the bank, and propel the boat by traction. A half mile of track has been laid where the trials are being made, and the tests thus far have been very successful. The invention, it is claimed, does away with all wash in the canal. A tug will cost from $3,000 to $3,500.

Bituminous Macadamization in Paris.—In the Faubourg Poissonnière an experiment new to Paris is being tried in road making. The road is being laid with broken stones and pebbles, and the whole held together with asphalt or bitumen. The asphalt is allowed to cool, and the material is subjected to a powerful pressure from a steam roller.

Scotch Street Locomotive.

English papers give the following report of a recent experiment in Edinburgh: The first trial of steam as a motive power was made on the Portobello line of the Edinburgh street tramway company a few days ago in presence of the chairman and directors of the company. The engine, which was manufactured by Hughes & Co., of Loughborough, is the same in general character as that now used, with permission of the local authorities, on the tramways in Leicester, but has been constructed specially for the Edinburgh company. Messrs. Hughes & Co.'s tramway locomotive is, in form, a small tank engine enclosed in a car, and thus presenting nothing to the outward appearance to suggest those objections to which steam tramway cars have been exposed, and in no place more than Edinburgh. The "blast," which has been the stumbling block in the way of the urban use of road steamers, is entirely removed, while the nature of the fuel used and the arrangements for condensation remove all visible discharge of smoke or steam. The engine is constructed to condense its own steam for a run of at least six miles, and the water thus used is available either to throw on the roadway as the engine proceeds, or to be discharged at the end of the journey. Coming to the actual result of the experiment at Edinburgh, we are informed that the directors and those gentlemen whom they had invited to witness the first running of the engine were satisfied in every way as regards the success of the engine in overcoming the usual objections to the use of steam. In the course of the journey over a public road, on which a considerable amount of traffic was going, the horses which met the car or were overtaken by it, treated it with the utmost indifference. Being market day there were many carts on the road, and a considerable number of riding horses were out for a morning canter. A pair of spirited grays with a wagonette, the property of the chairman of the company, also accompanied the car the whole of the journey, and the perfect calmness with which every horse regarded the novel machine proved that the most formidable objection to the road steamer—the blast, or discharge of steam—had been effectually overcome. The absolute control under which the car is driven, both as regards variation of speed and sudden stoppage, also attracted attention; while the circumstance that the driver is in front, full in view of every occurrence in the street before him, seemed to make the machine in some respects more safe and manageable than a car where the driver has his team of horses between him and any obstruction he may meet. This consideration and the excellent guard or "cow catcher" with which the machine is fitted, remove in a great measure the fears as to the safety of a steam car in the midst of other traffic.

A New Water Raiser.

M. Th. Foucault has invented a new apparatus for raising water by means of ammoniacal gas. The machine depends for its operation on the facts that water at 15 deg. C. absorbs 743 times its volume of ammoniacal gas, and gives it off again at 60 deg. C; that, at 100 C., the tension of the vapor is seven and one-half atmospheres; that petroleum and ammoniacal gas are without action upon each other; and that the same is true of petroleum and water. The apparatus consists substantially of a heater which is partially filled with a strong aqueous solution of ammoniacal gas. This heater is connected by pipe with the upper part of a closed reservoir, the lower part of the reservoir being connected by means of pipe and suitable valves with the stream or well from which and the tank to which water is to be raised. The reservoir contains a small quantity of petroleum, which forms a thin stratum on the surface of the water, and serves to keep the ammoniacal gas from contact with it, and, as the inventor expresses it, forms a fluid piston. The operation is as follows: Supposing the reservoir full of water, the temperature of the heater is raised by suitable means; ammoniacal gas is given off, and passes over into the upper part of the reservoir, the stratum of petroleum preventing its being absorbed by the water there. A pressure is thus created in the reservoir, which forces the water there out and up to the tank to be filled. When all the water has been forced out of the reservoir, the heater is cooled by removing the fire and allowing a jet of water from the tank to play on it. The water in the heater, as it cools, reabsorbs the ammoniacal gas from the reservoir, and thus creates a vacuum, which the water from the stream or well rushes up to fill, and thus refills the reservoir. The heater is then again heated, and so on, as before. The inventor claims that the consumption of fuel is almost insignificant as compared with that of a steam-pump of the same capacity. The author also describes a modification of his apparatus adapted to be run by the heat of the sun, in which case the only expense is that of wear and tear, which is small, there being no moving parts.

Paper Church.—The Philadelphia *Ledger* says: There is a paper church near Berlin which can contain nearly 1,000 persons. It is circular within, octagonal without. The reliefs outside and statues within, the roof, ceiling, the Corinthian capitals, are all papier mache, rendered water-proof by saturating in vitriol, lime water, whey and white of eggs.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to Nov. 16.		1 W'k to Nov. 23.		1 W'k to Nov. 29.		1 W'k to Dec. 7.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	....	....
Advance	....	....	....	....	....	....	....	....
Alpha	41	30½	36	30	33¾	33	37	31
Alta	....	....	2½	2½	2⅝	2½	3⅜	2
Amer'n Flax	....	....	....	....	....	....	....	....
Amer'n Flat	750	....	....	....	....	....	....	....
Andes	2	1¾	2	1½	2	1.80	2	1½
Alps	....	....	50o	....	....	....	....	....
Amazon	....	....	....	....	....	....	....	....
Belcher Con	2½	2	4	2	3¾	3¼	3⅜	3
Belcher	15⅞	13¾	1⅝	13½	14¼	13¾	14⅝	13½
Belmont	2½	2	3¼	2¾	2¾	2½	2⅝	2½
Best & Sel	43	41½	47	40	47½	49¾	46	44
Bockeye	....	....	....	....	2½	2½	2	1
Bullion	35	25	37½	30	33¾	30	32	31
Caledonia	⅞	8½	10¾	8	11	10	14	11¼
California	55¼	50	54¾	46	54¾	47¾	51	47⅞
Challenge	3	....	3	....	....	....	2¾	....
Chollar-Potsi	72¼	67	77	66	76	70	84½	75
Confidence	13¾	12	13	11½	13¾	11⅝	12¾	12
Con Imperial	3.45	2½	2½	2,6	3.10	2½	2⅞	2.65
Con Virginia	49¾	43½	51	42½	52¼	45	49	46½
Crown Point	10	8¼	10	7¾	9¼	8¾	9¼	8¾
Cosa Con	33o	20c	25c	22½c	....	....	40o	25c
Daney	....	....	....	....	....	....	....	....
Dayton	3¾	2¾	3	....	2¾	....	3½	2¾
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka (Nev)	....	....	....	....	....	....	....	....
Eureka Con	12	11¾	11	10½	11	10½	11	10⅜
Exchequer	13¾	11½	14	11¾	15	12⅜	14	12¾
Enfopa	....	....	....	....	....	....	....	....
Gila	60o	55c	75o	60c	1¼	1	1⅛	95c
Globe Con	....	....	100	....	....	....	35o	20c
Golden Char	1⅛	....	1⅛	....	1½	1¼	1¾	1⅛
Gould & Cur	13¼	12¼	14	10¾	14	11½	13¼	12¾
Hale & Nor	8	6¾	7⅞	6	7¾	6¾	7⅜	7
Ida Ellmore	....	....	....	....	....	....	....	....
Jefferson	....	....	....	....	....	....	....	....
Julia	6⅜	5	6½	5¼	5¼	6¼	5¾	5¾
Justice	22½	20¾	27	22¾	26½	23½	26½	25⅜
Jackson	3½	....	....	....	3¼	3	3	2⅜
K K Con	....	....	....	....	2¼	....	2¼	....
Kentuck	13½	10½	11¾	10	10¾	10	10	9½
Knickerb'k'r	....	....	....	....	30c	....	50o	30c
Kossuth	1¼	....	1¾	1⅜	1¾	2	2	1⅜
Lady Bryan	65c	60c	55c	50c	25c	22½c	35c	27½c
Lady Wash	1¾	1¼	2½	1½	2	1½	4¼	2¼
Leo	....	....	....	....	....	....	....	....
Leopard	7	6½	6¾	5	6⅞	6	6½	5¼
Leviathan	70c	65c	1	70c	1	1¼	1½	1
Mahogany	....	....	....	....	....	....	....	....
Mansfield	25o	....	25o	....	....	....	10o	....
Meadow Val	....	....	....	....	....	....	90c	70c
Mexican	25	22½	26¾	21¼	25	22	24¼	22½
Midas	....	....	....	....	....	....	....	....
Mint	25o	15c	....	....	....	....	....	....
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	1	62½c	75c	62½c	87½c	75c	1⅛	87½c
Niagara	....	....	....	....	37½c	....	1c	....
North Belle	30	28½	30	27	33¾	30	34¾	....
New Coso	2¾	2¼	2½	2¼	3	3	3¾	2¾
Occidental	....	....	3	2½	....	....	3	2
Ophir	45¾	41¾	46	41	45½	42¾	46	43¼
Or Gold Hill	....	....	....	....	....	....	....	....
Overman	73	73	....	....	72½	91	81	122
Pacific	....	....	....	....	....	....	....	....
Phil Sheridn	2¼	2	2	....	2	....	....	....
Ploche	....	....	....	....	....	....	....	....
Poorman	10c	....	80	5c	30o	....	20o	15c
Prospect	1½	1	1½	1¼	1½	....	1¾	....
Prussian	....	....	....	....	....	....	....	....
Ray & Ely	6	....	3½	3	5¼	4½	5	4½
Rock Island	90c	....	1	75c	1	....	87½c	62½c
Rye Patch	....	....	....	....	....	....	....	....
Savage	12	10½	12	9	11	9½	12	10½
Seg Belcher	71	82	....	....	75	....	93	85
Sierra Nev'da	11⅜	10½	11¼	10	11⅜	11¼	13	11⅜
Silver Hill	9	7¾	9¼	7½	10¼	9	11½	9
8th Chariot	62½c	....	87½c	....	....	....	62½c	60c
Succor	50o	....	50o	5c	40c	....	50c	....
Union Con	12	10¾	12¼	10½	12⅞	11½	12¾	11¾
Utah	16	13	16	14	16	15	15	14½
Wells-Fargo	10c	....	10c	5c	8o	....	5c	....
Woodville	1½	....	1¼	1	1⅜	....	1⅜	1¼
Yel'w Jacket	16½	14½	18¾	13¾	17½	15	17	15½

Sales at S. F. Stock Exchange.

FRIDAY, A. M., DEC. 1.

85 Andes 2
250 Alta 2½@2
250 Alpha 3¼@3½
595 Best & Bel 44½@44¾
150 Belcher 13½
150 Bullion 31
395 Baltimore Con 3⅜@3
150 Bockeye 2½
1325 Caledonia 11½@11¼
415 Crown Point 9¾
925 Con Imperial 2.65@2.70
1280 California 49¾@49
10 Chollar 70c
955 Con Virginia 46¾@47
50 Dayton 2¾
110 Exchequer 13½@14
100 Gould & Curry 12¾
400 Globe 20@22½
425 Hale & Nor 7⅞@8
765 Justice 25½@25⅝
25 Jolia 3¾
440 Knickerbocker 90c
190 Levia-han 1¼@1⅜
325 Lady Wash 2¼@2⅜
200 Lady B 35c
785 Mexican 23¾@23⅝
250 New York 87½c@90
300 N Con Vir 75c
245 Ophir 14½@14
440 Overman 96@97½
250 Occidental 3
660 Silver Hill 9
1530 Savage 10¾@11
660 Sierra Nevada 12@11⅞
460 Union 11¾@11½
150 Wood'ville 1¼
535 Yellow Jacket 15½@16

AFTERNOON SESSION.

510 Alpha 37
20 Belmont 2½
750 Baltimore Con 3¼@3⅜
170 Belcher 13
115 Best & Belcher 45¼@45½
335 California 50@50⅝
160 Con Virginia 48½@48⅝
600 Con Imperial 2.55@2.65
1655 Caledonia 13¾@12½
50 Chollar 76@75
70 Crown Point 9½
560 Coso Con 40c
50 Eureka Con 10¾
20 Exchequer 13¾
2200 Gould & Curry 12¾@12½
120 Gould & Curry 12¾@12½
225 Golden Chariot 1½
254 Hale & Nor 7¾@7½
500 Hussey 45c
1510 Justice 25¾@25
365 Lady Wash 3½
155 Leopard 5¼@5
200 Mansfield 10c
290 Manhattan 15¾@15½
285 Mexican 23¾@24
475 Modoc 5¾@5¾
575 Northern Belle 34¼@34
400 New Coso 2¾@2¾
640 Ophir 45½@45¾
22 Overman 111@109
360 Sierra Nevada 12½@12¾
205 Seg Belcher 86@88
810 Savage 10¾@10¾
890 South Chariot 5½@60c
390 Yellow Jacket 16¾@16⅝

SATURDAY, A. M., DEC. 2.

120 Andes 1¾@1¾
400 Alpha 36@36½
860 Best & Belcher 45¾@46
525 Belcher 14@14¾
65 Bullion 32
101 Buckeye 2¾
3760 Caledonia 13@13¼
1590 California 51@50½
3.0 Crown Point 9¼
120 Chollar 76@75
3320 Con Virginia 48@49

1015 Con Imperial 2.85@2.82½
150 Exchequer 13¾@13
505 Gen Thomas 1½@1⅝
1600 Gilla 1½@1
140 Gould & Curry 12¾
50 Hussey 50c
150 Hale & Nor 7⅝@7½
600 Justice 26¾@26½
100 Jackson 2¾
110 Leopard 5⅞@5¾
300 Leede 2
275 Mexican 23¾
180 Manhattan 15½
100 Modoc 6
145 Meadow Valley 10c
140 N Belle 34¾@34½
700 New Coso 3½@3⅝
1000 New York 1⅛
400 Ophir 45@45½
170 Overman 118@121
400 Panther 50@40c
50 Ray & Ely 3
110 Savage 11¾
35 Seg Belcher 93@90
1400 South Charlot 62½@50c
115 Un Con 12¾@12¾
1 5 Yellow Jacket 16¾@16⅜

TUESDAY, A. M., DEC. 5.

460 Alpha 35@36
600 Alta 2¾@3
100 Andes 1¾
150 Best & Belcher 44¾@45
510 Rest & Belcher 44¾@44⅝
90 Belcher 14¼@14¾
1115 Baltimore Con 3¼@3½
100 Buckeye 2
245 Bullion 32
1125 California 49½@50
3685 Caledonia 13¾@14
1750 Con Virginia 47¾@47⅞
75 Crown Point 9@9¼
1555 Con Imperial 2.82½@2.85
280 Chollar 83@84½
70 Challenge 2¾
20 Dayton 2
25 Exchequer 13¼
245 Gould & Curry 12¾@12¾
300 Globe 20c
160 Hale & Nor 7¼@7⅝
1315 Justice 26¼@25¾
260 Julia 6¼@5¾
60 Kentuck 10@9¾
513 Knickerbocker 45½@50c
450 Kossuth 2¼@1¾
1438 Lady Wash 4¼@4
145 Leopard 23¼@22¾
915 New York 1⅛@1⅛
570 Overman 119@122
390 Ophir 45½@45⅝
250 Rock Island 87½c
2525 Sierra Nevada 12¾@13
125 Silver Hill 9⅞@10
21 Seg Belcher 9
130 Union 12@12¼
45 Utah 16
1440 Wells-Fargo 11¼@11⅝
1230 Yellow Jacket 16¾@17

AFTERNOON SESSION.

50 Belmont 2¾
915 Best & Belcher 43⅞@44½
490 California 49¼@49¾
2020 Con Virginia 46¾@46⅝
2135 Caledonia 13¾@12¾
5 0 Coso Con 25@26c
310 Gould & Curry 13¾
1 Gila 1
155 Gen Thomas 1½
60 Golden Chariot 1½
100 Jackson 3
315 Leopard 6¾@6
410 Leviathan 1½@1¾
100 Leeds 2
595 Mashattan 15¼@15¾
135 Modoc 6¾@6¾
130 Meadow Valley 7½@80c
116 North Belle 34@34¼
300 New Coso 3
2030 Nth Con Va 1
1050 Ophir 44¾@45
390 Overman 116@114
150 Panther 30@25c
100 Prospect 1½
20 Ray & Ely 4½
105 Savage 10½
2300 Trojan 80@85c
220 Yellow Jacket 16¾@18¾

WED'SDAY, A. M., DEC. 6.

245 Alpha 34@33¾
225 Belcher 13¾@13¾
110 Bullion 31¾@32
290 Best & Belcher 44¼@44
260 Baltimore 3¼@3½
1715 Con Virginia 46¾@46½
35 Crown Point 9
130 California 49
1300 Con Imperial 2.80@2.75
3165 Caledonia 12¾@12¾
140 Chollar 81@81½
30 Gen Thomas 1½@1⅝
100 Challenge 2¾
220 Dayton 2¾@2¾
320 Exchequer 12¾@13
145 G & Curry 12¾@12¾
50 Gilla 1¼@1⅜
410 Hale & Nor 7¼@7¾
345 Julia 6@6¼
385 Justice 25¾@25⅝
235 Knickerbocker 90c
55 Kentuck 9½
650 Lady Bryan 25@30c
560 Mexican 24@23¾
600 Ophir 44¾@44½
895 Overman 112@113
100 Rock Island 62½c
230 Savage 10¾@10¾

Pacific Board—Latest Sales.

WED'SDAY, A. M., DEC. 6.

130 Alpha 34½@33¾
100 Atlantic 2½
500 Alta 3
220 Best & Bel 44
60 Belcher 13⅝
60 Baltimore 3¼
1100 Benton 15c
350 Con Imperial 2.72½
515 Con Virginia 46½@47
125 California 49⅝@49
340 Crown Point 8⅞@8¾
145 Chollar 82@81½
600 Caledonia 12¾
50 Exchequer 12¾
1100 Gould & Curry 12¾@12¾
250 Gould & Curry 12¾@12¾
70 Hale & Nor 7¼
155 Julia 6.30
220 Justice 25½@25¾
5 Kentuck 9¾
200 Knickerbocker 55@60c
80 Kossuth 1⅞
50 Lady Bryan 25c
405 Mexican 22¾@23¾
450 Monumental 25c
450 New York 1¼
470 Ophir 44¾@44½
195 Overman 112@114
50 Rock Island 87½c
220 Red Cross 2¼
60 Sierra Nevada 12¾@12¾
115 Savage 10½
250 Seg Belcher 10¾@10¾
500 Succor 55@57½c
500 Superior 6c
1200 Trojan 75c
15 0 Treston 10
100 Twin Peaks 12½
70 Utah 16

California Board—Latest Sales.

WEDNESDAY, A. M., DEC. 6.

80 Alpha 35@33½
1700 Baltic 20@30c
61 Belcher 10@10¼
5 Ballimore 5¾
1 Best & Bel 44¾
2 0 Caledonia 12¾@13
300 Coso Con 35c
5 1 Crown Point 9¾@9¼
955 Con Imperial 2.80@2.75
1 California 49¾
20 Chollar 83

145 Sierra Nevada 12¾@12¾
230 S Hill 10¾@11½
130 Union 12¾@12¾
10 Utah 14¾
215 Yellow Jacket 16¾@16¾

AFTERNOON SESSION.

80 Alpha 31
110 Andes 2
1250 Alta 3@3¼
100 Belmont 2¾
3940 Baltimore Con 3
280 Best & Bel 44@44¼
1510 Con Virginia 46¾@46¾
100 California 48¾@49
50 Coso Con 25c
2045 Caledonia 12¾@12¾
50 Eureka Con 11
100 Gila 95c
90 G Chariot 1¾
50 Ge des & Bertrand 2
180 Gen Thomas 1½
15 Juha 6@6⅝
115 Justice 25¾
100 Kossuth 2
400 K K Con 2¼
350 Leopard 6½
690 Leviathan 1¼@1
565 New York 1⅛@1⅛
660 Lady Wash 3¾@4
755 Manhattan 15¾@15¾
350 Modoc 6½
10 Mint 10c
200 Poorman 15@20c
30 Raymond & Ely 4½
425 Tonth Chariot 60@62½c
10 Wells-Fargo 8c
100 Woodville 1¼@1½
100 Yellow Jacket 16½

THURSDAY A. M., DEC. 7.

205 Alpha 34@35½
10 5 Andes 2
1 Alta 3
180 Best & Bel 44¾@44¾
65 Belcher 13⅞@13¾
100 Bullion 32
100 Buckeye 2
1 Gen Thomas Con 2
3270 Caledonia 12¾@12¾
350 Chollar 80@81
1580 California 49
100 Crown Point 9
1 Con Virginia 46@46¾
1795 Con Imperial 2.65@2.70
20 Challenge 2¾
235 Dayton 3¼@3½
220 Exchequer 12¾@13
100 Globe 20c
400 Gould & Curry 13
180 Hale & Nor 7¼@7½
70 Julia 6¾
465 Justice 25¾@26¼
10 Kossuth 1⅞
775 Knickerbocker 40@50c
100 Leviathan 1
30 Lady Wash 3¾@3¾
100 Mexican 22¾@23
830 New York 1¼@1⅛
40 North Carson 75c
970 Ophir 43¾@43¼
895 Overman 113@115
25 Occidental 2
100 Rock Island 87½c
125 Savage 10¾@10¾
385 Sierra Nevada 12¾@12¾
60 Sil Hill 10@10¼
70 Seg Belcher 85@86
780 Trojan 75@80c
115 Utah 14½
240 Union Con 12
1 Wells-Fargo 11¼
545 Y Jacket 16¾@16¾

AFTERNOON SESSION.

80 Best & Belcher 44¾@44½
1070 Belmont 2¾
1075 California 49¾@50
690 Con Virginia 47@47½
100 Coso Con 27½c
1 Con Imperial 2.67@2.70
225 Caledonia 12¾@12¾
570 Gonld & Curry 13
50 Gen Thomas 1¼
325 Gila 75@80c
9 0 Ge des & Bertrand 2¼
50 Grand Prize 4½
400 Golden Chariot 2@1¾
100 Hussey 40c
63 Julia 6@6¾
1 Justice 26@26¾
400 K K Con 3
600 Leopard 6@6¾
450 Leeds 2¼
10 Meadow Valley 80c
405 Manhattan 15½
200 Modoc 6¾@6¾
65 Mexican 23@23½
585 Northern Belle 3@33¾
620 New Coso 3¼
170 Ophir 43¾@43⅞
45 Overman 114
100 Panther 35c
275 Raymond & Ely 3¾
70 Schariot 60@62½c
60 Seg Belcher 6
25 Savage 10¾

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Deling'nt. Sale.	Secretary. Place of Business.
Amazon Con M Co	Nev	8 20	Nov 28 Jan 4	Jan 25 J A Reichart 330 Pine st
Belmont M Co	Nev	10 50	Nov 22 Jan 4	Jan 30 F Swift 419 California st
Crown Point M Co	Washoe	28 1 00	Oct 26 Nov 29	Dec 21 J Newlands 4 9 California st
Dayton G & S M Co	Washoe	8 1 00	Nov 6 Dec 12	Jan 2 W E Dean 419 California st
General Thomas M & M Co	Nev	3 50	Oct 27 Dec 1	Dec 20 W Willie 309 Montgomery st
Globe Con M Co	Washoe	9 25	Oct 27 Nov 30	Dec 29 W F Bogart 402 Montgomery st
Golden Chariot M Co	Idaho	16 1	Oct 26 Nov 13	Dec 26 W F Shaw 419 California st
Gould & Curry S M Co	Washoe	23 1 00	Nov 15 Dec 29	Jan 16 A K Durbrow 309 Montgomery st
Hale & Norcross S M Co	Washoe	52 1 00	Oct 10 Nov 14	Dec 5 J F Lightner Nevada Block
Hussey Con M Co	Nev	2 20	Oct 21 Nov 22	Dec 11 R H Brown 426 California st
Jefferson S M Co	Nev	2 10	Oct 11 Nov 18	Dec 11 O A Sankey 331 Montgomery st
Knickerbocker M Co	Nev	16 *1 25	Nov 13 Dec 16	Jan 4 J H Sayre 330 Pine st
Lady Bryan M Co	Washoe	14 5	Nov 2 Jan 23	Jan 18 W H McClintock 419 California st
Lady Washington M Co	Washoe	9 50	Nov 10 Dec 14	Jan 2 D L Thomas 419 California st
Lamoille M & M Co	Cal	2 20	Dec 1 Jan 8	Jan 29 L Hermann 2 0 Sansome st
Monitor Belmont M Co	Nev	— 25	Oct 17 Nov 20	Dec 18 E B Minor 309 Montgomery st
Niagara C S M Co	Nev	4 25	Dec 4 Jan 5	Jan 29 W R Nowasend Nevada Block
North Con Virginia M Co	Washoe	6 50	Nov 21 Dec 22	Jan 18 J Macuire 419 California st
Overmen M Co	Washoe	26 3 00	Oct 21 Nov 25	Dec 15 Geo D Edwards 414 California st
Poormen G & S M Co	Idaho	7 25	Oct 23 Nov 27	Dec 16 W Wills 308 Montgomery st
Raymond & Ely M Co	Pioche	6 1 00	Dec 6 Jan 15	Feb 8 T W Colburn 419 California st
Rye Patch Con M & M Co	Nev	5 5	Nov 11 Dec 19	Jan 9 D F Verdenal 409 California st
Savage M Co	Washoe	24 1 00	Nov 25 Dec 23	J n 17 E B Holmes 309 Montgomery st
Sierra Nevada M Co	Washoe	46 1 00	Oct 21 Nov 28	Dec 15 W W Stetson 309 Montgomery st
Trojan M Co	Washoe	3 10	Oct 20 Nov 21	Dec 11 D Wilder 328 Montgomery st
Utah S M Co	Washoe	14 2 00	Nov 15 Dec 20	Jan 9 G O Peck 309 Montgomery st
Wells-Fargo M Co	Washoe	6 15	Nov 6 Dec 9	Dec 29 O H Bogart 402 Montgomery st
Yellow Jacket M Co	Washoe	24 1 00	Oct 28 Dec 4	Jan 3 G W Hopkins Gold Hill

* $1.25 old stock; 30c new.

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Atlantic Con M Co	Nev	1	25	Oct 20	Nov 25	Dec 19	P Robinson 330 Pine st
Blue Jacket M Co	Nev	3	2 25	Nov 3	Dec 9	Dec 30	O J Eaton 724½ Market st
Eclipse & Lee M Co	Cal	2	25	Nov 11	Dec 16	Jan 5	D Buck 308 Montgomery st
Gold Run M Co	Cal	14	50	Nov 14	Dec 21	Jan 10	C O Palmer 41 Market st
Josephine Gravel M Co	Cal		10	Dec 6	Jan 6	Jan 25	W Small 531 California st
Lexington M Co	Nev	1	5	Nov 10	Dec 12	Dec 28	H B Congdon 330 Pine st
Lone Star & Eclipse Con M Co	Cal		10	Oct 25	Nov 30	Dec 21	D Buck 309 Montgomery st
Lone Tree M Co	Cal	1	10	Oct 28	Nov 29	Dec 16	G A Gould 419 California st
Monumental Quicksilver M Co	Cal	2	5	Nov 17	Dec 26	Jan 18	W H Manlove 5 Market st
New England Tun & Smelting Co	Cal	3	25	Nov 2	Dec 6	Dec 23	G O Tripp 401 California st
Newhall Petrolenm Co	Cal	1	1	Dec 4	Jan 20	Feb 13	G S Riggs 515 California st
North Fork M Co	Cal	11	10	N v 8	Dec 11	Dec 29	E F Oatman Sacramento City
Peytona G & S M Co	Nev		50	Nov 21	Dec 23	Jan 8	T J Owens 215 Sansome st
Plymouth Rock M Co	Utah	3	1	Dec 2	Jan 8	Jan 27	K Ohattin 442 California st
Rising Star M Co	Cal	2	10	Nov 8	Dec 9	Dec 30	J W Coppage 330 Pine st
San Francisco Petroleum Co	Cal	2	5	Nov 22	Dec 25	Jan 14	W Eaton 32 Montgomery st
Silver City M Co	Nev	1	25	Nov 16	Dec 22	Jan 11	A K Durbrow 309 Montgomery st
South Ophir M Co	Washoe	1	10	Oct 8	Nov 23	Dec 12	A C Gilbert 224 Montgomery st
Volcano Gold Gravel M Co	Cal	1	10	Oct 20	Nov 24	Dec 11	G Peck 330 Pine st
Weaverville Hydraulic Co	Cal	8	1 00	Nov 10	Dec 18	Jan 15	F H Rogers 331 Pine st
Yarborough S M Co	Cal	7	50	Oct 24	Nov 29	Dec 23	E Barry 415 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Accident'al Con M Co	Nev	O Metchke	426 Montgomery st	Annual	Dec 13
Allison Ranch Franklin M Co	Cal	T O Connor	505 Front st	Annual	Dec 22
Andes S M Co	Nev	M Lenehan	Nevada Block	Annual	Dec 18
De Frees M & M Co	Cal	H P Ledyard	320 Sansome st	Annual	Dec 15
Georgia S M Co	Nev	R Wegener	414 California st	Annual	Dec 16
Gold Canyon Con M Co	Nev	A A Pardow	639 Clay st	Annual	Dec 13
Gould & Curry S M Co	Washoe	A K Durbrow	309 Montgomery st	Annual	Dec 19
Lady Bryan M Co	Nev	W H McClintock	330 Pine st	Annual	Dec 18
McLellan Con M Co	Nev	C Metchke	426 Montgomery st	Annual	Dec 13
Napa Con M Co	Cal	W W Parrish	328 Montgomery st	Annual	Dec 11
Ophir S M Co	Washoe	C L McCoy	419 California st	Annual	Dec 9

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	O D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	419 California st	1 00	April 10
Black Hawk Quartz	Nev	W L Oliver	316 California st	40	Oct 11
California M Co	Washoe	C P Gordon	Nevada Block	2 00	Nov 15
Consolidated Amader	Cal	F B Latham	426 California st	25	Oct 9
Con Gold Hill Quartz M Co	Washoe	R Wegener	414 California st	25	April 17
Cons Virginia M Co	Nev	A W Havens	Nevada Block	2 00	Dec 11
Comanche M & M Co	Nev	W W Traylor	Nevada Block	20	Oct 25
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	2 00	April 11
Empire M Co	Sierra Co Cal	Chas Collishonn		50	Sept 26
Empire M & M Co	Washoe	W E Dean	414 California st	25	April 17
Imperial B M Co	Washoe	W E Dean	414 California st	25	April 17
Leopard M Co	Nev	R H Brown	426 California st	50	Nov 15
Manhattan S M Co	Nev	J Crockett	419 California st	1 10	Dec 8
Northern Belle M & M Co	Nev	W Willie	309 Montgomery st	1 00	Nov 15
St Patrick M Co	Cal	D F Verdenal	409 California st	30	Mar 19
West Cornetock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Feb 24

Mining Share Market.

The market for mining shares has for a long time been in a most unsatisfsctory condition. After a series of breaks, whicb almost amounted to panics, a revival set in a fortnigbt ago whicb promised a return to better times. The reaction, however, was short lived, and qnotations dropped to very nearly the lowest rates of the year. The general market, at the present time, is cbaracterized by an unwonted nndertone of strength. Prices have not yet rescbed the averSge Standard, but there is no pressure to sell and a growing disposition to invest, on tbe part of permanent holders, whicb imparts a feeling of solidity long unknown. In one respect the market of the past week has been a good one—the renewed activity has added to brokers' acconnts, and the rapid and marked fluctuations bave bronght out an unnsnal amount of business. Altogether, it msy be fairly said tbst the msrket is gathering new strength, and that the prospects for a better fntnre are actnally better now than has been the case for months, altbongh qnotations are still very low. The weaker accounts have been thoronghly clesned ont, and the element of uncertainty as to the immediate course slone remains to deter boyers.

The featnre of the week has been the deal in Overman, which hy its fantastic gyrations has become the center of attraction for tbe stock dealers who desire a lively security to operate in. From $78 it rose atesdily to $125, between boards; tben receded to $104; then fonnd a level at $116; subsequently drooped again, and bas at last almost recovered its prestige by a solid improvement. Caledonia, the neighboring mine, has almost eqnally attracted speculators, and its fluctuations, on a smaller scale, rival tboae of its bigger neigbbor. The news from these mines is somewhat indefinite, and the general impression is tbat the rise is rather the result of the perfect control held over botb stocks rather tban the uncovering of a second Gold Hill bouanza.

The annnal election of tbe Mexican mining company aronsed a certain amonnt of euthnsiasm. The contending parties were those represented by Senator Sharon and L. P. Drexell, of Virginia City. The vote was moderately olose, but the Sbaron party retsined their power and tbe old trustees were re-elected.

Lady Brysn is sgain a bone of contentiou; the dissatisfied stockholders are moving to secure their rights, and the whole affair promises to give rise to endless litigation.

The stockholdera of the Boston gold mining company are also causing a commotion in tbe affairs of tbat corporatiou, and call for a meeting to onst the present direotors.

Mausfield is agsin added to the list of the "dissatisfied." The stockholders in this company desire to examine the books and to mske certain changes in the administration, and expect to fix a charge of mismanagement npon the trnstees. Altogetber, tbe overhanling of acconnts is becoming general, and will donbtless lead to an improvement in the future.

The olosiug rates, as we go to press, indicate a fair advance in the market. No startling chsnges are promised, bnt the volnme of trsnsactions is sufficient to indicate a timely interest in the welfare of stocks.

The two bonsnza mines pay their nsual large dividends.

THE British troop-ship *St. Laurence*, with soldiers for Cspe Town, was totally wrecked off the coast of Africa. Tbe troops are all safe. A large qnantity of military stores were lost.

CAPT. A. H. BOGARDUS, tbe champion wing shot of the world, has arrived in this city.

3625 Monnmental 23@30c
200 Mint 21@22c
200 Mansfield 4c
185 Mexican 23¾@23⅝
100 Niagara 1c
200 N Carson 15c
50 North Con Vir 5c
100 Nevada 50c
250 New York 1⅛@1⅛
80 Ophir 45@44½
50 Overman 109@114
50 O G H 25c
200 Pictou 1
100 Panther 35c
50 Sierra Nevada 12¾@12¾
200 Silver Hill 10@10½
300 Smro 30c
400 S St Louis 60@55c
250 Southern Star 1½
20 Savage 10¾
2000 Superior 66@7c
200 Senator 1
50 Trenton 9¼
4100 Trojan 77@87½c
1200 Union 12@11⅞
100 Wells-Fargo 5c
100 Yellow Jacket 16¾@16¾

AFTERNOON SESSION.

25 Baltimore 3½
650 Belcher 12¾@11
45 Best & Bel 43¾@44½
875 Con Imperial 2.80@2 65
900 California 49@49½
200 Dayton 2½
50 Gila 1
100 Glasgow 10c
20 Globe 20c
60 Gould & Curry 12¾@12¾
50 Hale & Norcross 7¼
50 Julia 6¾
195 Justice 25½@25¾
60 Leviathan 1@1.10
100 Leeds 1¼
1000 Lady Bryan 2@2 o
50 Manhattan 23@23½
550 Mint 21@22c
4600 Monumental 25@28c
240 Mansfield 3c
100 New Coso 3¼
80 Ophir 43¾@44
125 Oasis 2
450 Pictou 1
600 Prospect 1.02½@1 05
50 Poorman 2½c
150 Panther 30c
150 Rising Star 1c
60 Savage 10¾@10¾
150 Sierra Nevada 12¾@12¾
500 Shasta 10c
100 Succor 62½c
650 Trojan 7@78c
300 Union 11½@11¾

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE.

Exchequer Mill.—Alpine *Chronicle*, Dec. 2: The improvements at this mill are making better progress since the steam connection was made with the sawmill, which can now furnish all the lumber needed. When completed agreeably with the plans of Manager Chalmers, the Exchequer and its appurtenances will be one of the best reduction works of its capacity on this coast. The old roof of the main building has been removed and a new one raised which covers a greater area and gives the works a more imposing appearance. The front has been built out flush with the main road and will be finished in rustic. The foundation for a new boarding house to be erected a short distance south of the present one is nearly ready for the contractors to commence the erection of the building, which is to be large and commodious. A large stable to accommodate 25 or more horses is to be erected just south of the new blacksmith shop. The road will be turned and carried to the rear of the present stable and above the blacksmith shop. The sawmill is now quite complete in its appointments, running a Huntington shingle machine, and a planing, tongue and grooving and molding machine. There are very few if any companies having greater facilities for carrying on mining operations. The Exchequer company have a large timber tract, and all the timber required for mining and building purposes is turned out at their own mill, the teams carrying timber to the mine and returning with ore.

New Company.—The Washington gold and silver mining company of Alpine county has been formed here, and next week the certificates of incorporation will be filed in the offices of the County Clerk and Secretary of State. Its capital stock is $10,000,000 in 100,000 shares of $100 each. The first directors are Joseph McCloy, N. D. Arnot, Jr., Erich Prahm, James Somerville, John Fearon and David Dewar, of Silver Mountain, and David Perry, of San Francisco. Its principal place of business is at Silver Mountain. This company has been organized for general mining purposes, but more particularly to work the old Washington claim on the Mountain lode. This is one of the most promising mines in the Silver Mountain district, and we are pleased to notice a movement toward its development.

AMADOR.

Olive Mine.—Amador *Ledger*, Dec. 2: This is a newly located mine at Drytown, which bids fair to vie with any claim now being operated in that rising district. It is owned by C. Nickerson, E. M. Corliss and half a dozen other gentlemen of Sutter Creek. The shaft is close to the main road. There are two ledges running toward the road in the shape of an acute angle. At present the ledge is six feet wide, all full of gold. A piece of gold no larger than one's two fists was pounded, and yielded $7 in gold. Specimens of a similar character have been repeatedly met with in sinking. There are now some 50 tons of high grade ore ready for shipment. The owners of the Bonanza mill have agreed to crush 250 tons of the rock, commencing about the 1st of January. A contract has just been let to sink 60 feet. The surface indications are not of a very marked character, the outcroppings being traceable only a short distance.

Oneida.—The mill of the Oneida mine started up again on Saturday morning, with 60 stamps, after a period of idleness extending over two months. During this time the shaft has been thoroughly repaired, and the mine is now in better working shape than it has been for a long time.

Amador City is entitled to the palm for activity in mining at the present time. The entire vicinity along the line of the main lead is a perfect network of mines, all of them being vigorously prosecuted. The Keystone moves on its way grandly, the king among its fellows, turning out bullion to the value of between $30,000 and $40,000 monthly. The Original Amador has improved wonderfully of late, and can now be classed among the dividend paying mines of the county. The Gover continues to prosper, yielding a satisfactory amount of bullion at every clean-up. The North Gover is also in active working, with every indication of proving a paying investment. The Talisman we notice as among the richest claims in the wonderful mining region around Amador. Altogether Amador City is the liveliest mining town in the county, if not in the State. Amador is steadily enlarging, and promises to be a much larger town one year hence than it is to-day.

Spanish.—It is gratifying to be able to state that mining operations are about to be commenced between Jackson and the Mokelumne river on a scale that promises substantial results. Captain Beck, in the interest of Eastern capitalists, has purchased the Spanish mine, situated one mile this side of the river. It is well known that the rock in this mine is exceedingly rich, and it is there in almost inexhaustible quantities. The original owners, Messrs. Mizner and Follander, have taken out large sums of money, crushing the rock in arastras. The deepest shaft is down about 70 feet, and the flow of water became too troublesome for them to handle. Pieces of ore taken from different parts of the property show free gold. The auriferous vein, we are informed, runs from 10 to 20 feet wide, and is traceable about 1,600 feet. Captain Beck has had large experience in mining on the other side of the mountains, but he says this is the most flattering prospect he has ever seen, and expects to develop a mine that will add materially to the prosperity of Jackson and the neighborhood. Two contracts have been let to sink 100 feet in two shafts. Negotiations are also pending to put up a 20-stamp mill to be in running order in six weeks or two months. There is plenty of ore in sight to keep such a mill running for five years. The whole undertaking is evidently in the right hands, and it is not too much to look for one of the richest permanent mines in successful working in Spanish gulch in the course of a few months.

BUTTE.

Mining.—Oroville *Mercury*, Dec. 1: Under this caption we referred to a number of mines in Butte county last week, but not to all of them. Among those that escaped our attention was the Bangor Blue Lead hydraulic mining company, of Wyandotte township. This company has some 300 acres of the best mining land in Butte county. Every part of it has been prospected by sinking shafts, and it contains gold in paying quantities from the top to the bedrock. The Blue lead has long been mined, but not within the boundary lines of this company, except in several places where shafts have been sunk, and in every instance with the very best success. The cement is hard and without a great amount of water it will be useless to spend much time here. The company, however, are wide awake to the value of their possession and have gone to work to procure water. In order to get a full supply they have had to go to Fall river for their head dam, a distance of 34 miles. Of course it will take time and money to do this, but both are to be had in abundance if we can credit the reports that come to our ears. Let the water once be brought in the mine and it will take the lead of mining operations in this county. The Severance claim in Bidwell township is paying well for the amount of work done upon it. For some unaccountable reason we are prohibited from giving the result of the clean-up at this mine. Just across the river and adjoining the Powers claim are 1,200 acres of the very best mining land in the State, owned by W. H. Parks & Bro. of Marysville, and F. A. Shaeffar, of Gridley's. Several parties have had their eyes open to this large claim in the hope that some day they might become the owner of a part of it, but it is not easy to get one of the owners to part with anything for less than its true cash value.

CALAVERAS.

Veith's Hydraulic.—Calaveras *Chronicle*, Dec. 2: Operations are being energetically pushed in Veith's Excelsior hydraulic, on Tunnel ridge. In the upper or northern portion of the claim a big blast is being put in, while in the lower claim piping goes steadily on. Mr. Veith contemplates putting up a water power derrick, in place of the hand machine at present in use, as soon as practicable.

Upper Country Mining Mites.—A lot of ore, said to be the richest ever taken from the mine, from the Champion, at West Point, is now being crushed in Carlton's mill. There is about 70 tons in the lot. Look out for another monster clean-up. Something like 65 tons of rock from the Mina Rica has lately been crushed in the mill connected with the mine. We have not been able to learn how much the rock paid, but the lowest estimate put upon it was $70 per ton, while quality as good judges set it as high as $135. The Mina Rica is looking splendidly. Very encouraging developments are being made in the Josephine. A rumor is in circulation that the Lone Star mine, at West Point, has been sold to a San Francisco company. We cannot vouch for the truth of the statement.

Rich Developments.—We have been shown some specimens of ore taken from the Josephine, at West Point, that speak very favorably for the prospects of the mine. The rock was literally spangled with the precious metal, rich in sulphurets and of a character that almost invariably carries free gold in addition to that visible. The quartz was taken from a winze sunk at the head of the 1140-ft level, a distance of 40 feet from the shaft. The ore body has been prospected the entire length of the level and found to be of the character of the samples shown us. The ledge is three feet thick, nearly all of it showing extremely rich and exhibiting every indication of a permanent vein. Operations are being briskly urged, and when stoping from the 140-foot level is commenced the Josephine will give as good an account of itself as any mine in the upper country.

COLUSA.

Quartz Mill.—Colusa *Sun*, Dec. 2: As early as 1853 gold was found on Sulphur creek, just above Wilbur's Springs, and something of an excitement was created throughout the mining camps of the northern part of the State. We carried a prospecting party in a spring wagon to the canyon of Freshwater, and, as there was no road any further, we camped there, awaiting the return and report of our prospectors. They came back mad as hornets. There was not only no gold, they said, but it was not a gold-bearing country. Later, quite an amount of coarse gold was taken out on a small at, near Munch's store, and miners said it came from a rich quartz vein close by; but all efforts to find it failed until lately, when the ledge was run into. It proved so rich that a 10 stamp mill has been erected, and will, we learn, be started next week.

INYO.

Minnietta Belle.—Coso *Mining News*, Dec. 2: Superintendent J. F. Cox says that everything is looking splendidly in their mines. He has completed the wagon road from the valley to the ore dumps, and is now ready to deliver ore to the mill. His dumps are all crowded with ore, and consequently but few men will be employed in taking out any more until the mill starts.

Favorable.—Thos. Luther, an old-time mining operator, with Mr. Eagan, superintendent of the Andes mine, have been here several days examining properties at Lookout, this place and at Lee district, but came more particularly to examine the Emigrant company's mines, at Lee, for John W. Mackey, who, if reported upon favorably by them, will purchase and work them for a large French company in Paris. From an interview with these gentlemen we are satisfied they are well pleased with the property, and the probabilities are that the mines will change hands and active work thereon soon be commenced. James Morgan, Esq., and Mr. McGeary, a very wealthy capitalist, have also been making very thorough examinations of all our properties, and both go away well pleased with all they saw, being particularly elated with the Defiance mine, which they say is the biggest thing outside of the Comstocks they have ever seen. We have nothing to fear from reports they will make, as they both said they were "bound to have some of it." Other parties have also been here during the week, but from none of them, so far as we can learn, will our properties receive any damaging reports. We have good mines, without a doubt, but without capital to develop and work them, we cannot look for any better times in Inyo county for some time to come, although it is to be hoped that the good opinion entertained by all these gentlemen and the reports they are likely to make, will have the effect to relieve us from our present lethargic state.

KERN.

Discoveries.—Kern County *Courier*, Dec. 2: From Mr. W. B. Phillips we learn of the new discoveries of silver leads on the Greenhorn mountains, near the headwaters of Poso creek. The leads lie on the ridge dividing Poso creek from Kern river, about 16 miles northeast of Glennville. About 40 leads have been taken up, and the laborers have deserted the saw mills to prospect for silver. A good deal of excitement has been caused by the good prospects so far discovered.

LAKE.

Change of Base.—Lake County *Democrat*, Nov. 25: The mill at Silverado, on the St. Helena mountain, has been taken down and moved to Sulphur creek, in this county, on the Mazanita mine. Five teams, loaded with the machinery and stamps, recently passed through Long valley, on their way to this mine, which is situated near the famous Abbott mine. The Manzanita mine is bonded to George W. Senn, of the Oat Hills mine, near Middletown.

NEVADA.

Empire.—Grass Valley *Union*, Dec. 3: This mine is the oldest, in the way of continuous work, that exists in this district. We are glad to notice that the underground appearance of the mine is more than encouraging, and that regular and steady profits are made. Yesterday Mr. David Watt, the superintendent, shipped to San Francisco two bars of gold, valued at something above $15,000, the proceeds of a 20 days' run. Mr. James Bennalleck, the foreman of the mine, and one of the best and most experienced miners on the coast, is very hopeful that the old Empire has many years of good future before her.

New Enterprise.—*Foothill Tidings:* An extensive enterprise has just been inaugurated by Messrs. S. H. Dile and Geo. C. King, of this place, and others, which promises big results, as must thousands of its class, which may be started up all over the country. They have taken up something over a mile in length—6,000 feet—of bed of the Yuba river, near Mooney Flat, in this county, and intend to go down beneath the 40 feet of sands and tailings, now resting upon the bed as it was when, years ago, Capt. Dile and his then partners took out $20,000 each, as the result of one summer's work, by the ancient method of damming and turning out the river—a very risky method, as many, who after working hard all the dry season to get where the gold lay, were driven out by early rains before making a dollar, need no help to remember. The plan to be adopted now, we understand, is to go upon the bank of the river, above the freshets and the anticipated rise of the bed by deposit, erect permanent and extensive hoisting and pumping works, and sink an incline down to the level of the bottom of the river, whence by drifts and tunnels, it is thought, the entire gold deposit of the channel can be drawn, without hindrance from the water now at any time flowing in the river.

PLACER.

You Bet.—Dutch Flat *Forum*, Nov. 30: A correspondent furnishes us the following items: Washing at Brown hill, or what is known as the Neece & West claim, was commenced last week. A small blast of 40 kegs of powder was exploded, doing good execution, considering the workmen employed—Chinamen. The Hayward company, D. Rose, Superintendent, is washing with three streams, and is doing well. He has about 30 men working for him, and employs no Chinamen. This company has reduced the wages to two and a half dollars per day, which makes it rough on miners and working men.

Meda.—Colfax *Enterprise*, Dec. 3: This mine is four and a half miles southwest of Colfax. The ledge was discovered several years ago, but the parties locating it were not well enough fixed financially to push the work of developing, hence it was allowed to lay comparatively idle; but it is now in hands that have the means and energy to prosecute the work. In two weeks they expect to have steam to drive the pumps, and in another week the stamps will be put to work. The shaft is now down nearly 100 feet, and the prospects brighten as they advance with it. A drift 100 feet in length from the shaft, northward, shows the ledge to keep up equal proportions with the main shaft, both in width and in richness. About 20 tons of rock already taken out, some of which has been fairly prospected, is valued at $50 per ton.

PLUMAS.

Eureka.—Plumas *National*, Dec. 25: From Mr. W. W. Yeates, who has this week been up in the Eureka country, we learn that the big mine and mill is being run to its full capacity, and that everything indicates prosperity. Eight new stamps have recently been added to the mill, and now 48 stamps are steadily grinding away, together with the large pans, roasting furnaces, etc. All the machinery is run by one large engine, and it seems to have about as much as it can attend to. The superintendent is now having an engine and hoisting works put in the mine a distance of 2,000 feet, to raise the rock from the lower levels. A large working tunnel is being run at the old Mammoth works, three shifts of men being employed steadily, and when it is completed it will tap the main ledge some 500 or 600 feet deeper than the present works. It is the intention to put up a large mill at the mouth of the tunnel in the spring. The most of the supplies for the present winter season are in, and the company are about ready to go into winter quarters.

Irams.—Mr. H. C. Bidwell informed us that his company would have 150 stamps running on good quartz in less than eight months. The Dixie quartz mill has been moved up to the Green Mountain mine, and is again ready for work. A Virginia (Nev.) company have taken up an extension of the new quartz claim on Montgomery creek, near Taylorville, and have several men at work opening their mine. The Frankiin company will soon be ready to commence sending down their shaft on Willow creek, and are now only waiting for a small part of their pumping machinery, which is on the way from the East. The company owning the Pearson blue gravel claims, near Nelson, have about completed their arrangements and will start down with their shaft in a few days. They have got themselves in good fix, and will have the best paying claim in the mountains when they get it under headway.

SIERRA.

Steam.—*Mountain Messenger*, Nov. 25: The Bald Mountain locomotive is proving itself all that was expected. On Wednesday last it took in 35 cars and all the men on one shift in one minute and a half. It has also been ascertained that it burns less coal than was expected.

SISKIYOU.

Siskiyou Ledge.—Yreka *Union*, Dec. 2: We learn that work has lately been resumed on the Siskiyon ledge, on Humbug, which has laid idle for a number of years. The ledge is owned by parties in San Francisco, who have done nothing on it for some time, except hiring a little work done on it from time to time, to keep their title to the mine good. Lately, however, they laid aside their policy of inactivity, and, under the direction of H. B. Warren, Esq., of this city, men have been put to work in the mine and considerable work done. They have out already some 120 tons of rock, which, we are informed, is of excellent quality, and prospects very rich. It is the intention of the company to have it crushed at McCann's mill, situated about half a mile from the ledge. Teams are now engaged hauling the rock to the mill, and the mill will be started up crushing the rock in a few days.

Nevada.

GROOM DISTRICT.

English Company.—Pioche *Record*, Nov. 29: We learn from Charley Heath that the owners of the mines in Groom district living in England have sent £5,000 with which to prosecute work on those mines, and that work will soon commence and be pushed forward with vigor. This English company intend seeing, by a thorough prospecting of the claims of Groom district, whether they are as represented when sold, and we have no doubt but from all indications that they will be well satisfied with the returns from that district.

HIGHLAND DISTRICT.

Furnace.—Pioche *Record*, Nov. 29: Ore is being conveyed from Pioche to this furnace, which being mixed with Highland ore, makes a good flux, so that hereafter there will not be so much trouble experienced in smelting as has heretofore been the case.

The bullion from the Highland furnace in John Roeder's hands was again attached on Monday evening last by Deputy Sheriff Birdsall at the suit of Gerrous and others. John Roeder was given charge of the same as keeper, and it is at his store awaiting any further process of law.

REESE RIVER DISTRICT.

Sure Thing.—*Reese River Reveille*, Nov. 29: It is as sure as anything in the future can be that the new 571-ft cross-cut of the Frost shaft will strike the big ore chimney of the Independence vein, as rich and extensive (if not more so) as it appears in the present workings down to the 500 ft level. The vein in the 500-ft east drift has always been the strongest and richest on the lower side, showing that the best part of the chimney is still below any point yet prospected, and the incline recently started from this (500-ft) level to connect with the 571-ft level is in a large and well defined ledge, carrying high grade ore, with everything to indicate that it will continue so to the full depth to which the incline is to be sunk. The opening of the 571-ft level, with new stopes of ore up to the 500-ft level, will give a large additional supply of ore from this mine; and while the fact has already been demonstrated that this—like all the others in Lander hill—is a well defined, true and continuous fissure vein, it will be proven that the depth to which its ore chimneys extend is only limited by the extent of the vein, and that in the Independence alone, to say nothing of its other ledges, the Manhattan company has a mine which will afford a profitable field of work for years to come.

WASHOE DISTRICT.

California.—Gold Hill *News*, Dec. 6: Daily yield, 400 tons of ore. The ore breasts at all points on the 1500 and 1600-ft levels are yielding rich ore and are showing well. The yield of bullion for the past month insures the payment of the regular monthly dividend of $2 per share at the proper time. The general features of the mine never appeared more prosperous than at present. The face of the south drift in the ore body on the 1650-ft level is still in good ore. A portion of the week was consumed in putting a steel rail on track in this drift, so that the progress made has not been quite as great as it usually is. Sinking the C. & C. shaft is making good progress, the bottom still being in hard blasting rock, and the flow of water very steady and strong. The pump-bob and station, 50 feet below the 1650-ft level, is completed.

Lady Washington.—The main east drift cross-cutting the ledge at the 800-ft level is being pushed forward with renewed energy, the very encouraging indications of the last few days stimulating things considerably. The drift has already passed through 100 feet of ledge matter since cutting the west wall, and shows no indication of the east wall as yet. Several fine stringers of white Comstock ore have been cut through, giving assays as high as $72 to the ton, and more are daily met with.

Julia.—The branch drift from the main south drift, on the 1600-ft level, running to connect with the Ward shaft, is being pushed rapidly, following the vein of quartz and ore recently struck by the main drift. This vein of quartz has widened out to about eight feet, and is of a very fine character. The west cross-cut from the main south drift on the 1800-ft level is in quartz of the most encouraging character. The appearances are that the ledge is concentrating more and more, and that the development of another bonanza on this portion of the ledge is but a matter of time.

Baltimore and American Flat.—Sinking the north winze on the ore vein on the 1050-ft level is going ahead steadily forward, the ledge gradually improving as to greater depth is attained. A drift has been started northward on the vein, at a depth of 50 feet below the 1050-ft level, the face of which is in good ore. The ore in the upraise above the 1050-ft level is also showing a decided improvement.

Ophir.—Daily yield, 220 tons of ore. The ore breasts on the 1600-ft level are showing finely. The west cross-cut from the bottom of the winze on the 1650-ft level is developing a fine body of good milling ore, the extent of which cannot yet be determined.

Dayton.—The flow of water is still strong at the bottom of the main shaft, but is kept under control by a steady use of the pumps. The pumps work splendidly and keep a perfect river of water running from the shaft. There is no better piece of pumping machinery on the Comstock.

Sierra Nevada.—The flow of water at the bottom of the main shaft is gradually decreasing. The north and south drifts on the fourth station level are both being pushed vigorously forward, the face of each being in ledge matter of a very favorable character.

Amazon & Glasgow.—Sinking the shaft is going forward at a rapid rate. The bottom of the shaft is in favorable ground, carrying streaks of fine quartz. The flow of water is increasing, with every appearance of soon draining the main portion of the ledge.

Silver Hill.—Sinking the main incline has been resumed, the pump station and bob at the 600-ft level having been completed. The north drift on the 444-ft level has penetrated to within 100 feet of the Justice line.

Hale & Noacross.—The pumps still keep up their regular stroke of seven and a half per minute, keeping a steady flow of water pouring up from the bottom. It is now reduced to a point about 20 feet below the 1900-ft level.

Leviathan.—Cross-cut No. 2, at the 600 ft level, 50 feet north of cross-cut No. 1, is pushing eastward into the ledge. Its face is already in ore, and will doubtless develop us good a width of pay ore as is already cut through in cross-cut No. 1.

Justice.—Daily yield, 300 tons of ore. The Pacific mill has been added to the crushing capacities of the mines, and the ore stopes got north on the 400 and 600-ft levels are still producing fine ore, the ledge holding a uniform width of about 30 feet. A winze is being sunk on the ore vein below the 400-ft level, which is showing ore just as rich as that found on any of the levels, either above or below. The appearances are that on the 500, 600 and 700-ft levels the body of ore developed extends much farther to the northward than was ever expected by the most sanguine experts that have ever examined the mine. On the 800 ft level, cross-cuts Nos. 1 and 2 are both steadily advancing, both showing more quartz and ore, and an improved appearance in the formation penetrated. The winze sinking on the ore vein below the 800-ft level is steadily developing fine ore, with every appearance of its extension downward to the 1,000-ft level. The southeast drift on the 1,000-ft level is encountering a gradual change in the rock formation that betokens a near approach to the main ledge at that point. The making of dividends is now only a matter of time, and may be looked forward to as a matter of certainty.

Con. Virginia.—Daily yield, 400 tons of ore, keeping the mills running up to their full crushing capacities. The ore breasts on the 1400, 1500 and 1550-ft levels are all showing well as usual. The regular dividend of $2 per share, aggregating $1,080,000, was declared yesterday. On the 1700-ft level the north drift has been cleaned out, repaired and work in the face begun. The side railroad track to the C. & C. shaft, for the shipment of ore from that point, is nearly completed.

Yellow Jacket.—Sinking the new shaft is making splendid progress. It is now down 155 feet. The side track of the railroad is nearly completed, which will make the site of the shaft one of the most convenient on the line of the Comstock. The air connection recently made with the Imperial is gradually cooling every portion of the mine and placing it in a better condition for work than for many months past.

Imperial Con.—Sinking the north winze below the 2100-ft level is making good progress. It has very nearly reached the point at which it is intended to start a drift south to connect with the north drift now being run from the bottom of the south winze. The pumping machinery is now working splendidly, and the flow of water gives but little trouble.

Bullion.—The south drift on the 1500 ft level is developing a splendid body of quartz with every indication of finding paying ore at no very distant day. The heat in the drifts on the 1500-ft level is intense and necessarily makes the progress very slow until better air can be obtained.

North Con. Virginia.—A fine working station has been opened at a depth of 1,100 feet; and two drifts, one east, the other west, started to cut the ledge. The opening of this level on an entirely new and unprospected portion of the Comstock ledge is being looked forward to with deep interest by not only the present stockholders but by the entire mining fraternity of the lode, it being the opinion of many of our best experts that the development of a paying mine in that vicinity is only a matter of time.

Overman.—The north drift on the 1200-ft level has been stopped for the present. The south drift on that level is rapidly advancing, with very favorable ore prospects. The shaft has reached the 1400-ft level, below which point a sump is being finished. The ore and ledge developments on the levels above are almost a sure guarantee that when the vein is opened a paying mine will be developed. The erection of the new pumping machinery is rapidly approaching completion.

Mutual.—This mining location lies some five miles to the northward of Virginia City, on the direct range of the Comstock. It is principally owned by San Francisco men, and is considered very promising property. They have sunk a shaft in the ledge, which crops out strongly at the surface, and at various points cut small streaks and bunches of ore which give excellent assays.

Belcher.—Daily yield, 200 tons of ore. Sinking the main incline is not doing so well on account of the strong flow of water encountered.

Sutro.—Work is about being actively resumed in this mine after a rest of some months. The old tunnel, which is 1,200 feet in length, is to be pushed ahead to the ledge, which it is expected to cut in about 125 feet further.

Trojan.—The ore body on the 300-ft level is opening out finely, and stopes are being started to extract it.

Continued on Page 388.

Treating Nickel Ores and Alloys.

The London *Mining Journal* says: Although the recent attempts to form a European company to develop the nickeliferous deposits of New Caledonia did not prove successful, there is no doubt that the New Caledonia ore will come largely into the market, as their improved methods of treating it are not without interest. The invention of Mr. Alex. Parkes, of Granby Hill, near Birmingham, has mainly for its object to obtain nickel alloys and nickel from New Caledonia nickel ores and other oxidized ores of the metal. For this purpose he fuses oxidized compounds of Caledonian ores of nickel with oxide of copper together with fluxes, in order to collect the nickel and copper in a metallic state reduced together from their oxidized condition to an alloy so fusible that it can be smelted in a reverberatory or other furnace, and when properly melted it is tapped into sand beds, by preference metal and slag together; when cool the nickel and copper alloy is found well separated from the slag, or the slag may be first skimmed off the surface, as in copper smelting, and the mixed alloy run into water to granulate it.

The nickel alloy, whether in pigs or granulated, is now placed in a calcining or roasting furnace, and submitted for about four or five hours to calcining or roasting, in order to oxidize a considerable portion of the alloy, especially the iron, it may contain, when the heat is increased and the alloy melted down with silica or lime in the roasting furnace; by this treatment most of the iron and other impurities are separated from the nickel and copper. If not all taken out oxide of copper is thrown on from time to time to fuse the alloy from iron in the form of a black subcrust slag, that is skimmed off after every addition of oxide of copper from time to time, and when the workmen finds from experience that all or most of the iron is practically separated the alloy is either tapped out into sand beds or water, or ladled out with iron ladles and poured into iron molds. From two to three cwts. of oxide of copper will be sufficient for one ton of rough metal. Or in place of roasting or calcining the crude nickel and copper alloy as above named he melts it down at once in a reverberatory furnace, and adds oxide of copper (by preference mixed with silica or lime or ammoniacal substances) from time to time, free and remove off the slag until it is found that all or most of the iron is oxidized and separated in the slag.

The alloy, well freed from iron and other impurities, may be at once used in the preparation of alloys called German silver, by fusing it with varying proportions of copper and zinc; but before doing so he prefers to refine and toughen the alloy (after it has been roughly refined), to separate any manganese or other impurities as before described. This may be done in crucibles, or reverberatory furnaces, or in a cupellation furnace; the alloy is to be fused, and if any impurity arises as more or other deleterious matter remains, more oxide of copper is added, and after the reaction is finished the flux is removed by skimming it off, and then he employs a refining process similar to copper refining by poling, or as refined by means of a toughening flux of borax and then spar with a little carbon or other reducing flux. The metal thus obtained is of the finest quality.

In carrying out the first part of his process on a large scale at the New Caledonian nickel works, Birmingham, Mr. Parkes has found the following proportions of flux and oxide of copper most satisfactory. For one ton of New Caledonian nickel ore of ten per cent. nickel he employs two to three cwts. of oxide of copper, three to four cwts. of lime spar or cryolite, two to three cwts. of anthracite coal, one-half to one cwt. of rock salt; all the above substances are by preference ground so as to pass through a sieve one-eighth inch mesh, and being well mixed and made damp with water to prevent loss when throwing the charge into the furnace. The charge is melted in a reverberatory furnace in from four to five hours; in order to collect the alloy of nickel and copper formed by fusion of the above proportions of substances together, he puts into the melted charge from one to two cwts. of metallic copper in a granular state about one hour before tapping out the charge. This addition collects the nickel alloy more completely. He either runs the whole of the melted charge into sand beds, or he refines and tops it into water.

Another part of his invention consists in fusing new Caledonian nickel ores and other similar nickel ores, especially if of low percentage, together with sulphur or sulphate of baryta, together with carbon, and the fluxes above mentioned; by this means a very fine sulphide is formed, easily converted into nickel of the finest quality, or an alloy of nickel, by the method first above named, or by the well-known wet method of preparing nickel. The fluxing will greatly depend upon the proportion of earthy matter in the ore. He also employs iron pyrites, copper pyrites or arsenical compounds as fluxes to the New Caledonian ores and sulphate of soda or rock salt. For one ton of New Caledonian ore—say, of five per cent.—he finds the fluxing is well effected when 20 cwts. of nickel ore, one to two cwts. of fluor spar, two cwts. sulphate of lime or gypsum, two cwts. carbon anthracite, all the substances are ground and passed through a sieve one-eighth of an inch in the mesh, well mixed, wetted with water and charged into a reverberatory furnace by preference. The charge will melt well in from four to five hours, and may be run out altogether into sand beds or first skimmed, and the regulus run into water to granulate it; or the regulus may be ground by machinery. The regulus is to be either calcined and fused with oxide of copper, to collect and form a metal alloy, as at first described, and treated in the same way, or the regulus may be treated by the well-known method of refining metal. In place of fluor spar he sometimes uses cryolite and sulphate of iron or copper as fluxing mediums with salt and carbon in obtaining a regulus.

A correspondent of the same journal further sends the following additional information on this subject:

From the recent discoveries of rich nickeliferous ores in New Caledonia and elsewhere some interest naturally attaches to improved methods of treating them, more especially when they emanate from such thoroughly sound metallurgists as Messrs. Christofle & Bouvillier, of Paris. The ores of New Caledonia, to which they are more particularly giving their attention, consist chiefly of silicates of nickel and of magnesia, containing varying quantities of iron and alumina; average samples give between 12¾ and 13½ per cent. of protoxide of nickel. The peculiarity of these ores which distinguishes them from the ores hitherto treated in Europe, consists in their neither containing sulphur nor arsenic, but a remarkable quantity of magnesia in varying proportions, the total weight of the magnesia and of the nickel is, however, almost invariably about equal, these two bases by reason of the laws of isomorphism being substituted one for the other.

The nickel ores of New Caledonia contain considerable quantities of iron in the state of silicate and of oxides. The iron is not combined with the nickel, but forms a separate combination, either mingled in alternate layers with the silicate of nickel, or diffused in the mass and without apparent order, but so as to be easily recognized by the reddish color of the ore. The mode of treating the ore by melting it directly after having pulverized it is open to the objection that the whole of the iron contained in the ore forms a combination with the nickel reguli or the fused nickel from which it is very difficult to eliminate it. In fact, in order to effect this elimination it is necessary either to resort to a puddling process at a high temperature, which, in order to scorify the iron, causes considerable quantities of nickel to pass off in the scoria, and produces great and costly waste, or to employ a process of refining by cementation, which is long and costly as if the whole of the ore were subjected to the direct action of coke.

To obviate these difficulties Messrs. Christofle and Bouvillier first treat the ore by a wet process to remove the iron and treat the cleansed nickel ore by a dry process. In separating the iron the ores are dried and washed in order roughly to separate the portions rich and poor in mineral respectively, each being afterwards treated separately. In the separation of the ferruginous matter from the nickel the silicates and oxides of iron are first attacked and dissolved before the silicate of nickel, care avoiding the iron to be separated from the nickel in the first treatment by a wet process. By means of a mechanical lixiviation with hydrochloric acid in suitable apparatus by the ordinary system, the iron is dissolved out by means of the acid. The solutions thus obtained contain the whole of the iron, the easy metals and a certain quantity of nickel. As soon as the pulverized ore loses its ochreous tint, and the silicate of nickel appears with a beautiful green color, the operation is to be stopped and the ore tested to ascertain if it still contains iron. If it is found to contain iron it is to be again digested with fresh acid, care being taken not to dissolve too much of the nickel. If the ore is then found not to contain any more or but a small quantity of iron, it is washed and dried, and the water in which it has been washed is put aside to be treated in order to separate the nickel which it contains.

After the process of solution is completed the solutions will contain iron, nickel and magnesia, and they are treated in such manner as to separate the iron and the magnesia and to collect the metal by one of the processes of treatment hereinafter described; other acids than hydrochloric acid may also be employed for the purpose of separating iron from the nickel contained in Caledonian ores, in order to enable the ores to be subsequently treated by the dry process. For example, formic acid, acetic acid or citric acid may be used, providing that the acid of iron contained is soluble. In this case oxalic acid is preferred by reason of its possessing the advantage of forming at the same time an insoluble salt of nickel, and in consequence of the whole of the nickel remaining in the ore, which result does not take place when hydrochloric acid is employed.

When oxalic acid is employed the ore is reduced to a fine powder in heated ten, and in sufficient quantities with a concentrated solution of oxalic acid in suitable vessels, after heating for several hours when it has been ascertained that the insoluble powder does not contain any more iron, the liquid is run off and the ore washed. The whole of the easily oxidizable of iron, manganese and oxalic acid in excess are afterwards treated by milk of lime. The oxalate of lime produced is digested with sulphuric acid, in order to regenerate the oxalic acid, which may then be re-utilized in the manufacture. As oxalic acid is formed when an organic substance is heated in presence of matter capable of imparting oxygen to it, the result will be similar whether the acid be prepared before hand or consumed by the reaction of the elements which serve for its preparation in presence of the ore.

In carrying out the subsequent dry process for the treatment of the ore, the ore after having been washed and dried and re-united with the ore resulting from the first sorting, is afterwards mixed with the quantity of pulverized wood, charcoal, and flux, suitable for producing the reduction and fusion of the metal, and a very fluid scoria. The flux which gives the best results consists of a mixture of car onate of soda and carbonate of lime, the proportions of which may be varied according to the nature of the ore and the amount of silex and magnesia which it contains; it possesses, moreover, the advantage of scorifying any iron which may still remain. Preliminary trials will indicate the proportions to be employed; other fluxes may, however, be used, such, for example, as fluor-spar, borax, vitreous salts, and other known fluxes, with a similar result.

The ore thoroughly mixed with charcoal and flux is placed in successive charges and highly heated, either in a crucible heated by itself in an air furnace, or in crucibles heated in a special furnace, or in a reverberatory furnace heated directly by coal, or a gas furnace on one of the known systems, such, for example, as Ponsard's, Siemens', or others, or in any other suitable apparatus by running off the scoria from time to time, or by skimming it off with a ladle, the progress of the operation may be ascertained, and fresh quantities of mixture of ores and flux may be added; thus increasing the amount of product obtained from the operation. The result is commercial nickel, which may be run into ingots, shot, and the like. Various modifications in detail are of course necessary, according as slightly different qualities of ore are under treatment, but the above will convey a general idea of the process.

Important Land Decisions.

WASHINGTON, November 15th.—The recent Supreme Court decision in the case of Frances *vs.* Fyan and others, from the Circuit Court in Missouri, has a vital California interest. It holds that swamp land patents cannot be impeached by actions at law, and overruled the old decisions of the California Supreme Court. The land in dispute was vested in plaintiff through a purchase from the Missouri Pacific railroad company, to whom it had been certified in 1859, as part of the land granted to aid in the construction of said road. To overcome this *prima facie* case, the defendant introduced the patent issued to Missouri under the swamp land act of 1850, and it was admitted that the defendant has a regular chain of title under this patent. At the stage the plaintiff offered to prove in rebuttal, by parol evidence, that the land was not swamp or overflowed and unfit for cultivation, and that the greater part thereof had never been so since 1849. The court below ruled that since the defendant introduced the United States patent to the state for the said land as swamp land, this concluded the question, and ruled out the parol evidence, and the plaintiff accepted. The Supreme Court sustains the court below, under its previous decisions, that the swamp land act was a grant in present, by which the title to those lands passed at once to the State to which they lay, except to lands admitted into the Union after its passage. The court holds in substance that parol testimony cannot be received to overturn the decision of the Secretary of the Interior, as declared in the patent, that floor having been made by law the tribunal, whose decision of such questions was controlling. Judge Field called the attention of the Court to a series of California decisions, having a different view from that held by the Supreme Court. In this case, Judge Miller's opinion on behalf of the Supreme Court says: "In reply, with all respect for that court, we are unable to concur in the views therein expressed. The principle we have laid down is in harmony with the system which governs the relations of the courts to the officers of the Executive Department, especially those having charge of the public land as we have repeatedly decided, and we must abide by them." The Court further holds that there is no conflict between its present decision and the former one in the case of the railroad company against Bird.

Decisions of the Secretary of the Interior.

Copp's Land Owner for November reports a decision by the Secretary of the Interior in effect as follows:

The filing of a declaration of a preemption settlement before settlement does not invalidate a right in absence of an adverse claim. All ex parte evidence filed after the close of the hearing in a contested land case, before the local land officers, must be rejected except as a basis for an application for a new hearing. All documents, all exhibits, filed in the case, when the same have passed beyond the jurisdiction of the general land office, must be passed upon by the department proper, and no paper thus filed should be referred by the general land office.

In school grants, where a party settled on land in the 16th or 36th section, long prior to the survey thereof, but has exhausted his preemption privilege, he cannot by a homestead entry prevent the tract from passing under the school grant.

Regarding swamp lands, it says that to settle upon lands of a swampy character would raise such a doubt of the settler's good faith, as upon a proper application to justify an order for an investigation. At such a hearing the character of the land at the date of the settlement should be determined. When notice of the selection of a tract by the State is received at the local land office the State should be notified before proof and payment is made by the settlers thereon. But where patents have been issued under the former ruling of the Interior Department, cases will be considered *res judicata*.

Timber culture.—Land covered by an invalid State section may be entered under the provisions of the timber culture act, or otherwise subjected thereto.

The Mines at Eureka.

The Eureka *Sentinel* contains the report of the County Assessor, from which we take the following:

Eureka County,

The youngest of the 14 comprising the commonwealth of Nevada, has, since its formation, steadily advanced in prosperity, and to-day, with its vast mineral resources, rapidly improving agricultural and grazing lands and the facilities offered to the patrons of all industrial pursuits, it ranks second to but one in the State. The acknowledged growth of the material industries of the county has given encouragement to capitalists seeking profitable investments, and at the present time negotiations are pending, which will, in a short time, result in the sale of several valuable mining properties and the employment of many additional miners in the active development of the mines. During the earlier portion of the present season the demoralized condition

Of the Silver Market

Crippled the mining industry of the county to a great extent, and for a long time leaving it a matter of grave doubt whether the mines could be worked at the prices offered for their product, but happily the market recovered itself and soon placed the value of silver at a figure enabling the miners to resume their vocation and the companies to continue operations without loss, and, in several instances, with large profit.

Eureka Mining District.

During the past year the developments made in many of our leading mines has been attended with gratifying results. Large bodies of rich ores have been found. Among the most important transactions taken place has been the sale of the Matamoras mine to Messrs. Steele & Sturgis, o Chicago, who are now here. They have had a new furnace erected on the site of the old Buttercup smelting property, which has also been purchased by them, which is now in successful operation. A number of miners are also in their employ engaged in developing their newly acquired property, which promises to be one of the most valuable in the district.

Following is a report of the mines for the quarters as named, which, taking into consideration the general depression caused by the silver decline, presents a creditable showing. The ores from many of the mines carry a large percentage of gold, which gives Eureka an advantage over many of the mining districts of Eastern Nevada:

For quarter ending—	Tons ore extracted.	Gross Yield.	Tax.
Sept. 30, 1875...	24,877	$410,708	$5,091
Dec. 31, 1875 ...	23,903	661 419	7 923
March 31, 1876 ..	4,810	370 078	3,664
June 30, 1876....	7,537	855,824	1,867
Totals.....	56,127	$2,197,634	$12,705

The foregoing does not show the real condition of the mines and mining interests of Eureka county, as the mines have not been so energetically worked as formerly for reasons before stated, and, as a consequence, the bullion tax shows a material reduction in comparison with the other years. The mining outlook of the district never looked better. There are 18 furnaces in the county, and three quartz mills, with 45 stamps.

Gravel Mining.

There is no kind of mining so profitable to owners of claims as gravel or hydraulic mining. After a claim is opened the expense of running is light, compared with any other kind of mines, and the proceeds are generally greater. A gravel mine is not so good a thing as a quartz mine for the community surrounding it, because there are fewer men employed upon it, but the owners reap greater returns for their outlay. There are miles of such claims unopened in our country, and if capitalists of other parts desire to make paying investments, they have only to examine the prospects here, and we feel confident they will conclude no place on the coast offers superior inducements. We have a couple of miles of undeveloped channel, back of our town, that is known to be of the richest character, but the owners of the several claims on it are unable to make proper opening, and are waiting for capital to come to their relief. There are miles of ancient river beds on the San Juan ridge in the same condition. The development of the North Bloomfield company proves the richness of the channel. There are grounds adjoining the claims of the above company just as rich, and which can be opened for a quarter of the capital used for opening that claim, yet they lie idle. We understand that a very rich discovery has been made on Alta hill, near Grass Valley, where parties have been prospecting for the old channel known to run through there. In short, almost any part of our country offers inducements for the investment of capital, not found in any part of the State, and we are in hopes some of the bonanza kings of San Francisco will find it out one of these days.—*Nevada Transcript.*

Mining Prospects of American Flat.

From the earliest days of the discovery of ore on the Comstock up to the present time, says the Virginia *Enterprise*, it has been a vexed question with many as to whether American Flat has a genuine fissure lode or not. On the solution of this question hangs its future interests, so far as successful mining is concerned. Good mining men and excellent experts have differed in opinion as to the merits of the section, and differed honestly. There are those on both sides of the question who differ interestedly still. Then it is that men are found who contend most energetically on both sides of the question. But the question is an important one, and one which can only be answered by the rocks themselves. So the answer is being outwrought day by day with shovel and pick and drill, and men are waiting for the result.

That the region about American Flat is an early day produced good ore cannot be denied. The line of croppings to the west is distinct and well marked. But the formations near the surface were found to lie very flat and hence people said it was a cap which, in the vast surface disturbances of the long ago, had been hurled from the vicinity of the Comstock and flopped over into that section. While all admitted that there was ore there, some held that no genuine fissure vein existed; or, if any, it was very small and only a feeder of the great Comstock lode. Others contended as strenuously that the line of croppings indicated a genuine lode and set out to demonstrate what they believed to be the fact and to back their opinions with their money.

It is not the intention of this article to attempt to decide this question of yours, although in the mind of the writer there no longer exists any doubt upon the subject. Opinions have been given often enough on the subject. What men want are facts. It was with a view of furnishing a few of these, which might have a general bearing on the subject, that the reporter asked and obtained permission of E. Strother, superintendent of the Baltimore Con. and American Flat mines, to visit the lower levels of the former mine and examine the formations there encountered. The Baltimore Con. is the pioneer mine of American Flat so far as deep mining is concerned, being now at work opening up the 1450-foot level.

With the permission granted, the reporter yesterday visited the mine and was dropped to the 850-foot level. Here the cage was exchanged for the giraffe and the descent continued on the incline to the 1050-foot level. The flat situation of the upper strata has carried the ledge far to the east, and in this direction the drift was followed. No attention was paid to measurements, as they were unimportant. After following for some distance through west country rock, what is known as the red formation, being a composition of quartz, porphyry and clay, was reached. After running a while in this formation, a turn to the east of north was made through a cross-cut and black clay was encountered. Next to this came blue clay and then vein porphyry. After this came a fine ledge of quartz, bearing bunches and streaks of high grade ore.

The formation is full of interest and bears important testimony on the general question under discussion. It has nearly a polar trend. The dip is the same as that of the Comstock in all our principal mines. Its thickness is not determined, but it is not less than 150 feet, probably 200 and much more. It has been cut about 90 feet in one direction from the drift and 40 feet in the other, and the full width not yet reached. Here an incline upraise has been made 85 feet, following the ore vein all the way. From this upraise much good milling ore has been taken. The head is still in the same formation. At another point further north, a winze has been sunk about 50 feet on the dip of the ledge. The ore vein is wide and richer as depth is gained. Assays from this part of the mine average about $65. This is the testimony of the 1050-foot level.

After carefully examining the formation in various places the incline was again reached and the descent to the 1450-foot level made. A drift running to the east was followed for some distance, when again the black clay wall was reached. Against this rested the blue clay, followed in turn by the vein-porphyry carrying strong stringers of quartz, in which was found some rich ore. The formation is identical in its essential features with that 400 feet above, but gives greater promise of concentration. The quartz both here and above is of that lively and porous appearance which delights the prospector and indicates no small vein. On this lower level the drift is not yet in far enough to prospect the vein, but may penetrate ore at any moment.

That the testimony of these two levels may have its full weight, our previous knowledge of the workings of the mine enable us to say that this same vein-formation was struck first on the 225-foot level, and a rich but small seam opened up. This led to an ore-body some 25 by 50 feet, which was stoped out. Again on the 450-foot level the vein was followed 300 feet. A winze was sunk thereon 125 feet and an upraise made thereon 200 feet. The vein carried ore all through these distances. The dump near the mine is yet filled with what was then taken out. It was again encountered on the 750-foot level and followed 200 feet. In places it was from 25 to 30 feet wide. This vein has not been followed every foot of the way down, but from its similarity of formation and its position there can be no doubt of its identity.

Useful Information.

The Danger in Kerosene Oil.

The *Polytechnic Review* gives an article on the danger in kerosene oil as used in households, and tells how the quality may be tested:

It is simply to be set down to good fortune if one who has employed the light oils for household purposes has escaped injury, since no amount of care can avail against the inevitable result which must follow one accident. It is easy to understand how persons ignorant of the highly dangerous character of the light petroleums may unknowingly make use of them in the manner above named; but it is really a matter of concern and surprise that so many, even of those who are thoroughly aware of the nature of the incendiary they are introducing into their households, are nevertheless thoughtless or indifferent enough to continue the suicidal practice—for no term can be too strong to properly characterize the fearful nature of the risk one is constantly running while employing these oils in the household.

There seems to exist a notion that the explosive or inflammable properties of the light petroleums can be effectually neutralized by adding various substances to them. The patent office records for the past few years contain numbers of claims for such mixtures of naphtha or gasoline with a great variety of substances too numerous to mention.

Whether or not the inventors of these recipes really have faith in the claims they present is a matter of small importance; but the deceptive illustrations which they are able to offer in vindication of their assertions, no less than the attractive names which they attach to their incendiary mixtures, are the sources of many distressing calamities.

There is one simple and, for practical purposes, satisfactory method of determining the character of all such mixtures, and which applies equally as well to the common oils. Let a few drops be poured into a saucer, apply a match; if the material burns reject it as unsafe. The fact that the material can be set on fire at the ordinary temperature of our dwellings should be a sufficient evidence to a person of ordinary intelligence that when employed in the household it may, at the first thoughtless or careless act, become the cause of a frightful accident.

Now for the reason why these dangerous oils find their way into the market in defiance of legal prohibition.

The crude petroleum, as it comes from the wells, is not a simple substance, but consists of a mixture of a number of oils. The operation of refining the crude product consists essentially in subjecting it to a system of frictional distillation, whereby it is separated into some six or seven products to which the commercial names of rhigolene, gasoline, naphtha, benzine, kerosene, etc., are attached.

The benzine or naphtha makes up generally about 15 to 20 per cent. of the crude oil, and for this demand in the various industrial arts is by no means equal to the supply, in consequence of which it commands but an inferior price in the market: in fact, considerably less than that demanded for the burning oils proper. Here, then, exists a direct temptation to dishonest or ignorant manufacturers and dealers to adulterate their stock of burning oil with oils of inferior price and dangerous quality. To what extent this reckless practice is carried on, the community have no just conception, but the writer feels safe in asserting that it is as general as any of the trade adulterations.

So general has it been practiced, in Philadelphia at least, that only three years ago an examination of 3,000 oil samples sold in the various parts of the city and its suburbs, showed that not more than one-twelfth of one per cent. of all the burning oils sold in the shops of this city were of sufficiently high grade to pass the fire test; and it may be added that there is no reason to suppose that any improvement of this condition of things has taken place since the time when the examination was made. The constant occurrence, therefore, of accidents with coal oil—so long as the cheap and highly dangerous products of the refinery are indiscriminately used to adulterate the comparatively safe burning oil, the kerosene, or doctored, with equal impunity into the numberless burning mixtures with alluring names that meet one at every turn—is a perfectly natural result, and one that should occasion no surprise. And so long as inspection is a farce, and the inspector and vendor are beyond the pale of legal accountability for their deeds of omission and commission, just so long will coal oil murders and disasters continue to be deplored.

Wash and White Lining for Brick Fronts.—The following is said to have been found a successful plan in Chicago for giving a brick front a durable red wash: Venetian red and Paris brown, in proportion to suit the taste, are mixed with a quantity of water to make a heavy wash. With this the walls are well coated. To settle the color to the wall, and prevent its washing off by the rain, a wash with diluted muriatic acid (one-quarter acid) is given over the painted surface. The mixture forming the white lines or joints is made of settled white lime, to which is slowly added plaster of paris, kept stirring until the mixture is past setting, then mix a little fine sand to keep from cracking, and work into the consistency of glazier's putty. This putty is then applied to the wall by two men, along a straight edge, and with a beading trowel, the distance of the joints having previously been measured. Care should be taken in applying this putty to press it strongly against the wall to prevent any water from creeping between it and the brick. We have never seen any painted or washed fronts, however, which were as handsome as those treated with plain boiled linseed oil. It takes a great deal to make a good job, but when it is done the appearance cannot be equaled by any method of painting. The front requires oiling from time to time afterward, till the surface is thoroughly protected, then occasional coats may be needed, but not often.

Varnish for Cane and Basket Work.—According to the *Hessisches Gewerbeblatt*, has prepared after the following recipe, is used to cover split and colored cane: 25 grains of good linseed oil are heated in a sand bath, as long as a drop of it, poured on a cold stone, does not run when the stone is inclined, and when touched with the finger it feels throaty. Then are added, first in small portions, one pound fat copal varnish, or some other fat varnish. The heating of the linseed oil must not be carried too far, because otherwise it would not be completely dissolved in the copal varnish, and the vessel wherein the copal varnish is heated must be large, because by the addition of the linseed oil a great deal of frothing takes place. When cold, the required consistence is given to the varnish by mixing it with turpentine oil. It soon dries, preserves a sufficient elasticity, and may be applied with or without addition of colors.—*Stammer's Ingenieur.*

The Alligator Business.—Between 17,000 and 20,000 alligator skins are tanned yearly, which are consumed by boot and shoe manufacturers in every portion of the United States, as well as exported to London and Hamburg. The alligator is formerly came almost entirely from Louisiana, and New Orleans was the great center of the business. The Florida swamps and morasses are now the harvest fields, and Jacksonville, in that State, the great depot. The alligators often attain a length of 18 to 20 feet, and frequently live to an old age. The hides are stripped off, and the belly and sides, the only portions fit for use, are packed in barrels, in strong brine and shipped to the Northern tanner, who keeps them under treatment from six to eight months, when they are ready to be cut up. So far the leather has been mainly used in the manufacture of boots and shoes, but handsome slippers are also made of it.

Fish Skin Leather.—The *Commercial Bulletin* has the following: Shoes have been manufactured in Gloucester, Mass., from the skin of the cusk. They are said to be strong and give evidence of durability. If the new material for shoes proves what it promises, it will open up a new market for fish skins which will no doubt be highly profitable. A patent has been applied for. The cusk belongs to the cod family; and we see no reason why the skins of a large number of useless fish that are now swimming about doing nothing may not be utilized. They would be glad of the chance.

Emery grinding stones were until now almost exclusively obtained through a mixture of gum, shellac and emery. When they work with rapidity, the shellac is softened, and the grinding stone, becoming greasy, causes to polish. This difficulty is remedied by using, instead of shellac, soluble glass; this is done in certain German manufactories, the grinding stones of which are not corroded. They may turn at a velocity of 1,000 to 2,000 turns, without losing their form.—*Revue Industrielle.*

Good Health.

Causes of Mortality in England.

The following article from our exchange, *Iron*, will be read with deep interest, as several valuable lessons can be drawn from it: "Though there is only one way into the world, the avenues leading out of it are innumerable. According to the registrar general, however, whose report for 1874 has just been issued, two-thirds of the deaths in England in that year, and presumably in other ordinary years, occur from one or other of 15 causes. Bronchitis heads the list, killing over 53,000 persons; next comes phthisis, which answers for more than 49,000; then atrophy and debility, for nearly 40,000, mostly young children. Old age, which Dr. Farr qualifies as that which should be the highest in the list, was the cause of 28,604 deaths, more than 26,000 of which were of persons over 65 years of age, some of them centenarians, the proportion of men to women being as 12 to 76. Heart disease, apoplexy and paralysis are increasing, doubtless owing to the increased worry and rush of social life. Cancer, too, is growing more fatal, but consumption appears to be on the decrease. Hydrophobia is twice as fatal as it was 20 years ago; and the number of violent deaths was 17,920, the highest number yet registered. Nearly all were from accident or negligence; but the executions reached the unusual number of 18, and there were 1,592 suicides. There were 1,249 persons killed on railways in some way or other. The year's returns show 1,313 persons killed by horse conveyances; tram-cars killed 62, omnibuses only 55 persons. By cabs 61 persons were killed, and by carriages 82, and this limitation of the numbers is noted as implying great skill on the part of the drivers in streets often crowded. There were 942 deaths from injuries in coal mines, and 118 from injuries connected with copper, tin, iron and other mines. Deaths by poisoning increased to 461, about a third of them being ascertained suicides. There were 25 boys and men, nearly all following outdoor occupations, killed by lightning. Sunstroke was fatal to 90 persons, and 111 deaths were ascribed to gelatio and exposure to cold. There was a death from the bite of a fox, from the bite of a rat, from bite of a leech, from the sting of a hornet, and two from sting of wasp. An epidemic of scarlet fever raised the mortality of 1874 considerably, and there was an increase in the deaths from excessive drinking. An augmented death rate from infantile diarrhœa may, it is suggested, have been owing to the mixture of sewage with water. The deaths from accident and from the other last mentioned causes, as well as from many of those previously enumerated, with one exception, might be greatly diminished by proper care on the part of the State and of individuals."

Hiccoughing to Death.

The Pottsville (Pa.) *Miner's Journal* relates an incident of a man named Hoskins, who drank cold water on an empty stomach, and a hiccough set in. Every remedy known to his friends was tried, but without avail. A doctor was sent for, who administered remedies, uselessly, for he died. A reader of the Chicago *Tribune*, into which paper the story was copied, says he has never known the following simple remedy to fail:

Whenever attacked by hiccough, get some one to stand behind you and place the forefinger of each hand in your ears so as to stop them. Then between the finger and thumb of your left hand press the nostrils, in order to stop breathing through them. In your right hand take a glass of water, and, while ears and nostrils are closed, drink a good draft. This will instantly cure the hiccough.

I am not aware that there is any particular virtue in the water. I have seen the cure effected by a draft of ale or porter as well as water, and believe that a drink of any liquid, warm or cold, would have the same effect, although I have always seen it used cold. I attribute the cure to the momentary stoppage of breathing; but, whatever the cause, my experience for years has always proved it a success.

Treatment for Boils and Carbuncles.—Dr. Earl in the *British Medical Journal* says: Boils and carbuncles are not mere inflammations and sloughings of cellular tissue, but specific diseases. They are parasitic, and as such endowed with a definite life and history. In their early stages they may be infallibly destroyed and aborted by destruction of their central stem or root, and even after this stage is passed they may generally be destroyed, and in all cases, at the very least greatly modified by the free application of carbolic acid. To produce this result the acid must be freely introduced into the central portion of the disease, and also into any other part where an opening exists or is formed artificially. The strength of carbolic acid used was four or five parts to one of glycerine.

Poisoning by Hats and Boots.—A German medical journal quoted by the Cincinnati *Clinic* reports a case of severe pustular eruption of the forehead, extending over the face, and which was ascribed to the aniline dye in the leather of the hat band. We have seen a case of severe poisoning of the legs above the ankles, evidently produced by the leather linings of a pair of half boots. We have also under observation a gentleman of this city, a leather dealer, who has been repeatedly poisoned by handling a certain kind of leather. In this case the affection was eczematous and followed by permanent macules. The gentleman attributed the effect to sumach used in the preparation of the leather.—*Pacific Medical and Surgical Journal.*

Burns and Scalds.—The recent fearful explosion on board the British ironclad, *Thunderer*, has called out the publication of many recipes and remedies. Among them all, the following contributed, by an old and experienced physician, has the merit of convenience and readiness. The remedy is simply this: The common whiting of commerce (found in nearly every kitchen) reduced by cold water to the consistence of thick cream, is to be spread on a light linen rag, and the whole burned surface instantly covered, and thus excluded from the action of the air. The case it affords is instantaneous, and it only requires to be kept moist by subsequent occasional sprinklings of cold water. Painting the surface with ink soon relieves the pain of a small superficial burn.

Effect of Violent Pain.—Mantegazza (*Hirsch Jahresbericht,*) by experiments proved that in animals violent pain produced loss of appetite, dyspepsia, nausea, arrest of the digestive process, vomiting and diarrhœa, and if continued, great weakness and considerable loss of weight and greater sensitiveness to all injurious agencies. In man we find that severe neuralgic pain produces dyspepsia, want of appetite, coated tongue, pallor and anæmia, weak pulse, cold extremities, depressed, excitable states of the system, great sensitiveness to external injurious influences.

MINING AND SCIENTIFIC PRESS

W. B. EWER.....SENIOR EDITOR.

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Our latest forms go to press on Thursday evening.

San Francisco:
Saturday Morning, Dec. 9, 1876.

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NEW ADVERTISEMENTS.

Hendy's Challenge Ore Feeder, S.F.; Josephine Gravel Mining Co.—Assessment.

CENTENNIAL AWARDS.—The list of awards decided upon by the Centennial Committee of Appeals was made public on the 4th inst., and comprises the following to Pacific coast exhibitors: California—Fred. Ogden, automatic ore feeder; I. Landsberger & Co., champagne; Frederick Oppenheim, San Francisco, single and double buggy. Nevada—Allen A. Curtis, for Independence mine, Austin, Manhattan company, silver ore; S. M. Beloher & Co., miner's tools; Thomas G. Taylor, Gold Hill, double-deck hoisting machinee. Oregon—Pioneer oil company, Salem, linseed oil; R. C. Kenney & Sons, Selem, flour; Daniel Holton, Portland, veneerings of Oregon maple; Parrish & Miller, Jefferson, flax in the straw and lint; T. L. Davidson, merino wool; Charles Dubois, Portland, furs.

IT seems rather singular that, notwithstanding the great production of silver from our mines, especially in Nevade, our National Government is reported as purchasing silver in large quantities in Europe. This fact seems to have created a distrust in the minds of many Europeans as to the reported productions of our silver mines.

THE tunnel through Treasure hill, which was started by an Eastern company last spring, and which has been lying idle for several months for want of funds, is soon to be worked.

IF you have got a mining claim get a patent for it, and if you don't think it worth patenting, give it to some man that does. A patent to a mine increases its selling value about one-half.

Comstock Papers.

No. 11.

The White & Murphy Ground

Was located by Alexander White and John Murphy, Washoe miners of the ante-Comstock era. Their claim, which covered but 210 feet, now forms a part of the Consolidated Virginia mine. They sold out early, realizing but a few thousand dollars for ground that has since been sold many times over at the rate of more than fifty thousand dollars per foot, or ten million dollars for the whole. Both of these men are now dead, White having died many years ago, and Murphy more recently, both being poor at the time of their decease. Murphy, besides his interest in the above ground, owned at one time 200 feet in the Crown Point and some other locations at and below Gold Hill. But from none of these did he ever receive much money, having disposed of his interests therein before any important developments were made upon them. During the Reese river excitement he migrated to that country, and was there again fortunate in getting into a good claim, having been one of the locators and a fifth owner of the Murphy mine, situated in the Twin River district, 50 miles south of Austin. In 1864 he disposed of his interest in this property for $10,000 cash, after which he made a journey East, but does not appear to have remained there long, as he subsequently turned up among the advance prospectors at White Pine. But here his usual good luck failed to attend him, and he, like thousands of others, was forced to leave the district with a depleted exchequer; nor, speeking in miner's parlance, did he ever again succeed in making a *raise*. Murphy, who was an Irishman by birth, was a man of considerable shrewdness and natural ability, and with better early opportunities and more favorable surroundings would likely have achieved a larger and more permanent success. Being big-hearted and socially inclined, his character was marked by some of the infirmities common to generous natures, such as a disposition to trust to luck and to spend his money freely among his companions and friends.

The Hale & Norcross Claim,

Containing 400 feet on the main lode, was originally taken up by the men whose names it bears; both of whom were living in the country at the time of the Comstock discovery. Hale was an old man and a Mormon, having come from Salt Lake and settled in Washoe valley some eight or nine years before that event. He was about the only one of that sect, many of whom were then living in the valleys of western Utah, lucky enough to secure an interest on the great mother lode by location, though quite a number of "Jack Mormons," a class of Gentiles so called because of the special regard they manifested towards that people, had the good fortune to obtain claims or parts of claims in that manner. After selling out his ground in 1860 the old man returned to the Land of the Saints, where the $2,000 or $3,000 he had brought with him soon found its way into the plethoric purse of the church.

Norcross, who had spent most of his life on the ocean, acting in the capacity of a common seaman, had by some chance current of fortune been carried over the Sierra Nevada, and was, during the summer of 1859, at work in a sawmill standing at the head of Eagle valley. Excepting one idiosyncrasy he was not a man to be specially noticed or remembered—Norcross was one of the most profane persons we ever met with; and we say this not wishing to disparage the well-founded claims of other unusual men to great accomplishments in this direction. We don't say, as is so apt to be said in cases of this kind, that every other word this fellow uttered was an oath, because, in fact, it was not; yet we do affirm that he was noted for his impious and irreverent utterances even among the primitive crop of Washoe miners; and that these latter were by no means a God-fearing or, for that matter, a devil-fearing people, it is needless to allege. He joined Hale in disposing of his claim and soon after left Washoe and came to San Francisco. What became of this son of Neptune, if still alive, we know not; what has become of him, if dead, we know well enough. It is said that after having, sailor-like, spent all his money in fast living, he again betook himself to a seafaring life—a course he would be very apt to pursue on finding his coffers empty and his craft fast drifting on a lee shore.

The ground disposed of by these two men in the summer of '60 for some five or six thousand dollars, is now selling at a valuation of about three million dollars, and has in times past sold at much higher rates, if we deduct the cost of development and permanent improvements since made upon it.

John Bishop,

Who was a Canadian by birth, went to Washoe in '58, mined along Gold canyon and ran much with Sandy Bowers. He owned at one time in Yellow Jacket, Crown Point, and other claims about Gold Hill. He also owned 50 feet, being one-sixth of the California ground now included in the great bonanza mine of that name. He procured all these interests by original location, his name appearing often on the old records of the Gold Hill district. Although he sold out early and at low figures, the amounts received from his various claims aggregated a handsome sum. Being a man of many acquaintances and of social habits, his money went freely; and although an active prospector and good worker, we believe he has met with no special success since he left Washoe; his time of late years having been spent mining in California, or in tours of exploration into more distant parts of the country.

Bishop's name has recently been brought into prominence through its connection with a lawsuit instituted by certain Washoe parties against the present California company for the

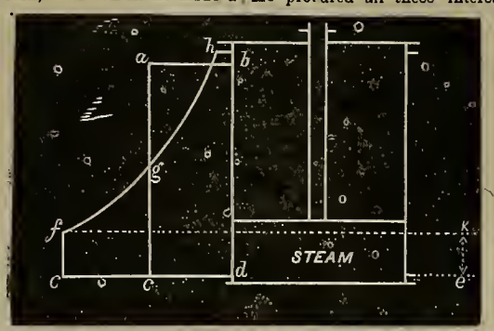

FIG. 1. CORNISH ENGINE THEORY.

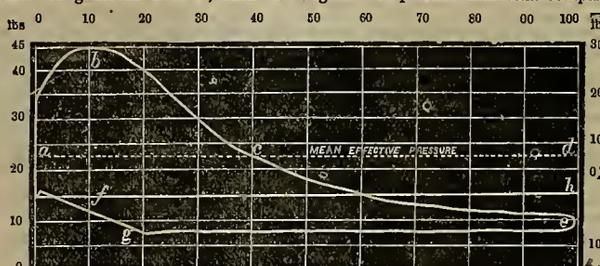

FIG. 2. CARD FROM CORNISH ENGINE.

purpose, as set forth in their complaint, of recovering the 50 feet of ground formerly owned by him, and to which they allege the company have no legal title, the deed purporting to convey it to them, and through which they claim to derive title, being a forgery. As to the merits of the controversy we have, in its present stage, no means of judging, though the plaintiffs stoutly affirm that they can maintain their allegations by ample and incontestable proofs. If this is the case, it is a little singular, to say the least, that a suit for the recovery of this valuable estate should have been postponed to so late a day.

THE ore of the bonanza mines is kept well wet down. An examination of the fine dust which congregates in the ore-house and which is frequently seen blowing from ore in transitu proved it to be chloride assaying $216 per ton. It is an easy thing for enough to be blown from a car-load of dry, rich ore to pay freights. This is saved by simply wetting down the ore.

THE C. & C. shaft has capacity for stowing away 8 000 cords of wood. Trains are kept busily running putting in a winter's supply, which will be but little less than that amount. A large supply of timber is also being laid in.

FIFTEEN Mormon wagons loaded with portions of the ten-stamp mill moved from Bullionville on Wednesday last bound for the Leeds mining district.

The Drainage of the Comstock Lode.

[Written for the PRESS by P. AUG. HUMBERT.—No. 1.]

There is hardly a subject of more importance to persons interested in the mining enterprises on the Comstock lode than the draining of the mines. On the solution of this problem rests in a great measure the prospects for future success in developing the deep workings. Only a few years and we will have attained depths before unknown in the annals of mining; this will necessitate machinery as perfect as that used in any other country, and I feel certain that I am complying with the wishes and interests of most men connected with this mining district by giving them the outlines of the systems now in use and my ideas of what is to be done in the future on the Comstock.

To explain what difficulties are to be conquered before attaining satisfactory results, it is necessary to comprehend how the water occurs in this lode.

Bodies of Water on the Comstock Lode.

Geology shows us that water occurring in slate formations is usually found in constant quantities; that is to say, that the flow is not susceptible of great change. Not so in rocks of crystallized character; here the water occurs in bodies of greater or lesser dimensions, which, after having been drained, give little or no water; that is to say, we have to do with inconstant quantities.

Experience has shown us this law of geology to be correct as regards the Comstock. The flow of water in these mines is of the most varied quantities, liable to be easily handled but also at any moment to come in such quantities as to flood the mines. The problem which is then set to the mechanic is to construct a machine capable of pumping a small as well as a large quantity of water and to be as economical as possible in regard to fuel. As to fuel, it is a question of the utmost importance, both as regards the cost of pumping and the future supply. It cannot be too strongly impressed that each year is making large inroads on the timber of the Sierra Nevada, and that every possible means should be adopted to save the most important agent in working these mines.

Deep Pumping.

The methods employed to pump water at great depths can be arranged in three distinct classes: 1, Pumping with surface engines and usual pit-work; 2, Pumping with underground steam engines; 3, Hydraulic system. We will examine each of these systems and then determine which is best adapted to the Comstock mines.

Pumping with Surface Engines.

The difficulties of pumping at great depths with surface engines and usual pit-work are generally but little understood, and have been totally disregarded in the calculations of the work to be performed by the pumping machinery on the Comstock.

It is well known that to arrive at economy of fuel, expansion must be used in steam engines. The Cornish engines were the first introduced on this principle. We will examine this system and then see why recourse was taken to compound engines. The Cornish engine is single acting; that is to say, the steam is employed on one stroke to raise the rods, and their weight is then used in turn to lift the water on the down stroke.

It is clear from the accompanying diagram, Fig. 1, that if a constant force is used to overcome a constant resistance a parallelogram will be formed, represented by the area, *a*, *b*, c, *d*. That expansion can be used is due to the energy which is stored up in every mass of matter which is put from a state of rest into motion, and that this energy can be used to bring the mass, by expanding itself, back to a state of rest. In the case of the Cornish engine the pit-work is the mass used to acquire this variable resistance, which is equal to the formula: $Wv^2 \div 2g$. In this formula, v, the velocity given to the mass, is the speed of the piston from *e* to *g*, and W is the mass moved. The speed of the piston is a quantity which may be regarded as constant; therefore the required momentum must be derived from the mass, and this mass must increase in a certain ratio to the degree of expansion used.

In the diagram, Fig. 1, the energy stored in the mass would be equal to that part represented by the area c, *e*, *f*, *g*, also equal to the area of energy expended, *a*, *h*, *g*. The mean pressure of *c*, *e*, *f*, *g*, multiplied by c, *g*, and the result multiplied by the area of the piston will give the energy of the mass or momentum. Taking the momentum at 150 foot-tons and the load on the piston at about 50 tons, at a velocity of four feet a second, the mass required would be nearly 600 tons, with an expansion of only four and one-half to one. The water load in Cornish engines used to be about 14 pounds per square inch of the steam piston, now it is about 20 pounds; this decrease of ratio of expansion in these engines is due to the too great wear and tear found to occur in the machinery, by the usage of a high degree of expansion. The best Cornish engines cut off steam at one-fifth of the stroke, but very generally expansions of one-third and one-half are used.

If the Cornish engine were made double acting the mass would have to be increased beyond practical limits, or very great reduction in the expansion would be required, necessitating a great waste of fuel; to use expansion to a high degree and to acquire as constant a force as pos-

sible during the stroke, leads us to expansion in two cylinders or compound engines.

To show the necessity of the usage of expansion, it may be stated that Henry Davey, of Leeds, England, writes in his treatise on the "Differential Compound Engine:" "Our steam engines consume annually 37,000,000 tons of coal, which at present (1875,) may, perhaps, be reckoned at 15 shillings per ton, representing over £27,000,000 sterling; an economy of 25 per cent. would, therefore, effect a saving of nearly £7,000,000 annually. With colliery pumping engines it is not unusual to find a consumption of from 12 to 14 pounds of coal per horse power per hour. A good compound engine will work with less than one-fourth of that amount of fuel. The saving to be effected on 400-horse power of actual work, by the substitution of a compound for a non-expansive engine would be, at the lowest estimate, 36 tons in 24 hours, which, taken at five shillings per ton at the pit's mouth, would amount to the modest sum of £2,700 per annum."

Taking Davey's estimate as a basis of calculation, and putting a cord of wood at $12 and 60

Inward stroke, light load. Cut-off, 47 per cent.

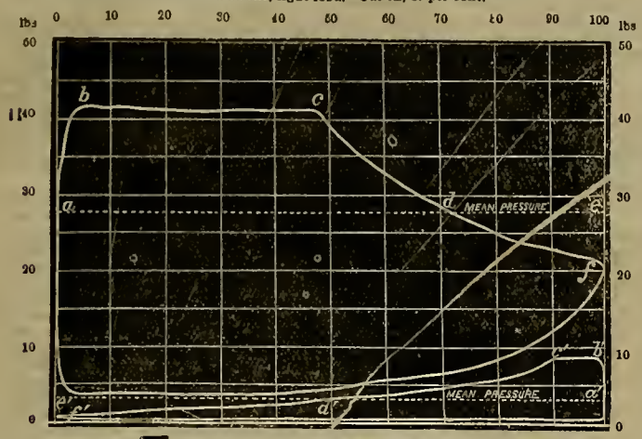

FIG. 3. CARD FROM THE DAVEY ENGINE.

High pressure cylinder, mean pressure, 27.8 pounds; low pressure cylinder, mean pressure, 3.4 pounds. High pressure = 60-horse power; low pressure = 18.8-horse power; total of both cylinders, 78.8-horse power.

per cent. of the best English coal as determined by experiments, a saving of $217,728 on 400-horse power of actual work would be arrived at between a non-expansive and a compound engine on the Comstock.

Having shown the economy of expansion, we will return to the advantages of working the compound engines as compared to those expanding in one cylinder.

We have seen that the Cornish engine cannot be economically applied to double action, and that as single acting it is a system of pumping which is subject to great wear and tear; further, it may be stated that the engine, being single acting, is very expensive in first cost. All these objections are, in a great measure, removed by the compound double-acting engine.

In a compound engine, by the usage of two

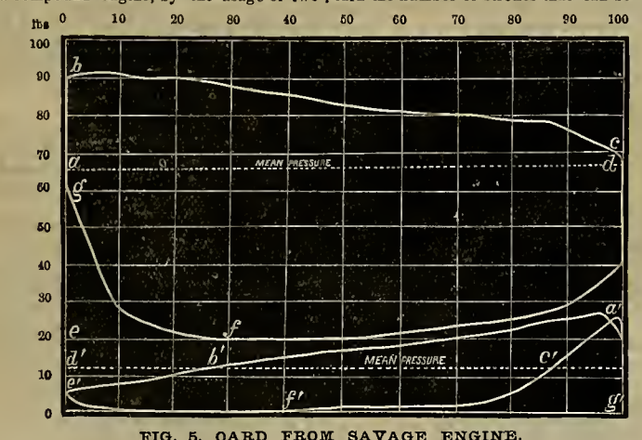

FIG. 5. CARD FROM SAVAGE ENGINE.

Outward stroke.—High pressure cylinder, mean pressure, 65.1 pounds; low pressure cylinder, mean pressure, 12.5. High pressure = 42-horse power; low pressure = 25½-horse power. Total outward stroke, 67½-horse power.

cylinders of different volumes, the steam works first in the small cylinder and expands then in a larger, working, therefore, with its reduced pressure on a larger area; the relative volume of these cylinders regulates the minimum expansion given to the steam. This naturally decreases the maximal strain on the piston and on all working parts.

It has been proven by diagrams that, on a compound engine expanding ten to one, a reduction of two and one-half to one need not be surpassed between the initial and terminal pressures in either cylinder, while with a single cylinder the proportion would be ten to one. This universally admitted fact shows that the momentum of the mass moved is, in this case, of no advantage and will only reduce the speed of the engine in starting and stopping it.

The pit-work should be made as light as possible, and every means should be employed to reduce the mass.

A suggestion may here be made regarding the pit-work on the Comstock, that is, the usage of iron pump rods, which, by lessening the mass would allow the engine to work at greater speed. These rods would not be more expensive than wooden ones, would weigh about one-half the column of water, balancing the engine, and be more durable where the waters are unt such as to eat iron too quickly. They are universally adopted in Europe for double acting engines.

Speed of Direct Acting Engines.

It has been already remarked that in the case of double acting engines on the compound principle, momentum of the working parts is not required, but in deep shafts the rods and balance bobs give a momentum which has to be stopped; it is the starting and stopping of this mass which limits the strokes of the pumping engines and consequently the speed of the piston. This limit of the speed is a serious objection and a difficulty which augments with depth.

To make a compound engine work correctly, that is to say, to acquire initial and terminal pressures nearly equal, no momentum should exist, consequently the formula, $Wv^2 \div 2g$, should equal zero; if we solve this equation to find v in this case we would have: v equals the square root of $2g \div W$, or, expressed in other words, W, the weight of rods, etc., being an augmenting quantity as depth is attained, the speed of the mass must decrease and with it the speed of the engine.

It will be found by calculations that a 20-inch pump, twice the size of a 14, will not throw double as much water, giving it the same stroke, on account of the increased mass. To remedy in part this difficulty with direct acting engines, the stroke of the engine should augment as depth is attained, but this increase of stroke is almost beyond practical limits, and leads to very costly machinery.

The number of times that a certain mass at a certain velocity can be started and stopped in one minute is a limited quantity, limiting in turn the number of strokes that can be accomplished, and consequently the water that can be pumped by the engine; by increasing the stroke a greater number of feet of piston speed can be arrived at, because the mass has to be started and stopped less times in a minute, and gives a greater distance to applying the power, consequently the delivery of water will be greater. This momentum, which is a given quantity, must be stopped if the engine is to work correctly by expansion, and leads us back to the Cornish engine theory, taking part of the benefit from the compound engines, that is to say, making the initial and terminal pressures of steam in the cylinders more unequal. Very generally on the Comstock, a cushion of steam is used to stop the energy, but this is decidedly injurious to the machinery by the mass playing on the cushion, creating a spring and jar through the whole pit-work. It is only to be used in urgent necessity, as an agent to increase the number of strokes. Being a loss of power, it will be found to increase the consumption of fuel by reducing the expansion. It results from these remarks that an engine working correctly should augment its expansion as depth is gained and reduce, as has been remarked, its piston speed or increase its stroke.

The increase of the stroke being variable, would necessitate new pumping machinery, and is a very serious consideration. On the Comstock, depths are just being attained when these defects will begin to show themselves more forcibly than heretofore.

The geared engines, which are more generally used on the Comstock than in any other mining country, have the same trouble of the momentum, only it is not so forcibly shown as in direct acting engines. Here the mass put in motion has to be stopped by the gear; the crystallization of the shafts, the breaks which occur so often, can be traced to no other reason than the sudden stoppage of the energy imparted to the pit-work during the stroke of the pumps. It is true a greater number of strokes can be attained, but at a heavy cost to the machinery as well as to the working of the mine, by stoppages just when the waters are heaviest and most likely to flood the workings.

Outward stroke, heavy load. Cut-off, 60 per cent.

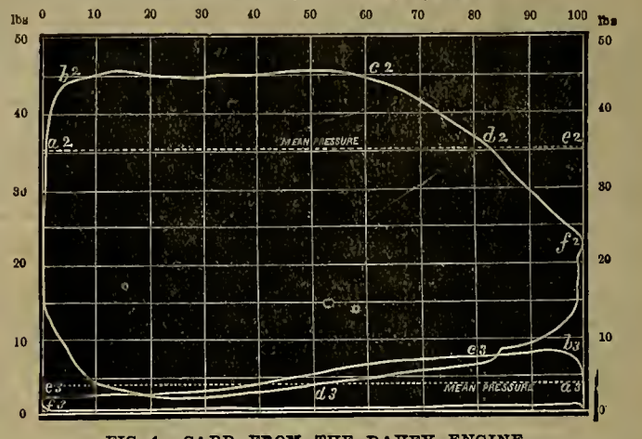

FIG. 4. CARD FROM THE DAVEY ENGINE.

High pressure cylinder, mean pressure, 35.2 pounds; low pressure cylinder, mean pressure, 25.4 pounds. High pressure = 76.2-horse power; low pressure = 25.4-horse power; total power, 101.6-horse power; total power of the engine, 180.4-horse power.

It will be found that on the present engines on the compound direct acting principle, working on the Comstock, by 1600 feet depth and 14-in. pumps, about 50 feet of pump speed cannot be overrun when the engine works with expansion and safety; with cushion and at 1558 feet depth, a velocity of 104 feet per minute of piston speed has been attained, the engine working without safety. This decrease of speed is to be considered a great drawback to pumping with surface engines and usual pit-work, and as it will increase with depth, the limit is not far distant when surface engines with usual pit-work will not be adequate to drain these mines with safety or economy.

Before leaving the question we will examine diagrams taken from a Cornish engine and a compound engine, by Mr. Henry Davey, and the expansion between the two strokes is 27 per cent. The variation on the inward stroke averages between the two cylinders for initial and terminal pressures, as 5:1; while the theoretical expansion is as 6¼:1; this is due to the fact of the condensation, which takes place from the exhaust of the high pressure cylinder into the low pressure, but is actually no loss to the engine as it exists also in the single cylinder engine, only is not shown by the indicator.

It will be easily seen

By These Cards

How much more constant the force is here than in the Cornish engine. With these diagrams the lifts are not mentioned; we will, therefore, compare the diagrams of the Savage with those of the

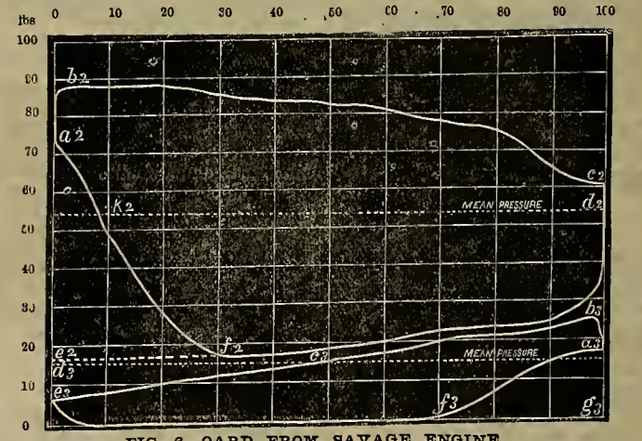

FIG. 6. CARD FROM SAVAGE ENGINE.

Inward stroke.—High pressure cylinder, mean pressure = 62.3-pounds; low pressure cylinder, mean pressure = 13.1 pounds. High pressure, 32.8-horse power; low pressure = 26-horse power. Total of inward stroke, 58.8-horse power. Total horse power of engine, 1262-15.

also the diagrams taken from the Savage, working with cushion, and the Alta, using expansion to bring the mass to rest; these will more clearly show the difference of the working of these engines under these circumstances.

Fig. 2 is an indicator diagram from Cornish pumping engine at Grenver & Wheal Abraham mine, Cornwall. Cylinder, 90-inch diameter, 11-foot stroke. Mean effective pressure, 13.8 pounds.

It may be remarked that f, g shows in the diagram a vacuum cushion; this closing on the down stroke the exhaust to the condenser, is simply to bring the heavy mass to a rest and is required in a single acting engine; it is no loss of power. The figure a, c, d, h, f is the actual water pressure on the steam piston, equal in this case to 13.8 pounds; the part of the diagram a, b, c above the mean effective pressure line is the energy stored in the pit-work, and the figure d, c, e is the force represented by the energy expending itself. It may also be remarked that the variation of initial to terminal pressures are here as five to one, consequently showing

Alta, but only as regards the stopping of the energy of the mass.

Figs. 5 and 6 represent the diagrams of the Savage engine; diameter of the high pressure cylinder 27″; diameter of the low pressure cylinder 48″; stroke, eight feet. At the time the the diagrams were taken the engine was making four and one-half strokes per minute (double), with 1,558 feet water column; non-condensing engine.

From Figs. 5 and 6 it is at once quite clear that in Fig. 5, a, b, c, d minus the back pressure of diagram, Fig. 6, supposing it to run to e^2, would be the energy of the mass and is stopped by the figure a^2, f^2, e^2; the same is to be taken for the low pressure cylinder and for the diagrams of Fig. 6. It is shown by these figures that expansion is scarcely used, and that the power is expended to create the cushion; the benefit that is derived from the cushion on the next stroke is very small, and at all events it is a mistake not to use the energy of the mass to create expansion, for with it would be reduced the consumption of fuel.

American Mines.

The subjoined article is from the London *Mining Journal* of October 28th of this yeer. It waa furnished the *Mining Journal* by a member of the firm of F. W. Munsell & Co., London, stock brokers, who was here in company with one of the editors of the *Mining Journal* a few months ago. Our readers will notice that it is but a preliminary article, and we presume will be followed by a series of communications which will tend to set the minds of Englishmen right in regard to our mines—something which heretofore it has seemed impossible to do. We shall look with interest for succeeding articles. The one in question from the *Journal* is as follows:

Accompenied by reputable experts during a three months' tour in the mining centers from Selt Lake City to San Francisco, we have ecquired a mass of information not to be otherwise obteined. We are indebted to Mr. John Mackay, "the honanza king" (to whom we were introduced hy Mr. P. McKay, of the Benk of California), for en inspection of Consolidated Virginia, the most productive of the Comstock group, and the richest mine in the world. So extensive is the scale of operations, so unparalleled the gulf of wealth, and so almost automatic the manipuletion of the ore from the time it leaves the huge excevetions till reduced into gold and silver bers, thet one feels to be well repeid for a journey from the old to the new world by a visit alone to thia truly mervelous treasure house, yielding as it does, a monthly dividend of $1,080,000 (£216,000). We propose to fully describe these mines in subsequent notices. In our examination of the prominent mines of Scandinevian canyon, Silver Mountain (inclnding Exchequer, L. X. L., Isabelle, etc.), we were aided by Mr. Chalmers and several other well-known authorities, some of whom had gained their experience in the Comstock mines. At Eureka, Mr. Probert, maneging director of the Richmond Consolidated mines, received us most courteously. We accepted his invitetion to inspect the mine, and had the edvantege of his personal assistance throughout a protracted exmination of the ore body at the different points of operetion. A second day wes employed in visiting the smelting works. At Gress Valley, California, we hed the privilege of inspecting the underground workings of the Idaho, the representative end richest gold quartz mine in the Golden Stete. This mine in 1870 wes offered in the London market for $100,000 (£20,000), since which it has returned in dividends, $1,300,000 (£260,000), is producing more and richer quartz then at any previous time, has larger reserves, apert from the faot that the vein hes just been cut rich in the 900-ft level, end the stock is selling at a high premium upon the San Francisco stock board. In our visit to the hydraulic gold mines we were accompanied by Professor Price and other experts, from whom much guiding knowledge wes gained. To Mr. Hughes, resident manager of the Blue Tent, and to Mr. Powers, of Birdseye creek, no less than to Mr. Bowe, a locel director, we owe our thenks for the painstaking manner in which they pointed out, with no small amount of lebor, the merits and capebilities of the reapective mines. While in Selt Leke district many fects were gleaned concerning Flagstaff, Emma, and other mines in the locality. Unpardoneble on our part would it be not to avail ourselves of this opportunity to acknowledge the friendliness with which we were received throughout the whole of the mining camps west of the Rocky mountains, and the business relations we have succeeded in establishing will place us in poasession of informetion usefnl to English investors.

Butte County Mines.

As the rainy seeson comes on, seys the Oroville *Mercury*, we heer the notes of preparetion for mining on every side. A great deal of gold wes teken out of the foothills, ravines and river-benks last season, but if we should he blessed with a wet winter the coming season a great deal more will be brought to light. In addition to the greet cleime that have been worked for a number of years, a large number of persons have sterted out to work in a small wey, in the hope of being successful. In fact, almost every one who ever followed the business et all, is now on the lookont for a new plece. Just ecross the river O. P. Powers has had 100 men at work for a long time cleaning out, deepeniug end widening the ditches, so as to admit of some 2,000 or 2,500 inches of weter runniug during all the wet seasou and es much as they cen get during the belance of the year. He has mede preparetion for five chiels to operate on the benk of loose grevel. This will wash away a large piece of ground during the winter. The claim cost them $50,000 about a year ago, and last winter, with a single chief and but little water, they took out over $13,000. This eeason, with five chiefs, they expect to more than treble thet eum. At Morris ravine, the Hendricke claim, said to be one of the richest in the whole State, has been put in a capital condition for working, and the returns from it will no doubt he correspondingly large. There is no part of this ravine thet is not rich. Very many valuable claims are now so situeted that it will be imposeible te work them on account of the want of water, but they lose nothing by being idle. Each year they increase in value as the surrounding claims yield up their golden harvests.

A quartz ledge that prospects well hae been fonud in the ravine and three araetraa have been built and are now ready for work. The Spring Valley company's claims at Cherokee still continne to send forth their golden fruit. Every month the company sends down from forty to seventy thousand dollars' worth of gold end will continue to do so for yeers to come. Further up the hills is the claim of E. J. Davis, thet hes been worked just enough to get it well opened, and to prove that it is rich. He has had between two and three hundred Chinamen at work digging a ditch to bring water to the cleim from the West branch. The underteking was one that cost about $30,000, yet it had to be done in order to work the mine except dnring the very wettest pert of the year. When once the claim is reeched, it can be worked during the entire year. We are not informed es to the time when the work will be completed, but hear thet it will be aome time before the close of the year. The Electric mine is doing well, having found a body of ore thet pays well. The new tunnel will open up a body that will last for a long time. The little mill with the Panl process is doing excellent work. At Forbestown the company is now working in rich rock. During the past summer they have been at work developing their ledges, so that when the mill started again there should be no leck of rock. On the Isebenda claim, near Dogtown, about one hundred men are at work digging a large ditch that shall be used to work a lerge area of grevel below that place. These ere by no meana the only pieces of work that ere being cerried on, nor are they the helf. Mining never before assumed the proportions that it does at the present day in this country. Capital is looking this way, and the rich fields that are being opened up give promises that it hes not mistaken the proper place for investment.

Mariposa Tunnel and Work.

On Wednesday last, seys the Meriposa *Gazette*, we mede a flying visit to Bear Valley and the Bentou Mill tnnuel of the Mariposa land end mining company. The distance from Bear Valley to the mouth of the tunnel by the wagon roed is about six miles, four miles of which passes over the track formerly used es e railroad in cerrying ore from the Pine Tree end Josephine mines, on the Merced river, near the adit of the tunnel end present works of the compeny. To e casual observer, it would scarcely be believed that auch an excellent wagon road could be built over so rugged a country as this locality presents at first view. The grede is easy end the road iu such fine condition thet with a two-horse vehicle, the descent to the river end beck againu to the Pine Tree end Josephine mines (which is the top of the mountaiu dividing the river from Beer velley), can be driven over with as much ease and rapidity as mostany other road of the same length in the county. This road is a greet convenience to the company, who now have their heavy mechinery brought to its destinetion by the large freight teams, thereby avoiding deley as formerly, in unloading from the wegon and reloading on board the cars, which wes attended with a great amount of labor and expense. We observed at the works and mills a lerge emount of new mecuinery, intended for a quartz crushing mill, the foundation of which is in course of construction, upon which the mill is to be erected es soon as precticable. Thet which most engages the company's attention at present is the new No. 7 compressor, seid to be one of the largest ever built, and is elready upon the ground. The mechinist and mechanics, employed for the purpose, are rapidly constructing the frame work, which is to receive the new compressor, one of the most useful improvements in machinery of this ege of discoveries end inventions. It is expected that in less time than three weeks the new compressor with all its adjuncts will be in full blest. The tunnel is now into the mountain about 2,300 feet, and it is anticipated thet by means of the new compressor from 12 to 16 feet per day will be excavated, whereas, heretofore the excavation of from four to eight leet hes only been the everege rete per day. There are quite a number of tona of ore upon the dump, teken out of veins crossed by running the tunnel, most of which is considered good pay rock.

You Bet.

The name of this proeperous mining camp is as familiar to the ear of the California miner es any of the numerous mining camps that sent down their tributes of gold to the see, end although now greetly reduced in size and population to what it wes in those good old days, it still remains a thriving little town, you bet. It hes had the misfortune of being entirely consumed by fire four times, and still it can boast of the following business houses, all of which are doing a good paying business: One hotel, two stores, two saloons, butcher shop, shoemaker shop, and postoffice. The Odd Fellows have a handsome and spacious hall. There are quite a number of nice family reeideuces in and about the town. The canyons and gulches in this vicinity, that were once worked in early days by the numerous miners, are now occupied by flumes and undercurrents, belong to the extensive hydraulic mines owned by A. Hayward and an English company. At present they are worked on a large scale, but it will take years to exhaust the mining ground. These mines give employment to a large number of miners, who generally make Mr. Drunzer's hotel their headquarters, passing an hour or two each day in the saloone, reading the papers, talking politics, and playing bean poker, and a more liberal and sociable lot of men we have never met in the State.—*Dutch Flat Forum.*

Reaping the Reward of their Labor.

The Nevade *Transcript* conteins the following: Now that the success of the Cold Spring gravel mining compeny is assured, and it will soon be classed es e paying mine, we propose to give a few facts showing the difficulties the compeny hed to encounter, and the perseverance with which they prosecuted their work.

The mine has been worked, more or less, for the past ten years; but steedy work was not commenced till 1874, when en incline wes run from the surface, a distence of 400 feet. From the bottom of the incline a chute of 132 feet was reised to strike the gravel. Finding they had not reached the chennel, they went back to the bottom of the incline, and commenced a tunuel towards the center of the ridge, which wes run a distence of 318 feet, through herd blesting rock. Again they raised up a chute a distance of 100 feet, when they struck pay grevel, but were not on the regular channel. From the top of the chute a drift was run north 85 feet, end in that direction the bedrock raised one foot in ten, but having a pitch to the west. They ceme beck to the top of the chute end ren another drift west, 50 feet, at which point the bedrock was pitching west and south. It was then determined to come back to the bottom of the main tunnel, where the bedrock wes soft, and run a chute in a westerly direction, thinking to strike the leed et its lowest point; but insteed atruck a high peak, the grevel being struck at a perpendicular hight of 78 feet, the bedrock pitching west rapidly, giving the helief thet the chennel was still west. Going back 40 feet in the seme chute, they run a drift in a northwest course, and at a distance of 132 feet struck pay gravel in the top of the drift, showing the rapidity of the pitch of the ground.

During the pest two months drifts have been run in various directions, prospecting the gravel end trying to find en inlet to the mein chennel. Not finding the object of their search, although having good pay dirt, they went back to the same chute to a place where the bedrock wes more demp than anywhere else, and raised enother chute running north. Nine sets of timbers had been put in, when gravel was struck at a perpendicnlar hight of 46 feet above the mein channel, pitching uorth. From prospecting since mede, it ia believed to be a ravine leeding to the ancient river chennel. Prospects of grevel which heve lately been made, show it to be increasing in richness ea they proceed north. Forty, fifty, sixty and seventy cents to the pan cen now readily be obtained. A number of pens of dirt from the dnmp-pile have been washed, which yield on an average twelve cents to the pan. Arrangements are now being made to work the claim in a systematic way, breasting out the gravel the entire width of the ravine or sag, end thus uneerth the golden treasure which lies imbedded under the ridge. The company will now commence to reap the reword of their industry, and good returns will be mede from the gravel which is now being teken ont, and when the main channel is reached, which cannot be far off, we believe, and with good reason too, thet the seme success will greet the owners of the Cold Spring as did the owners of the Live Oek, Young America, and Nebreske, in the palmy days of our city's early history.

Bartlett Creek.

Messrs. Merrill & Williams, two sturdy prospectors of the Bartlett creek region, errived in town yesterday. They report the mining interests of thet section as very encouraging. Miners in end around Varyville ere busy preparing for winter. Mr. Merrill brought in severel specimens of ore from ledges discovered by him the past aeaeon, which he is now having assayed at the Humboldt reduction works. The Highland mine, owned by Merrill, Mecy, Williams and others, situated neer Snow creek, and about aeven miles from Veryville, is looking exceedingly well. They have aunk about 12 feet on the vein, which, as much of it as can be aeen, fairly sperkles with gold. The vein avereges 10 inches in width. Five tone of ore from thie mine, worked at Denio's mill at Varyville, turned out fifty odd dollare to the ton in gold, end two and a helf tons, worked in the seme mill, turned out $140 to the ton. The company ere negotiating for the erection of a mill neer the mine. Within one mile of the miue a good water power can be had with but little labor.—*Silver State.*

A New Steamer for Lake Tahoe.—The latest eddition to the steam fleet on Lake Tehoe ie the iron steem yacht *Meteor*, built at a cost of nearly $16,000. She is owned by D. L. Bliss, of Cerson, end D. O. Mills, of San Francisco. Their euticipations of heving the faetest boat on thie side of the continent have been fully reelized, and visitore to the lake will be enabled to eteam aronud it in lees than six hours; a trip which hae heretofore taken at least 12 hours. The hull is compoeed of iron weighing hut eight tons, her frames being 1¼ by 1¼-inch angle iron, and plating one-eighth inch thick. Her length over all is 80 feet; on water-line 75 feet; beam at water-line 9½ feet. Her engines consist of two 10-inch cylinders with 12 inch stroke. The boiler is of steel, teeted to carry 200 pounde of steam. The propeller ie 54 inches in diameter and 7¼ feet mean pitch. With 330 revolutions on 155 pounde of steam the *Meteor* makes 20 statute miles per hour. The model was designed by E. J. Auderson, architect of the *Three Brothers*, while the engines and boiler were designed and built by W. R. Eckart.

Accidents in Mines.

Since 1869, says *Engineering*, accidents in mines involving loss of life in Prussia have to be entered by the mining authorities on special forms, which are sent in at the end of the year to the statistical office at Berlin. Here the materials are worked into a summery, conteining the respective occupetion of those killed, classing the accidents according to their severity, and grouping them in accordence with their causes. The summaries for 1874 end 1875 show that in the former yesr, 589, and in 1875, 576 persons lost their lives in Prussian mines, of which 572 and 573 respectively were overtaken by deeth while actuelly at work. Of the letter number, the following were killed in—

	1874.	1875.
Coal mines	484	436
Brown coal mines	36	42
Ore mines	36	82
Other mineral-producing occupations	16	11

To judge correctly the importance of those figures it is necessary to know the number of persons employed in each branch, which, up to the present time, are known only for the yeer 1874. In thet yeer the average number employed in coel mines wes 162,502; in brown coal minea, 18,646; in ore mines, 58,822; and in other mineral producing branches, 872 persons. Thua, the number of killed in 1874, per thousand, wes 2 99 iu coal mines, 1.93 in brown coel mines, 0 61 in ore mines, end 1.83 in other mineral producing occupetions.

It is not uninteresting to compare the figures of the loss of life in Prussien mines with that in English mines, on which the reports of the inspectors of minea give yearly full informetion. Unfortunately, the comparison between the English and Prussian reports is only of a very restricted netnre. In the English reports the grouping observed is not the seme as in the Prussien stetistics; coal, ironstone, cley, and coal-slate minea, in accordance with the coel mines reguletion act, being combined in one group; the other group, of still greater importance, and comprising, besides iron lead, and tin miuing, being snbject to the metalliferous mines regnlation act. In the 4,501 mines affected by the first named ect, 1,056 persons lost their lives in 1874 end 1,244 in 1875, while in the mines reguleted by the metalliferous mines act, 103 persons were killed in 1874 and 119 in 1875. The numbar of persons employed in coal, ironstone, clay and coel slate mines was 538,829 in 1874 and 535,845 in 1875, and in the remainiug mines 56,361 in 1874 and 58,073 in 1875. Of 1,000 persons employed in the first group of mining operations, therefore, 1.96 were killed in 1874 and 2.32 in 1875, while in the second group 1.83 in 1874 and 2.05 in 1875, lost their lives.

In the English mines under the operetion of the coal mines regulation act, 140,713,832 tons were raised in 1874, end 147,700,313 tons in 1875, so that there was one person killed in 1874 to every 133,251 tone (2,665,020 Prussian cwt.) of coels reised, and in 1875 to every 118,730 tons (2,374,600 cwt). In Prnasia, however, one person was killed for every 1,319,780 cwt. raised, of the value of £34,856 from coal mines; 4,842,583 cwt., of the velne of £43,705, from brown coal mines; 1,952,086 cwt., of the value of £81,572, from ore mines; and 285,766 cwt., of the value of £6,245, in other mineral-producing pursuits.

California Clay.

The following letter in regard to the quality of California Clay and the fictile uses to which they can be put, will prove interesting to many of our readers:

Sacramento.

J. B. Owens—

Dear Sir:—Your note of inquiry in regard to California clays, and its quality, etc., is at hand. In the manufacture of sewer pipe I use a plastic clay which, under the action of heat, forms a perfect vitrified body. In its manufacture I formerly used salt as a glaze, which is cheaper and requires less lebor, but I have now edopted the slip glaze, which I believe to be preferable. It is not the degree of heat, nor the use of salt nor slip, as many suppose, that makes the quality of pipe, but the quality of pipe alone depends on the quality of your clay. If your clay will form a vitrified body under the action of heat, glazing adds nothing to the quality, except to fill up the pores and make the surface smoother. If, in the manufacture of pipe, you use strictly fire clay, and use salt as a glaze, the action of the salt has a tendency to harden the surface, but on breaking the pipe you find it has taken no action at all to vitrify the body, hut acts alone on the surface, which is positive proof that the quality of your pipe depends on the quality of your clay. As to a comparison between iron stone pipe and cement pipe for sewerage purposes, it seems to be a point so well settled in favor of stone pipe by engineers of prominence, both in the Eastern and Western cities, that it is scarcely worth while to revert to the matter. You need not have any fears as to our suffering from the agitation of the qualities of pipe. I have been thirty-five years in the manufacture of clays, fourteen years of that time in California, eight years of that time in making and laying pipe, and I have yet to hear one word of complaint in regard to pipe. You can very easily settle any points in regard to pipe—to find its resistance pressure, place it under the force pump and apply your power; to test its durability, place broken pieces in sulphuric acid, and let it remain for three to four months.

Yours truly, N. Clark.

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Our intimate knowledge of the various inventions of this coast, and long practice in patent business, enable us to abundantly satisfy our patrons; and our success and business are constantly increasing.

The shrewdest and most experienced Inventors are found among our most steadfast friends and patrons, who fully appreciate our advantages in bringing valuable inventions to the notice of the public through the columns of our widely circulated, first-class journals—thereby facilitating their introduction, sale and popularity.

Foreign Patents.

In addition to American Patents, we secure, with the assistance of co-operative agents, claims in all foreign countries which grent Patents, including Great Britain, France, Belgium, Prussia, Austria, Baden, Peru, Russie, Spain, Britisb India, Saxony, Britisb Columbia, Canada, Norway, Sweden, Mexico, Victoria, Brszil, Baveria, Holland, Denmark, Itely, Portugal, Cuba, Roman States, Wurtemberg, New Zealand, New South Wales, Queensland, Tasmenia, Brszil, New Grenada, Chile, Argentine Republic, AND EVERY COUNTRY IN THE WORLD where Patents are obtainable.

No models are required in European countries, but the drawings and specifications sbould be prepared with thoroughness, by ehle persons who are familiar with the requirements and changes of foreign petent laws—agents who are reliable and permanently estsblished.

Our schedule prices for obtsining foreign patents, in all cases, will always be as low, and in some instances lower, than those of any other responsible agency.

We *can and do* get foreign patents for inventors in the Pacific States from two to six months (according to the location of the country) SOONER than any other agents.

The principal portion of the patent business of this coast has been done, and is still being done, through our agency. We are familiar with, and have fall records, of all former cases, and can more correctly judge of the value and patentability of inventions discovered here than any other agents.

Situated so remote from the seat of government, delays are even more dangerous to the inventors of the Pacific Coast than to applicants in the Eastern States. Valuable patents may be lost by extra time consumed in transmitting specificetions from Eastern agencies back to this coast for the signature of the inventor.

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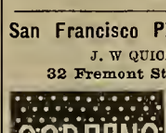

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Continued from Page 381.

COSMOPOLITAN.—The daily yield of ore continues to be about 10 tons. The face of the north drift from the bottom of the winze below the main adit level is in low grade ore. The north drift is in excellent ore.

CHOLLAR-POTOSI.—Daily yield, 100 tons of ore. This ore is crushed as fast as extracted, and yields but a small profit over and above the present cost of milling.

SAVAGE.—The pumps are kept steadily running, and the water is being gradually but surely lowered. It is now reduced to a point 20 feet below the 1900-ft level.

MEXICAN.—The west drift on the 1655-ft level is making favorable progress, with excellent prospects of good ore developments.

GOULD & CURRY.—The erection of the new pumping engine and other machinery is making excellent progress.

CALEDONIA.—Sinking the shaft is going ahead as rapidly as the hard nature of the ground and the steady, strong flow of water will permit.

SOUTH COMSTOCK.—The east cross-cut at the 300-ft level is now in 110 feet. The face shows very good little feeders of quartz, giving low assays, and some seepage of water coming in shows proximity to the vein.

UTAH.—Sinking the main shaft is being pushed ahead with the usual energy, the bottom in hard rock.

KOSSUTH.—The ore developments on the 600-ft level are steadily improving, and the appearances are that the Kossuth will soon rank as a first-class producing mine.

SUCCOR.—The new pumping machinery is about ready to start up.

BEST & BELCHER.—Cross-cuts have been started on the 1700 ft level to cut and prospect the ore vein at that point. The heat in the main drift and at these cross-cuts is intense.

NEW YORK.—The enlargement of the pump shaft is being pressed to completion with all the speed possible.

HERALD.—The incline below the 200-ft level continues to develop a fine character of quartz and rich ore.

LADY BRYAN.—The foundations are completed, the hoisting works finished and the erection of machinery commenced.

MINT.—Sinking the shaft is being pushed forward with great energy. The bottom of the shaft is still in soft ledge material of a favorable character.

SUTRO TUNNEL.—Total length of tunnel this morning, 14,211 feet. The face of the header continues in hard porphyry, with small seams of quartz and clay. No increase of water.

NORTH CARSON.—Bottom of shaft in splendid vein matter, with streaks of good ore.

WEST BELCHER.—At the 300-ft level the ore body is coming fully up to the most sanguine estimates in both quality and quantity.

ALTA.—Sinking the shaft is making excellent headway. The pumps continue to handle the water with ease.

Idaho.

THE MINES.—Owyhee *Avalanche*, Dec. 2: For several weeks during the season a limited number of workmen at the Oro Fino took out a considerable quantity of rock, 56 tons of which were recently crushed at the Ellmore mill. It yielded over $36.50 to the ton, realizing a net total for the crushing of $2,062. This is a tolerably good showing. It makes it certain that judicious work and systematic development only are needed to place the Oro Fino on a good paying basis. The company suspended operations about a year ago and made a great mistake in so doing, especially when it is taken into consideration that they had erected costly works and made all preparations for taking out rock on an extensive scale. Such a drawback as that which characterized the management of the Oro Fino is similar to many other discouraging movements which we have witnessed in this camp for the past 18 months. They have been ill-advised and the camp is now reaping the fruits of such action in a partial suspension of business and the prospect of a most exceedingly dull winter. We hope if the companies do not deem it prudent to resume operations, they will allow the mines to be worked for a brief season at least, by private enterprise. There is not a mine on War Eagle mountain to-day but would pay the owners handsomely if judiciously and economically worked. The new quartz mill of Messrs. Jones & Adams, at Wagontown, has just been completed. This marks a new era in the history of that camp and all who are interested in mines there may now reasonably entertain a hope of having good returns from their claims. The mill works like a charm. We have most favorable reports from all the mines in that camp, which promises to be one of the most lively spots in Idaho before long. The prospects of the Golden Chariot were never better than at this moment. It is expected that the force of workmen will be increased soon and operations carried on on a larger scale. The Belle Peck and Potosi mines are looking first-rate. Some rich rock has been taken from the Ellmore recently. It is reported to go fully $200 to the ton. The Empire rock recently crushed turned out very well. Arrangements have been made to work a limited force at the Silver Cord mine this winter.

Montana.

THE YOUNG AND ROUDEBUSH MILL.—Butte *Miner*, Dec. 2: Desirous of learning something positive in relation to progress of work, and how soon it was expected to have this mill in operation, we took a tramp out to the works last week. The site is about three miles northwest of Butte, on what is known as Gimlet gulch. We found matters pretty well along, and if the weather holds favorable it is expected to have the mill in operation in three weeks. It is proper to state that, considering the work done, matters have progressed as rapidly as could be expected since operations first commenced. With the exception of the boiler and engine, stamps and dies, everything connected with the construction of the building, battery, pans and settlers, has been done on the ground. The work has gone forward under the superintendence of Mr. R. C. KNOX, and is being well done. The construction and arrangement of the entire works are very compact, and for economy in space and saving of labor when in operation, this mill will be a model. It is an eight-stamp battery, wet crushing process, and will start with one Purvine pan and one settler. It is their intention, however, to add another pan in time, as the one will not have sufficient capacity to handle the pulp from the eight stamps. The power is furnished by a locomotive engine, of 10-horse power. It is rather light, but to give the engine all the advantage possible, it is geared to run up to something over 200 revolutions per minute, which will drop the stamps at about 90. Messrs. Young & Roudebush now have a small force of men at work at their lead—the Burlington—located in close proximity to the mill, taking out ore to supply the mill when started.

Utah.

ALTA MINES.—Cor. Salt Lake *Tribune*, Nov. 23: The Flagstaff works 125 men, and is shipping plenty of ore. The company have leased the Bay City tunnel and are driving it through to tap their ledge. The Lavinia or Grizzly mine works 70 men and ships 30 tons of ore per day. This is one of our leading mines, and to all appearances will hold its own in the future. The Prince of Wales is working 70 men. They are trying the experiment of allowing each man a percentage on the ore he takes out, a plan which is proving successful and gives general satisfaction. Their new steam drifting and hoisting works will be in operation in a few days. The Read & Benson works 30 men. They have struck some rich bodies of ore lately and the mine never presented a more prosperous appearance. The Crown Prince and Frederic mine works 12 men in their upper works, and are driving their tunnel to tap the mine at a great depth. The Ohio mine is working a small force and shipping some ore. The Utah mine has made some large strikes lately of very rich ore. The Utah bids fair to become one of our leading mines, and we congratulate the lucky owners. How many fortunes lie sleeping in our mountain sides waiting for men of nerve, combined with muscle or means, to bring to daylight, none can tell.

BINGHAM.—Salt Lake *Tribune*, Dec. 3: This portion of the canyon is now enjoying a serenity that is not at all desirable, either in a financial or business point of view. Few mines are working, and even those that are afford employment to but few men. It cannot be accounted for in the light of lack of ore, for the mines of Bingham are as rich to-day as ever they were in her greatest prosperity. For some time past the standard for lead ores has assumed such a high point that it is a difficult matter to extract ore of the required grade and remunerate the parties for their time and labor. Owners of smelters contend that they cannot realize sufficient from their bullion to warrant a deduction in their standard, but with the present price of silver and lead, it is very palpable that some one is making a handsome profit out of the sweat of the brow of the hard working miner.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING NOVEMBER 28TH, 1876.

BUROLAR-ALARMS.—John P. Everetz, S. F.
MITER MACHINES.—Allen H. Putnam, Oakland, Cal.
EXPLOSIVE COMPOSITIONS.—Charles De Lacy, S. F.
PILE DRIVERS.—Richard Hillyer, S. F.
TAP AND FAUCET.—Antone Pfeiffer, S. F.
AXES.—John O. Rollins, Truckee, Cal.

TRADEMARKS.

GENTLEMEN'S SHIRTS AND UNDERWEAR.—Percy Beamish, S. F.
SOAP.—Albert Man & Co., S. F.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

FRUIT AND BERRY BOXES.—Chas. W. Weston, S. F. The peculiar class of fruit and berry baskets or boxes to which this invention relates, are made of thin wood shavings or veneers. The most common method of constructing these boxes is to take two strips of veneer of proper width and cross their middles so as to form the bottom of the box. The four ends are then turned up to form the four sides of the box, and a metallic binding stiffens and preserves the proper shape of the boxes. Heretofore boxes of this class have only been made in small sizes for containing one or two pounds of small fruit, such as berries, etc. The reason of this was that the manufacturers, even in constructing the small boxes referred to, persisted that the metallic binding rim must be made in one continuous piece in order to give the boxes the requisite strength and durability, and they therefore purchased tin in the sheet in order to be able to cut out single strips of sufficient length to encompass the entire top of the box. Mr. Weston has discovered, however, that he can employ any number of short strips of sheet metal for binding, not only the small boxes, but that he can also manufacture large boxes or baskets capable of containing large fruit, and at the same time render them sufficiently rigid and durable. This enables him to make small boxes cheaper than heretofore, because he can use certain kinds of scrap tin—the refuse of tin shops—for the binding straps; and it enables him also to produce as a new article of manufacture, large baskets or boxes made in this way.

TAP AND FAUCET.—Antone Pfeiffer, S. F. This patent embraces certain improvements in that class of faucets and taps which are intended to be permanently secured in the head of a barrel, and are provided with a valve which is opened by the aid of the faucet introduced to the tap and through which the liquid is to be drawn. These taps, as usually constructed, have various forms of valves, most of which have screw threads upon the outside, so that after the faucet has been screwed a part way it will take hold of the valve and open it (either by screwing it inward or outward) by the time the faucet has reached its seat, while the latter must be carefully protected from leakage by closely fitting packing. This invention consists in the employment of a tapering plug ground to fit the inner end of the tap, with its large end toward the interior of the barrel, while its small end is provided with a lug or lugs, which fit into a slot made transversely in the end of the faucet. The faucet is pushed directly to its place and is secured by a gland surrounding it and screwed into the tap, making a tight joint by pressing an elastic washer against a nut or shoulder within the tap. Holes are made in the plug and in the sides of the tap and when the faucet is turned a little it opens a passage in the manner of an ordinary faucet.

BALING PRESS.—A. D. Miller, Sacramento. This invention relates to certain improvements in baling presses for hay and other materials, and it comprises the compression of the bale rapidly and powerfully by means of a double fuse in combination with pulleys and rope wheel; a novel means for locking and unlocking the doors of the press; and a method of making the bale perfectly true, and rectangular and for releasing it easily from the press after it is secured. It also comprises means for compressing the bale at the points where the rope, wire or other confining device encircles the bale, so that when it is removed from the press it will not spring and become too large. There are several other devices covered by the patent.

PILE EXTRACTOR.—Richard Hillyer, S. F. This is a device for pulling wooden piles and other wooden beams or timbers, such as are driven into the ground to serve as a support for wharves and other structures. When a wooden pile breaks off below the surface of the water it becomes dangerous to shipping, and, as an obstruction, requires to be removed; and being entirely submerged, it is often difficult to find its exact position, in order to attach a gripping device, so that it can be pulled out. This improved gripper is so constructed that it is also a feeler for finding the pile.

MITER MACHINE.—A. H. Putnam, Oakland. This invention is an improved machine for cutting miters and bevels, and consists in a combination of arrangements and devices difficult to describe without the aid of engravings.

Mining Accidents.

A number of mining accidents have occurred since our last issue, although fortunately none of them were such as to cause a number of deaths at once. The most mysterious of these accidents was that which caused the death of John Gallaghan in the Imperial mine, on the Comstock. As one of the miners of the Bullion was descending the incline of the Imperial, on his way to the combination drift of the Alpha, Exchequer and Bullion mines, which is being run from the 2000-foot station of the Imperial, he was surprised to find, some 20 or 40 feet below the 1700-foot level, the body of John Gallaghan. The *Enterprise* says: There is much that is mysterious about this death in the depths. Previous to the discovery of the corpse the man had not been seen since 11 o'clock of the night before. At that time he was lowered down the Yellow Jacket shaft to go as watchman to the drift where he was accustomed to work as watchman, the first of the Imperial not being running and it being more convenient to reach the 2000-foot level of the Imperial that way. The body was found 300 feet out of the way and above where he should have gone from the incline of the Jacket. He had thrust his candlestick into the timbers of the incline, the candle had burned out and death found him alone in the darkness. In the meantime the man he was to relieve toiled all night, unconscious of the fact that his friend was a corpse 300 feet above. The temperature of the incline at the point where the body was found is from 110 to 120 degrees. It hardly seems possible that deceased could have been so soon overcome, however, after leaving the 1700-foot level, if indeed he was passing down and not up at the time, for there was on that level plenty of fresh air and water. There was also a cooling house but a short distance below where his body was found. The cause of his death is as yet a mystery.

A fatal accident occurred last week at the Exchequer mine, Alpine county, Thomas P. Floyd, a miner, having been instantly killed by a cave in the drifts in which he was working.

The *Enterprise* says that about 10 o'clock last Sunday morning a deplorable accident occurred at the mouth of the Sutro tunnel. While H. L. Foreman, time-keeper at the tunnel, was engaged in boxing up some explosives which had been condemned as unfit for use, some three hundred of them exploded, tearing to fragments the structure in which they were and very serionsly, if not mortally, wounding Mr. Foreman. His right arm was laid bare to the bone, his face burned to a crisp, his right eye damaged beyond recovery, and his entire right side so badly torn and mangled that even should the injuries received not prove fatal he must forever lose the use of his right side. Mr. Foreman is a young man about 28 years old, a first-class mechanic, and a mathematician and scientist of no mean ability.

Richard Cowell was severely hurt about the head and back on Wednesday, by a cave in the face of the drift which is being run from the C. & C. shaft to connect with the 1650-foot levels of the Con. Virginia and California mines.

A shocking accident occurred at the new shaft of the Yellow Jacket mine on Monday. A miner named John D. Harris, familiarly known as "Doc," was working in the shaft about 15 feet from the bottom. One of the men on top was ordered to send some tools down, and in putting them into the bucket a hand-axe fell, striking Harris in the center of the crown of the head. The skull was split clear down, and a piece of bone three inches long by two and half inches wide and several small pieces were taken out by the physicians. The injured man retained his consciousness from the first and there is a possibility, although very little probability, of his recovery. The axe fell 130 feet.

There came near being a very serious accident at the Con. Virginia hoisting works last Sunday, according to the Virginia *Enterprise:* At the time of changing shifts in the mine it is customary for nine miners to stand on each cage as they are raised from or lowered into the depths. Sunday, as a double-decker with its double load of eighteen miners was descending, the cage in some way became fixed in the guides and stopped. The heavy cable began piling down upon the bonnet of the upper cage, threatening the lives of all on board. Fortunately the watchful engineer discovered the absence of weight upon the descending cable and stopped the engine before any great amount of slack had accumulated. One of the men was slightly injured, however, as it was, but was able to be about yesterday. Had the whole amount been paid out the cage and all thereon must have been crushed like an eggshell beneath its weight, or it would have broken through its obstructions and descended with fatal speed to the bottom of the shaft.

The Gulf of California Oyster Company.

The above company is an institution just organized to develop a comparatively new interest among us, and is destined in all probability to become a very useful organization. The California oysters are, as is well known, quite inferior, and the Eastern oysters are very expensive, while the bivalves which exist in such numbers in the Gulf of California are of splendid quality, large size and inexhaustible in quantity. This company has been organized for the purpose of supplying our market with oysters, and it is intended to go to work on a large scale to carry out the project.

Thus far the oyster most esteemed in the United States is found on the coast of Virginia. It exists in large numbers in Chesapeake bay, and the same species is sometimes found in the vicinity of Boston and also at the river St. Lawrence. Another species is called the northern oyster, which finds the largest sale in New York. The main sources of supply are the Chesapeake bay, the coast of New Jersey and Long Island sound. The wholesale trade of New York alone is estimated at $25,000,000 a year, and that of Chesapeake bay is probably nearly as great. These figures will throw some light on the importance of the project of the new company. The supply in the Gulf of California is very large, and the oysters exceptionally fine. The difficulty heretofore has been proper means of transportation, so that the field has been neglected. With the completion of the Southern Pacific railroad to Fort Yuma, however, this difficulty is removed. The company will have canneries on the spot, employ cheap Indian labor for gathering the oysters, and 200 or 300 of California boys for canning and packing. It will also have an ice manufactory on the ground and own vessels for shipping the oysters from the gulf to Fort Yuma, taking return freights.

In order to give the best effect to the operations of the company, the arrangements will be very complete. It is expected that the Southern Pacific railroad will connect with Fort Yuma in the early part of next year, when tank and refrigerator cars will be provided for shipment of fresh oysters. A line of boats will bring the oysters from the gulf to the Fort in 48 hours, and 50 hours more will transport them by rail to this city. For greater convenience temporary beds will be made at the mouth of the Colorado river, where the cargoes of boats from the gulf will be left, to be again taken up immediately before the departure of a train, so that they will arrive in San Francisco 50 hours after being taken from the water. Several beds of the oysters will also be made in San Diego and San Francisco bays, where it is confidently believed they will rapidly breed. Canned oysters will form a great specialty of the company, and cannot fail to be highly remunerative. There will be a market for these oysters in Eastern cities and in London, where the consumption will be large and constant enough to absorb all the supplies which can be sent from this coast. Another branch of the business will be drying coarser varieties of oysters for the China trade.

The officers of the company are A. Blacklock, president; Don Ramon Jose Gonzales, vice-president; William S. Manning, secretary and S. J. Priaglove, treasurer. Before incorporating, the officers thoroughly informed themselves on the breed of oysters in the Gulf of California, purchased rights from the Mexican government for the exclusive use of the beds, entered into arrangements for securing all appliances for canning as well as for the purchase of an ice manufacturing machine of Senator Jones' patent; provided for the charter of boats to carry oysters to Fort Yoma, and had an understanding with the railroad authorities in regard to transportation.

IRON MINING IN CALIFORNIA.—The Eureka mining company has just been organized to mine and work hematite ores at Placerville, El Dorado county. The company have 80 acres of land, well timbered, on which is also a fine marble quarry; also, on the same ground, is a limestone quarry. The company has also secured the refusal of 320 acres of adjoining land, well timbered, and containing mineral. It is the purpose of the company to immediately erect works for the manufacture of iron, especially shoes and dies, etc., for quartz mills, working Catalan furnaces, and forging the iron indirectly from the furnaces, which will be double the value of the cast shoes and dies.

Mechanical Ore Concentration and Separation.—No. 13.

[Written for the Press by Francis M. F. Cazin, M. E., Santa Fe, New Mexico.]

The question of "wet or dry" being thus determined, by mere necessity and want of practical success of the dry method, in favor of wet concentration, the next point to decide upon is the selection of apparatus. Neglecting all unimportant supplementary contrivances, I shall consider the important ones only:

I. Utilizing vertical intermittent and horizontal permanent streams of water in free contact with ore particles (jigs).

II. Utilizing the contact between the ore particles and solid faces in addition to a permanent horizontal or inclined stream of water, with or without concussion motion (tables).

III. Utilizing an uninterrupted stream of water, and the depositing tendency with different speeds of such stream (spitzkesten, flames, streaming apparatus).

Of these three classes I intend to describe the most prominent specimens, especially those having had an undoubted practical success. It remains to specify the kind of work that can best be done by the different apparatus.

This work can be divided by the size of the material to be worked. Efficient jigs should work all sizes from the largest down to one-half millimeter (one-fiftieth of an inch). The apparatus of the second and third class should work one-half millimeter size and all smaller sizes. It is unsafe to work smaller sizes than one-half millimeter with jigs, and only poor results can be attained in working coarser sizes than one-half millimeter on any of the tables. This being established by experience, all attempts in another direction can have only a very limited success, and only under extraordinary circumstances favoring the excess in either, as may be the case in the nature of the ore, or in extraordinary skill in handling the apparatus.

Jigs.

In the most primitive way jiggiag is done by a man holding a sieve in his hands and plunging it down into the water. He withdraws it and repeats his plunging motion; he thereby attains the jigging motion. Hengiag the sieve to one end of a beam end taking hold of the other in order to give the jigging motion to the suspended sieve is another mode of jigging. These contrivances may do where a man is in the same position as an Indian who needs flour; if water or steem mills cannot be had to grind the wheat or corn, a coffee-mill or smooth rock must answer. This treatise is, however, written only for those who wish to dress minerals in the cheapest and most efficacious way possible by the most improved contrivances; therefore I do not intend to describe the hundreds of different jigs that have been in use in different countries at different times. Changes in shape were frequently made to accommodate local peculiarities; improvements were made by a proper appreciation of principles: but prejudice, nonrished by custom, obstinacy, ignorance and boastful vanity, prevented a general and thorough reform of established imperfections, until an entirely different shape was given to all things belonging to mineral dressing by the appearance of Ritter von Rittinger's book on the Science of Mineral Dressing.

Mining in Butte County.

We had a conversation this week with a gentleman from Oroville, Butte county, who informs us that the mining interests of that section of the State are in a much more promising condition than for some time past. In his opinion it will not be long before the Butte county mines, generally, will be in a more prosperous state than ever before. A number of new enterprises have, of late, been taken hold of by men fully capable of carrying them out on a proper scale. All the mining being done is on a legitimate and not a speculative basis. This county has, like others, suffered from speculators taking hold of ground and getting up companies more for the purpose of manipulating stock than for legitimate work. The miners now, however, who are at work and those who have lately purchased claims are devoting their attention to legitimate work.

Among the enterprises mentioned by our informant, is that being carried on by Powers & Co., of Oakland. W. B. West owned 1,500 acres of gravel ground near Oroville, which fronts for about three miles on the river. He had also a ditch which carried about 1,000 miners' inches of water in the wet season. Working this ground with one giant and three men, in a small way, he made a profit of about $100 per week. This property was purchased last February by a company of three persons—Powers & Co. They have enlarged the ditch and put the property in order for better work. Part of the ditch is about five feet wide on the bottom and it will probably be connected with another so as to float down lumber. The supply of water will be increased in the winter to about 3,000 inches, and several giants added so as to work more ground in front. The property has turned out about $3,000 per month since it was worked on a larger scale, and could not now be purchased for $100,000, although originally purchased for $45,000. The ditch has been enlarged; the water is light yet and will be until the rains set in.

A number of other instances of like character were mentioned by our informant, showing that the present owners of mining property are going in for legitimate work; and whenever they have done so, good profits have been the result. The people find that more money can be made by going to work in the right way than by trying gigantic speculations—on paper—or getting up big companies, which never do any mining.

General News Items.

The American mining board, recently organized in New York, has extended its business to railroad and miscellaneous securities.

A London dispatch states that an extradition treaty between the United States and Great Britain has been arranged.

A Rio Grande dispatch says that General Diaz has entered the City of Mexico, and that Lerdo and his Ministers have fled westward.

The Cambridge University boat club has declined the challenge of Yale and Cornell to a four-oared race on the Thames next year.

The hearing of the Lick estate contestants was set in the Probate court yesterday for January 3d, 1877. A venire for 48 jurors has been issued.

There is still great distress in portions of India. There are no crops for want of rain. Cholera has appeared in Bombay, and is increasing.

A dispatch from New York, dated the 5th inst, states that the Brooklyn theater was burnt that night. Loss about $300,000. About 300 persons were killed.

Colonel Gordon, the African explorer, has arrived at Cairo, after an absence of three years. The Antinori, or Italian exploring expedition in Africa, has arrived at Liece. It was expected to set out for the Equatorial lakes.

Harry Andrews, for nine years connected with Woodward's Gardens, retires from its management, his health not having been good for some months past. After a few months' rest he will enter a mercantile career.

A Bethlehem, Pa., dispatch says that more than one-half of the mines in that State are closed. The number of men thrown out of employment is estimated at between 35,000 and 45,000. It is believed that the suspension will be entire by the middle of the month.

The Associated California Pioneers in New York have inaugarated a series of monthly receptions for the reviving of old ties, swapping of pioneer experience, and eliciting and recording personal and historical facts connected with pioneer days.

Small-pox is raging at White Mud river, Minnesota, and many Indians and Icelanders have died of the disease. The government storehouse has been converted into a hospital, the sick removed there and their vacant dwellings burned.

A rebellion has broken out in Buenos Ayres, headed by Colonel Alsina, Minister of war. Gold is at a premium of 30 per cent. The first reports of the Buenos Ayres insurrection were grossly exaggerated. Order has not been disturbed, but the government has declared a state of siege in four provinces to prevent the fomentation of disorder by bands of desperados.

In this State during the week there have been indications of rain, but no water. In some counties this lingering of the elements is greatly regretted. Rain is now needed to help along the volunteer and early sown grain, and to start the plows on the new fields. In the city trade is also awaiting the rains and the resumption of activity in the country.

On Monday Congress met in Washington, and on Tuesday President Grant transmitted his eighth and last annual message. Contrary to general expectations this document contains no allusion to the election difficulty which is now vexing the country. The message gives a review of the country during Grant's administration and notes other matters which, at this time of excitement, will not largely occupy the public mind. The House of Representatives has elected Samuel J. Randall, Democrat, of Pennsylvania, to the speakership. Up to this time both houses of Congress have done little but effect their organization and receive the message of the President.

The eastern districts of Bombay are reported rapidly recovering from the effects of the cyclone. The damage to the crops is less than was expected, but the loss of life has probably not been overestimated. Ninety per cent. of the plow cattle were lost. Sickness prevails, but fears of destitution are removed.

The main building of the International exhibition was purchased by the International exhibition company for the sum of $250,000. The auction sale of 24 buildings belonging to the Board of Finance and 20 belonging to individuals, brought, on the exposition grounds, $776,000. Their cost was $2,500,000.

The Tulloch automatic ore feeder has received an award from the Centennial committee of appeals.

Woodward's Gardens embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

Onoreless Excavating Apparatus Co. of S. F.—Nov. 30th. Capital stock, $100,000. Directors—D. E. Root, Francisco Taylor, John Mallon, O. Van Buskirk and James Fairclough.

Eureka Mining Co.—Dec. 3d. Location, El Dorado county; principal place of business, Oakland, Alameda county. Object: Mining and working iron and other metals. Capital stock, $600,000, in 12,000 shares at $50 each. Trustees: A. W. Bishop and W. M. Kellar, of Oakland; John C. Brewster, A. J. Kennedy and Geo. J. Blanchard, of Placerville.

Potsdam Compressed Yeast Co.—Dec. 5th. Object: To buy and sell yeast and liquors and the materials necessary for making yeast and liquors. Trustees: Charles Schroth, Peter Becker, Gustave L. Page, Wm. Westerfield and Louis Hemme.

Lookout Coal and Transportation Co.—Dec. 5th. Object: To deal in coal, lumber and wood. Capital stock, $2,500 000. Directors: Charles W. Frazer, John W. Pearson, Charles E. Pearson, David M. Seaton and Peter M. McLaren.

The Moscow *Gazette* says a fund is being subscribed for the purchase in America of letters of marque vessels, to be employed against English merchant shipping in the event of a war between England and Russia. Similar subscriptions have been opened in other Russian towns.

The result of the recent presidential election still remains in doubt.

METALS.

[WHOLESALE.

THURSDAY, M., Dec. 7, 1876.

American Pig Iron, ₩ ton	30 00	@	— —
Scotch Pig Iron, ₩ ton	29 00	@	30 00
White Pig, ₩ ton	— —	@	30 00
Oregon Pig, ₩ ton	— —	@	— —
Refined Bar	— —	@	— 4¼
Boilar, No. 1 to 4	6 ½	@	— 9 ½
Plata, No. 5 to 9	6 ¾	@	— 8½
Sheet, No. 10 to 14	— —	@	— —
Sheet, No. 18 to 20	— 5¼	@	— —
Sheet, No. 22 to 24	— 6	@	— —
Sheet, No. 26 to 28	— 6½	@	— —
Horse Shoes, per keg	— —	@	6 00
Nail Rod	— —	@	— —
Norway Iron	— 8½	@	— 9¾
Rolled Iron	— 7½	@	— 9
COPPER.—			
Copper Tin'd	— 37	@	— 40
Sheathing, ₩ lb	— 37	@	— 40
Sheathing, Yellow	— 21	@	— 22½
Sheathing, Old Yellow	— 11	@	— 11
Composition Nails	— 21	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ₩ lb	— 14	@	— 25
Anderson & Woods' ordinary sizes	— —	@	— 16
Drill	— —	@	— 16
Flat Bar	— 16	@	— 20
Plow Steel	— 8½	@	— 12½
TIN PLATES.—			
10x14 I C Charcoal	10 50	@	— —
10x14 I X Charcoal	12 50	@	— —
Roofing Plate I O Charcoal	10 00	@	10 50
Banca Tin	— 24	@	— —
Straitsman	— 18	@	— 18 ½
ZINC.—By the Cask	— —	@	— 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₩ lb	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 12½
do do 8x4 ft, No 11 to 16	— —	@	— 12
NAILS Assorted sizes	3 50	@	— —
QUICKSILVER, per lb	— —	@	— 55

LEATHER.

[WHOLESALE.]

WEDNESDAY, M., Dec. 6, 1876.

Sole Leather, heavy ₩ lb			25@25
do do light ₩ lb			20@22
Jodot, 8 Kil., per doz	43 00	@	50 00
Jodot, 11 to 13 Kil., per doz	68 00	@	79 00
Jodot 14 to 19 Kil., per doz	82 00	@	94 00
Jodot, second choice, 11 to 16 Kil. ₩ doz	57 00	@	74 00
Cornellian, 12 to 18 Ko	57 00	@	67 00
Cornellian Females, 12 to 13	63 00	@	67 00
Cornellian Females, 14 to 16 Kil	71 00	@	76 50
Simon Ullmo Femeles, 12 to 13, Kil	58 00	@	62 00
Simon Ullmo Females, 14 to 15, Kil	66 00	@	70 00
Simon Ullmo Females, 16 to 17, Kil	72 00	@	74 00
Simon, 18 Kil., ₩ doz	61 00	@	63 00
Simon, 20 Kil. ₩ doz	65 00	@	67 00
Simon, 24 Kil. ₩ doz	72 00	@	74 00
Robert Calf, 7 and 9 Kil	35 00	@	40 00
French Kips, ₩ lb	1 00	@	1 10
California Kip, ₩ doz	40 00	@	50 00
French Sheep, all colors, ₩ doz	8 00	@	15 00
Eastern Calf for Backs, ₩ lb	1 00	@	1 25
Sheep Roans for Topping, all colors, ₩ doz	9 00	@	13 00
Sheep Roans for Linings, ₩ doz	5 50	@	10 50
California Russett Sheep Linings	1 75	@	4 50
Best Jodot Calf Boot Legs, ₩ pair	5 00	@	5 25
Good French Calf Boot Legs, ₩ pair	4 00	@	4 75
French Calf Boot Legs, ₩ pair	4 00	@	—
Harness Leather, ₩ lb		24@	32½
Fair Bridle Leather, ₩ doz	48 00	@	72 —
Skirting Leather, ₩ lb		33@	37½
Welt Leather, ₩ doz	30 00	@	50 00
Sniff Leather, ₩ foot		17@	⅛
Wax Side Leather, ₩ foot		17@	—

LUMBER.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE —Retail Price.	
Rough, ₩ M	$18 00	Rough, ₩ M	22 50
Rough refuse, ₩ M	14 00	Flooring and Step, ₩ M	32 50
Rough clear, ₩ M	30 00	Flooring, narrow, ₩ M	35 00
Rough clear refuse, M	20 00	Flooring, 2d quality, M	25
Rustic, ₩ M	32 50	Laths, ₩ M	3 50
Rustic refuse, ₩ M	22 50	Furring, ₩ lineal ft	—¾
Surfaced, ₩ M	30 00	REDWOOD—Retail.	
Surfaced refuse, ₩ M	20 00	Rough, ₩ M	22 50
Flooring, ₩ M	28 00	Rough refuse, ₩ M	18 00
Flooring, refuse, ₩ M	18 00	Rough Pickets, ₩ M	18 00
Beaded flooring, ₩ M	30 00	Rough Pickets, p'd, M	20
Beaded floor, refuse, M	20 00	Fancy Pickets, ₩ M	30
Half-inch Siding, M	20 00	Siding, ₩ M	25 00
Half-inch siding, ref, M	16 00	Surfaced and Long Beaded	37 50
Half-inch, Surfaced, M	25 00	Flooring	35 00
Half-inch Surf. ref., M	20 00	Oo du refnse, ₩ M	25 00
Half-inch Battens, M	20 50	Half-inch surfaced, M	32 50
Pickets, rough, ₩ M	1 00	Rustic, No. 1, ₩ M	40 00
Pickets, rough, p'nted	13 00	Battens, allual foot	—¾
Pickets, fancy, P'ntd	26 00	Shingles ₩ M	3c
Shingles, ₩ M	35 00		

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by Suteo & Co.]

SAN FRANCISCO, Dec. 6, 8 P. M.

Legal Tenders in S. F., 11 A. M., 92½ to 92¾. Silver 67½@7.

Coin in N. Y., 108.

Gold Bars, 880 to 890. Silver Bars, 8@12 per cent. discount.

Exchange on N.Y., 50@55-100 per cent. premium for gold; on London bankers, 49; commercial, 49¾; Paris, five francs per dollar; Mexican dollars, 1½ per cent. discount.

London — Consols, 96⅝; Bonds, 102⅝

Quicksilver in S. F., by the flask, per lb, 55c.

It is not unusual for patients suffering from diseases for which sulphur baths are recommended, to travel thousands of miles to avail themselves of sulphur bathing. They would find it less expensive to buy Glenn's Sulphur Soap and bathe at home. Sold everywhere.

Knight's American Mechanical Dictionary is a book for all persons who make, buy, sell, use, or want to know anything about tools for machines, or are curious as to the history and development of mechanic art. It is a descriptive word-book of tools, instruments, machines, chemical and mechanical processes; civil, mechanical, railway, hydraulic and military engineering; a history of inventions; general technological vocabulary; and digest of mechanical appliances in science and the industrial and fine arts, etc. For circulars or price address or apply to A. Roman & Co., wholesale and retail booksellers, 11 Montgomery street, San Francisco.

Goon Printing Ink.—We prefer Chas. Enen Johnson's printing inks, having used them on this paper for the past four years. H. S. Crocker & Co., printers, stationers, blank book and paper dealers, are Johnson's S. F. agents.—Dewey & Co., Publishers.

Sacramento, May 29th, 1875.

Messrs. Dewey & Co.—*Gentlemen:*

Yours of the 27th inst. is received. The patent came only to hand yesterday, by express. Please accept thanks for your promptness in obtaining the same.

Very respectfully, Duncan Beaumont.

CHALLENGE ORE FEEDER.

$1,000 Challenge Ore Feeder and the Tulloch Feeder. A letter has been received from the Crescent mine, Plumas county, in which it states that the Tulloch is a failure as against the $1,000 Challenge Feeder of HENDY'S, 49 and 51 Fremont street, San Francisco.

To Mining Secretaries.

An amendment to Section 338 of the California Code, taking effect July 1st, 1874, provides that in addition to the regular publication, daily or weekly, of the assessment and sale notices as heretofore,

PERSONAL NOTICE

Must be served as provided in the following quotation from the law:

"*The notice must be personally served upon each stockholder, or in lieu of personal service, must be sent through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where the principal office of the Corporation is situated.*"

The above refers to the ASSESSMENT NOTICE only. Advertisers in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assessment notices printed on slips suitable for serving personal notice under this law at short notice.

DEWEY & CO., Publishers.

Mining and Other Companies.

Persons interested in incorporated shares will do well to recommend the publication of the official notices of their companies in this paper, as the cheapest appropriate medium for the same.

The Golden Sun Gold Mining Company.

Notice is hereby given that the regular annual meeting of the stockholders of The Golden Sun Gold Mining Company will be held at the office of the company, No. 702 Market street, (up stairs,) San Francisco, Cal., on Monday, the 11th day of December, A. D., 1876, at one o'clock P. M., for the election of Trustees of said company for the ensuing year. The transfer books will be closed on December 4th, 1876, at three o'clock P. M., and remain closed until after the meeting. By order of the President,

JOSEPH PENTECOST, Secretary.

Josephine Gravel Mining Company.—

Principal place of business, San Francisco, Cal. Location of works, Brushy Canyon, Placer Co., Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the sixth day of December, 1876, an assessment of ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 531 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the eighth day of January, 1877, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 25th day of January, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

WM. SMALL, Secretary.

Office Room 1, No. 531 California street, San Francisco, California.

Mariposa Land and Mining Company

of California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the ninth day of November 1876, an assessment, No. 8, of one dollar per share was levied upon the capital stock of the corporation, payable immediately, in United States currency, to the Secretary at the office of the Company, room 33, Nevada Block, No 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office, No. 9 Nassau street, New York, N. Y.

Any stock upon which this assessment shall remain unpaid on the 11th day of December, 1876 will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the eighth day of January, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

By order of the Board of Directors

LEANDER LEAVITT, Secretary.

Office, Room No. 33, Nevada Block, No. 309 Montgomary street, San Francisco, Cal.

Cerro Bonito Quicksilver Mining Company.

Location of principal place of business, San Francisco, Cal. Location of works, Cerro Bonito mining district, Fresno county, Cal.

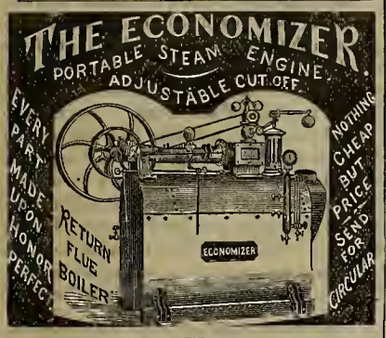
Notice is hereby given, that at a meeting of the Board of Directors held on the 13th day of November, 1876, an assessment (No. 1) of four dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, 418 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 14th day of December 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the eighth (8th) day of January, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors

J. W. CLARK, Secretary.

Office, Room No. 2, 418 California St., San Francisco, Ca

Machinery.



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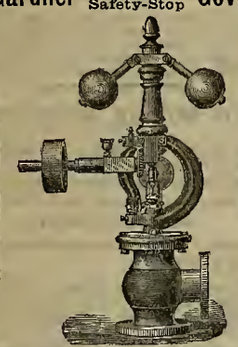

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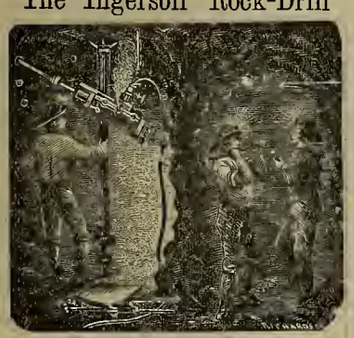
Selling Agents for Pacific States,

Cor. Market & Fremont Sts., S. F.

The Ingersoll Rock-Drill



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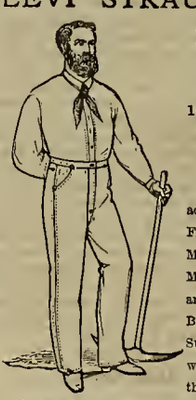

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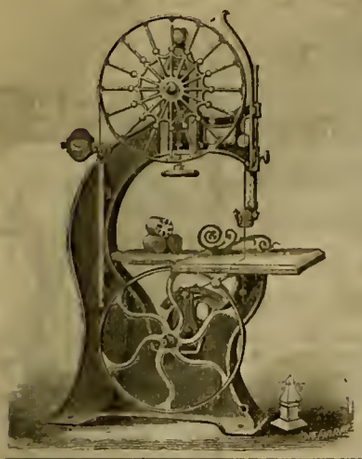

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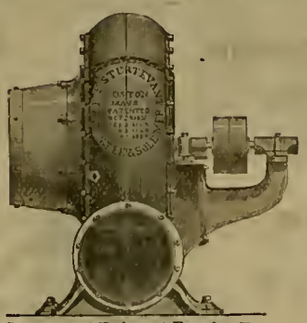

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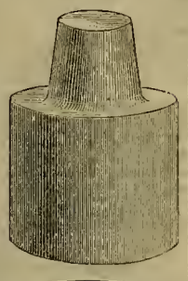

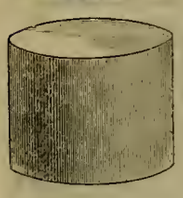

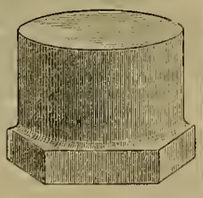

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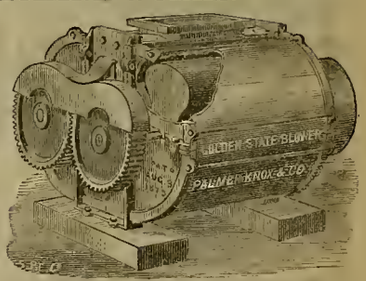

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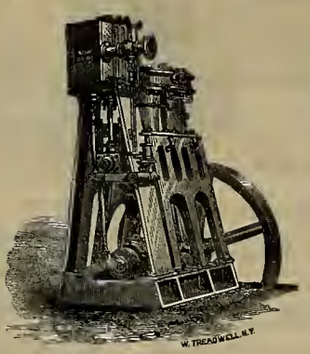

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Under the heading of the first chapter, "Testing Ores for Silver," we find paragraphs on ore formation, test for silver, with heat and water, acid or blow pipo. In speaking of testing for a process, the extent and richness of ore is considered, smelting ores, selecting and working sample, appliances for testing, roasting, etc. Under the head of "Working Ores" the anthor describes Aaron's process, has something to say of superheated steam, preparation of dichloride of copper and protochloride of copper, use of copper and iron, quantity of chemicals, carbonate of lime, chloride ores, amalgam, Patchen's process, etc. He also describes the methods of working roasted ores, treatment of base metals, stirring, heat of furnace, want of sulphnr, eto. Under the head of "Leaching Processes" are the titles, Smelting, Mexican process, Kroencke's process, Chilean process, etc. Under "Pulverizing Machines" are described the arastra and its construction and operation, stamp batteries, screens, Crocker's trip-hammer battery, Paul's pnlverizing harrel, Kendall's battery, Noice's pulverizer, a cheap rock breaker, eto.

In speaking of amalgamators the anthor describes a cheap amalgamator, grinding the ore, directions for making a barrel, preventing mechanical wear, nse of quicksilver, copper in bars, Freiberg barrel, cheap harrel, trongh, barrel on rollers, Aaron's amalgamator, separator, eto.

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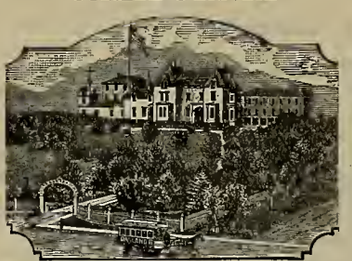

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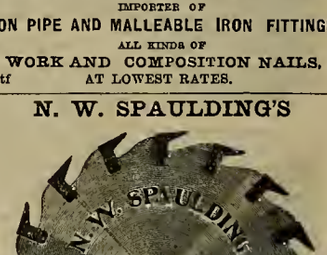

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BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, DECEMBER 16, 1876.

VOLUME XXXIII. Number 25.

Rock Drills and Hoisting Engines.

Dnring a recent viait to the Eaat, Mr. A. L. Fish, of Nos. 9 and 11 First street, secnred the agency of aeveral kinds of machinery, which he ia now introducing on this ooaat. The most important, at leaat to the mining commnnity, is a naw rock drill for steam or compressed air. It ia called the Union rock drill, and is a ccnsolidation of the patanta owned by the Winchsster rock drill company, G. H. Reynolda and the Delameter iron worka.

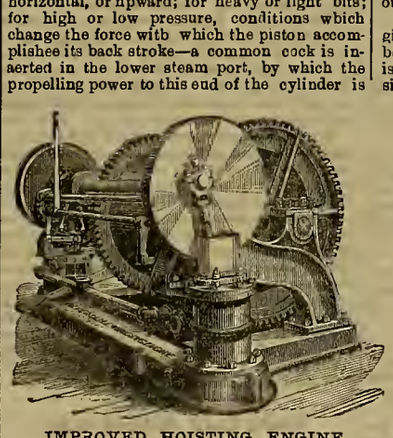
Maohine drilla hava now hecome such a necessity in engineering and mining operations that tha minds of prominent engineera have heen bnsy with the constrnction of machines that wonld aupersede tha slow and tedions procesa of hand drilling. Tha resnlt has been a acore of contrivancea more or less well adapted for the purpose, and the firat drill of Sommeiller haa been aacceeded by those of Dnbois-Francois, McKean, Waracp, Darlington, Kainotcman, Sachs, in France, England and Germany, and those of Burleigh, Ingeraoll, Rand, Waring and Winchester, in America. All of them have made a reputation, hut atill the success has heen an incomplete one, and will probably remain so for a long time to come. The conditiona nnder which a rock drill ia made to work are of a natnre whioh excludes the posaibility of continned working without a comparatively great amonnt of repairing. Exposed in tha open air to the action of rain, to the ill treatment of inexperienced men and to great abnse in general, it belonga to a claaa of machinea that mnst, in certain parts at leaat, give ont sooner than one whicb is constantly in the hands of a painstaking and skillfnl attendant. To rednce the liabllity of getting out of order, and to make a machine at the esme time light and effective and easily handled, are probably the essential points to be fulfilled.

The new machine which A. L. Fish & Co. now offer to the mining pnblic, is, as before stated, a combination of the patenta of E. S. Winchester, George H. Reynolda and C. H. Delameter & Co., and promiaes to answer all tha reqnirementa of a good rock drill in an nncommon degree. The accompanying engraving ahcwa the general featnres of the drill. All the parts composing the valve gear and rotation are completely protected and ont of view; still they are easily accessible. The valve gear ia very aimple, and the maobine can he rnn at any desired apeed without danger of getting it out of order. The tappet by which the valve ie moved hanga down loosely, having no apringa or coils about it, and ae it is made itself of an elastic apring is not affected by any sudden blow. It ie ao arranged aa to move easily and quickly without the alightest chance to get out of order by any violent impact of the piston. The valve ia ao arranged that when desired it can be turned from the outeide by a simple motion ao as to draw back the drill; this obviatea the necessity of pnshing the drill back by main etrength when it is desired to withdraw it. When drilling npwards the port can be so adjnated that ae little steam or air ae desired ie admitted to draw the drill downwarde, altbongh the full force is still exerted npward. Thie is of great advantage, as in drilling upward the drill is aided in ite backward motion by ite own weight, and ia apt to come back harder than necessary.

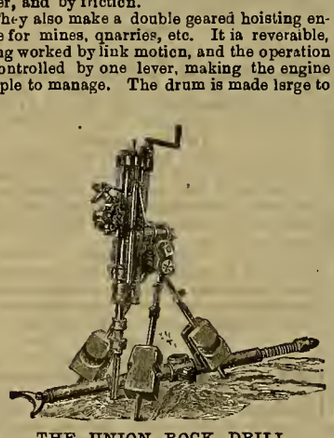
The rotation ia antomatic and absolntely certain. The ratchet wheel ia provided with two pawls, whioh act alternately, thne admitting of the nae of a larger and stronger ratchet wheel, the ratcheta not being so freqnent on the circnmference of the wheel. On the back atroke the drill revolves slightly eo ae to change the cntting edge with relation to ita laat atroke, bnt it ie held rigidly by the pawl engaging with the ratchet in ite forward etroke. A projection from thie ratchet to the outside of the machine allows the operator to rotate the drill more or lesa as desired, so that in case the drill geta in a crevice it can be rapidly rotated by hand while the blowe are being atrnck. Thia will give a clean finish to the hole. The feed ia regulated by band from the back of the machine.

The upper head of the cylinder can never be struck by the piston, because the chuck ord rill holder firet meets a hardened steel ring which projects ont of the stuffing box of the lower head and which rests on the elastic packing of the stnffing box itself. For the down blow n eimilar bat much larger steel ring is inserted in the inner side of the lower head, and this also is bedded on an elastic ring of rubber, the latter entirely enclosed by the metal and removed from the action of the steam or the friction and consequent wearing by the piston rod. The drill itself fits closely against the piston head. The chuck ia qnite simple and holds the drill effectively, while it is not liable to get jammed so as not to readily release the drill when desired. The drill is held in place by large rings, which close over it on the wedge principle, no screw action being used.

The packing ringa are atationary in the cylinder, ao that the jar or motion of the piston cansea no motion of the rings. The cylinder heads are very securely fastened on in a manner which leaves no liability of breakage. Bolts run atraight along the ontside of the apparatus from one end to the other and bold on the cylinder heads, thus distributing the strain on four iron rods. To accommodate the drill for different directions of drilling—for downward, horizontal, or npward; for heavy or light bits; for high or low pressure, conditions which change the force with which the piston accomplishes its back stroke—a common cock is inserted in the lower steam port, by which the propelling power to this end of the cylinder is



IMPROVED HOISTING ENGINE.



THE UNION ROCK DRILL.

nnder complete control of the attendant, and yet allows a perfectly free exhaust from the same side when the piston returns to perform the blow on the rock.

The tripod for the drill combines all the advantages that can be desired ot this part of the machine, admitting of a motion in all directions. The legs are slightly flattened on two sides so as to give a very strong hold to the clamps, and keep the drill securely in position. For mounting the drill on a column or etretoher-bar it is necessary to nnscrew only one nut and the whole apparatus can be nnecrewed from the tripod and set on the bar. All the mechanism of the anparatna is made in the strongest manner and the machine is at the same time quite light and portable.

Mr. Fish has also brought out the Union drill company's coupling for hose. The hose ie pnt on the ends of the pipes and clamped tightly with nuts. Then a qnarter of a turn will nncouple it when necessary. The connection ia made by simply slipping the ends together and giving a quarter of a turn; different sizes are made. It is impossible for the clamp to slip off, and at the same time an air-tight joint is made.

The Hoisting Engines.

The hoisting engines which Mr. Fish is introducing, are manufactured by Copeland & Bacon. Several styles are made. Some of the engines are intended for use where one or more are needed to be operated from one boiler, as is frequently done in warehouses, factories, breweries, steamships, quarries, and in all kinds of contractors' work. The engines are supplied with either clutch and brake or link motion for reversing, enabling them to be controlled in hoisting or lowering or stopping by the use of one lever; by this means the heaviest weights can be lifted with much more safety than with the ordinary clutch and brake. In most of these engines both the link motion and the clutch and brake are furnished. The double geared engines are intended for extra heavy work in quarries and are provided with both the link motion and clutch and brake. They are calculated to lift double the weight of single geared engines at a proportionate rate of speed. The differential geared engines are intended for both light and heavy hoisting and combine the advantages of both the single and double geared engines, as by simply shifting the clutch the engine can be made either single or double geared, or can be run separate from hoisting gear, and with the single engines can be used for pumping. They are furnished with a link motion and clutch and brake, and for a great many kinds of work, where the material to be raised varies in weight considerably—these engines are unequaled, as the power of the hoisting gearcan be doubled without changing the fall ropes, etc., as is usually the case; the lowering can be controlled by the use of either link or brake. The double cylinder engine gives double the power for about the same space occupied, and has larger drums so as to hoist quicker; it cannot be caught on the center.

A double drum portable hoisting engine for stevedores' use, pile driving, etc., is also made. The drums are worked independently of each other, and by friction.

They also make a double geared hoisting engine for mines, quarries, etc. It ia reversible, being worked by link motion, and the operation is controlled by one lever, making the engine simple to manage. The drum is made large to nse wire rope and of any width to suit depth.

The engines are all tested before leaving the works and are shipped in complete working order.

Still another is the reversible winding engine for mines, intended for very quick work. It ie provided with two steam cylinders which are single geared to a large drum. It has a link motion for reversing so as to hoist one while it lowers another bucket.

The safety steam elevator is for buildings, stores, factories, etc. Thie engine is intended to be used in connection with a passenger cage or platform for hoisting merchandise. It is safe and noiseless, having a uniform steady motion. One of these hoists is now on the way to this city for Benson's building on Pine street. It is the latest and most approved hoisting engine, with all the safety attachments, etc.

IDAHO MINES.—A. B. R. writes us from Idaho that the mines in the basin and other surrounding camps are mostly closed for the season. Quartz mining and drift diggings are prosecuted still. The last season's operations in the mines have been very prosperous and encouraging; especially have Idaho's quartz mines developed splendidly the last season. Owyhee district has been no exception as far as rich developments are concerned, but her owners have not operated successfully for some cause best known to themselves. The mines of Alturas county—Atlanta district—have astonished all who have entered their rich vaults and seen for themselves.

PIPER'S bill concerning the Black Hills country proposes the immediate creation of a Territorial Government for that region. He considers this very important and therefore will urge the prompt passage of the bill.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

ENVELOPE, NEWSPAPER WRAPPER, ETC.—L. J. Henry, S. F. The ordinary construction of an envelope of sized paper, necessitates care to prevent blotting the address after being written. This invention makes the envelope with the back for the inscription made of the usual sized paper. The opposite side is made of unsized or blotting paper, so that when many letters are to be written, each succeeding letter or paper serves to blot the ink on the preceding one. For newspapers, instead of the ordinary form of open wrapper, the inventor prefers to use an envelope or pouch closed at one end and having a flap at the other, so that the paper can be placed entirely within the pouch and protected from abrasion or dirt. One side of the wrapper is made of unsized paper. The inventor states that the work of writing addresses will be facilitated by the use of such envelope, and its usefulness will cause it to be preserved, so that the sender's business card will be retained in a prominent position.

SCOW AND PILE DRIVER.—Richard Hillyer, San Francisco. Mr. Hillyer's patent relates to an improvement in floats or scows, such as are used in supporting pile drivers and moving them from place to place in order to conveniently drive such piles as are driven into material under water. It also relates to an improved manner of securing the pile driver so that it can be adjusted back or forward according as required by the circumstances of each case. By the arrangement patented the inventor is able to drive the piles on a straight line and at the same time fasten the scow immovably while driving each pile. This arrangement also permits the inventor to use his patent gripping device for pulling piles (described in our last issue) to a great advantage, as he can work all around the pile, and he obtains the advantage of applying the downward force at or near the middle of the scow.

SPRING BED.—A. J. Lattin, Alvarado, Alameda Co. The invention relates to certain improvements in the construction of beds, and consists in a novel construction of the longitudinal slats which form the bed bottoms, and also in a means of attaching them to the coiled spring at the other end, together with certain details of construction. The invention also relates to the construction and attachment of a head and foot piece, which completes the bed.

HOSE CART REEL AND IRRIGATOR.—E. J. Delaney, San Jose. This invention relates to carts for the transportation of garden hose and consists first, in providing an arrangement by which the rotation of the axle can be made to rotate the reel for the purpose of winding up the hose when desired, and secondly to a novel arrangement by which the carriage may be converted into a standing irrigator.

WREATH PIECE FOR STAIR BUILDERS.—Christopher Lamb, S. F. The object of this invention is to provide a device for bolting the wreath pieces of stair case hand-rails in the proper angular position, to enable the workman to carry the rail properly to the band or other saw for sawing the concave or convex sides of the pieces.

BULLION FROM OREANA.—Mr. E. P. Torrey writes us from Oreana, Nev., that there has been shipped from that station during the year 1876, upwards of 420 tons of bullion. This bullion has been produced from ore extracted from the Hurricane mine, now owned by the Hurricane company, of San Francisco. They will add 100 tons to the yield during the present month. The statement of the yield was taken from the railroad company's books.

AT a meeting of the American mining board, in New York, on Monday, a new set of officers was chosen, with Tuthill as president.

CORRESPONDENCE.

Mining in Madison and Gallatin Counties, Montana.

EDITORS PRESS:—Having made the circuit of the mines of Madison county, it may be safely stated that they are doing as well, in some respects at least, as those of any county in California or Nevada.

The amount of bullion produced in the aggregate may fall far short of some, but the number of mines paying will doubtless be found greater.

Dividend-paying mines have usually been the exception. Here it is the rule. They have generally paid from the surface, are usually worked or superintended by the owners, sometimes to a great disadvantage from lack of capital, but mostly with prudence and caution. Probably to these causes in the main may be attributed the rather unlooked for success of their operations.

At Red Bluff,

Madison county, there are some promising silver mines, with ore going from $80 to $120 by wet crushing and within 85 per cent. of the assay, at Thomas & Old's mill.

The Eberhardt mine, at Havana, the property of Young brothers, of 1,400 feet in length, has worked from $60 to $80 per ton in silver. The fissure is four feet wide, with good free milling ore on each wall.

The Crown Point, at the same place, is a very rich but narrow vein, from one to eight inches, with ore principally chloride, running from $500 to $2,000 per ton, some of it even to $4,000 in silver. The ore is selected and shipped to Omaha for working.

There are several other claims here, such as the Annie and Relief, with ore and probably veins similar to the above.

The Whortleberry,

On Middle creek, Gallatin county, nine miles from Bozeman, is a late discovery, and as yet but little prospected, but giving assays from $17 to upwards of $200 in gold and silver. It is estimated from tests to work about $20 per ton. The lode has well defined walls of granite, eight feet wide and entirely filled, where opened, with good solid quartz. It is owned by Messrs. Bailey, McKenzie, Lansing and Robinson, of the vicinity.

Eastern Montana Mining and Smelting Company,

Incorporated capital stock, $500,000, 25,000 shares, with place of business at Bozeman, own seven lodes on Clark's fork, and have taken out near the surface some 200 tons of excellent smelting ore, mostly argentiferous galena, giving assays from $50 to $300, and running in lead from 40 to 60 per cent. They have also two good iron leads for fluxing and some superior fire clay in the immediate vicinity of the mines. A smelting furnace and all necessary buildings for operations have been erected. Officers: L. S. Wilson, President, J. D. McCaman, Secretary, and J. G. Dow, Treasurer.

The Republic,

In Blackmore district, in the same neighborhood, shows large deposits of rich smelting ore from three to 30 feet in width, being opened only to the depth of about 15 feet. The lowest assays run as high as $125 and some as high as $625. Eight hundred pounds, taken as it came from different points along the lode, worked at the rate of $175 per ton, going 50 per cent. in lead. The ore as seen in the sacks looked fully as well as that of the Richmond, at Eureka, Nevada. In fact, no better looking smelting ore has hitherto been met with, and said to have been pronounced by Prof. Hayden as of a very superior quality. High hopes are entertained for the future of both the above named companies. Wood and water are represented as found in the greatest abundance, and all other needed facilities for successful working.

Some Gravel and Placer Mines.

Mr. A. W. Tanner has been engaged for the past three years in this kind of mining near Havana, in Madison county, and has persevered in spite of the derision of some of his neighbors, with the full confidence that he would be able to make it pay.

He has 157 acres under a U. S. patent, that pays from eight cents to $1.42 per cubic yard, and reports the gravel range extensive, as ascertained for gulch, ranging from five to nine feet in depth, and for hills from 45 feet probably to 100 or 200 feet. He wishes it distinctly understood that he has neither ground nor water to sell, and will cheerfully answer all letters of inquiry from California or elsewhere in regard to locations that can be made.

Emigrant Gulch,

Thirty-five miles from Bozeman, was not visited, and we are indebted to Mr. Allen, of the *Avant Courier*, and others for a few facts.

About 50 or 60 claims are at work and said to be doing well. Miner's wages are $4 per day, and from 75 to 100 men engaged. One poor man was heard of who went in there three years ago, and who has realized about $60,000. Messrs. Cone & Lee have taken out a pile this year, with plenty of good ground left. Nash & Co., and all in the lower district have been successful. The Drain ditch company have also had a splendid season. Reynolds & Co., Wood & Long and Clifford & Co., of the upper district, had shut down on account of snow, but their purses were represented as considerably heavier than when they commenced work in the spring. It promises to pay better next season, as the claims will be better opened and will probably give employment to about 200 men. The mining of Gallatin county is not so extensive as that of Madison and some other counties of the Territory, the attention being given more to grazing and agriculture, in both of which respects it excels. A. C. K.

South Mountain District, Idaho.

EDITORS PRESS:—As the general opinion is on the outside that this camp is defunct, I will give you some items of the prospects outside of the Idaho smelting and mining company. The miners here are talking of forming a company of their own to erect a furnace and mill on a small scale, say five tons capacity, each to work their mines and run the machine themselves, for there is plenty of ore here that will justify them in so doing. In order to prove it I will describe some of them.

The Philadelphia Tunnel Company,

Owned by W. W. Hastings & Co. In running this tunnel the Black Giant was discovered 50 feet in, cutting the lode at right angles, the vein 12 feet in width and assaying $75 per ton and 45 per cent. lead. With the continuation of the straight tunnel in a southeasterly direction, about 250 feet, the Golden Monarch was discovered. This mine is six feet in width and the depth from surface 115 feet, the average assay being $154 silver and 58 per cent. lead. They have run on the line of the lead 22 feet, showing four and one-half feet of galena.

The Avenue

Belongs to Hastings Bros.; this mine has a shaft down 16 feet, the ore taken out at that depth is 20 tons, assaying $270 silver and 50 per cent. lead; vein, four feet.

Scandia.

This mine, owned by Don Vincent, has a shaft down 60 feet; ore on dump, about 80 tons, averaging $96 per ton silver and 40 per cent. lead.

Clipper.

The owners, Palmer Bros., have a shaft down 64 feet; width of vein from three to four feet; ore on dump about 40 tons; assays from $50 to $630 in silver, with an average of 20 per cent. lead.

The Mono

Is owned by Wm. Quail; shaft down 80 feet; ledge, four feet in width; ore on dump about 80 tons, of gray carbonate, galena and black sulphurets, assaying from $60 to $1,000 per ton, with an average of about 40 per cent. lead.

The Disappointment

Is owned by Wm. Rockefellow, the discoverer of the Virtue mine in Baker county, Oregon. It is about 90 feet in depth, showing a four-foot vein of splendid ore, assaying from $50 to $300 per ton in silver, with a small percentage of lead.

The Chronicle

Is owned by Vinton; shaft down 30 feet; vein small, from two inches to one foot; ore, gray carbonate and horn silver, assaying from $50 to $1,093 per ton, and 60 per cent. lead.

The Ruby

Is owned by Atkins, Connel and McLacey; shaft down 60 feet and a tunnel has been run on the line of the ledge about 60 feet, showing a four-foot ledge; about 75 tons on dump, assaying from $60 to $700 per ton, with 50 per cent. lead, and some of the ore showing native silver.

The Violet

Belongs to J. Smith and others; shaft down 20 feet, three feet between walls, showing native silver and galena ore.

The Mountain Chief

Is owned by Palmer Bros. and A. Brooks; shaft down 20 feet; three feet between walls, showing solid galena ore.

The general direction of all the mines is southwest and northeast, and dip to the southeast. The formation is principally lime, quartzite, mica, slate, feldspar, and in some places granite, syenite and gneiss.

Timber is plenty and any quantity of good ore in sight to make this camp self-sustaining. There is any amount of quartz here that will pay well for milling that has not more than from three to five per cent. lead, and no other base metal in the ore. The gentlemanly superintendent, Joseph Bowyer, is daily expecting orders from the company in San Francisco to start up their mines here, and if they don't start soon the prospect is that the miners here will increase their mining stock some.

X. Y. Z.

November 22d, 1876.

Coal in Santa Cruz County.

EDITORS PRESS:—Sometime ago you copied from one of the local papers a statement that the Vulcan coal company, whose prospecting works are located on a branch of the Corralitos creek, Santa Cruz county, had made such discoveries of coal as to justify the expectation of early shipments to San Francisco. This statement was premature, as they had found nothing like a permanent lead until last week, when Mr. Wm. Strader, the indefatigable representative proprietor of the works, accidentally made the discovery of a vein of coal, which, if it continues to improve as it has up to the present time, will realize all that has been hoped of these mines. The indications of coal which induced the inauguration of these works, consisted chiefly of croppings on the north side of the creek and 15 to 20 feet above it. The croppings indicated a vein a foot or more thick, dipping at an angle of about 35 deg. into the mountain northward. A number of sacks of these croppings were sent to San Francisco last year, and tested with satisfactory results.

The company sunk a shaft 160 feet near this vein; at 150 feet they ran northward a level 225 feet, thinking to strike the main vein at the distance indicated by the dip at the surface. The perpendicular shaft is five by ten feet and the level five by five feet, all well timbered. All of the excavations have been in a friable sand rock, occasionally being hard enough to require blasting. All the coal indications at this depth were occasional patches of disturbed bituminous strata, showing that they were detached portions of the main vein, but in no manner pointing to the exact location of that vein. Owing to the great depth there was such an accumulation of water as to require the services of the hoisting engine several hours of the day to draw the water to the surface. For a while past the workmen in the drift were troubled with foul air, and it was found necessary to force down the shaft a current of pure air by some contrivance within the reach of the inventive genius of the parties. Some kind of a revolving fan was decided upon, and while seeking a board to be used in its construction, Mr. Strader discovered, in the hill on the south side of the creek, and about 40 feet above it, the croppings of the vein we have already alluded to. This vein has a dip to the south at an angle of about 50 deg., runs about east and west, and is near four feet in thickness. A shaft, four by five feet on the incline, has been sunk about five feet. It has improved every inch it has been sunk, and from thin layers of perfect coal at the surface, with considerable imperfect coal between, it has, at the present depth, thickened up its perfect veins to near an inch in thickness, with but little imperfect coal between. The vein at this altitude has a clay wall on its lower side, with sandrock on its upper. If this vein proves a genuine one, the date of its discovery will have been an epoch in the industrial interests of this county; for all these mountains have equal indications of coal, from Santa Cruz to the Pajaro river, and no doubt continue in the Gabilan range. Railroads will be built to carry the coal to market; towns and villages will be built all through and along these mountains. A home market will be created for most of the agricultural products of these valleys, and new life and impetus given to business in this region not known since the days of gold discovery.

Before closing we would state that this company have sunk shafts and run tunnels at several other places in this vicinity within the last two years, with about the same results as in the instance mentioned. The zeal that this company has manifested to open up this great interest is certainly to be commended; for men of less nerve under equal discouragements would have given up the enterprise, while no less energy and perseverance than has been shown could have achieved the present success. We shall watch the working of this vein for the next few weeks with a great deal of interest, and will keep your readers informed of the results. C. N. W.

Watsonville, December 4th, 1876.

Pacific Coast Railroad Items.

Advices from Yuma announce that the Southern Pacific railroad will be completed to that place by the first of February. The people of Arizona have waited long for this consummation, and are to be congratulated. We wait now to see what effect this latest improvement will have on the Arizona bullion shipments.

The Virginia and Truckee railway company have projected an extension of their line up into Carson valley. Indeed it is a mere question of time as to when the road will reach out to and through Douglas into Esmeralda, and so on, south and west, wherever the timber belt stretches and mines are developing. C. L. Anderson, surveyor-in-chief of the road, has started the survey. Mr. A. will keep along until storms put an end to work for the season. Judging from present appearances the line of road will be surveyed as far as Genoa before snow stops the party. Whether it is to be a broad or narrow-gauge road has not yet transpired.

The editor of the San Diego *World* has been examining the map and profiles of Crawford's survey for the Texas and Pacific railroad. Starting from San Diego the line runs through National City, thence crossing the Sweetwater through Telegraph canyon to the lower end of the Jamul valley; thence by Harbison's bee ranch to Cottonwood at the mouth of Bear valley; thence up Bear valley through Moreno canyon into the Matsequal chain of valleys, through which a decidedly light and easy line has been discovered, to the head of Laposa valley, taking the side-hill down, and, on getting up, taking the top of the mountain at the head of Miller's valley, running level on the crest and crossing Walker's summit, thence through Walker's River canyon to the head of Cariso canyon; thence through Cariso Creek canyon and Palm Tree Creek canyon to the desert; then straight across the desert to Yuma, shortening the distance materially—the maximum grade being two feet in one hundred. In excavating for the bridge at Yuma on this side of the Colorado river, a fine lead of silver and copper ore was struck by the excavating party, samples of which have been sent to San Francisco for assay.

The editor of the Bidwell *Herald*, a paper published at Camp Bidwell, Modoc county, in its issue of November 22d says: On Friday and Saturday we were out with the surveyors, who were running a trial line for a contemplated railroad, which has for its object to give Oregon an outlet by land both to the East and San Francisco. The party left the Central Pacific railroad at a point between Humboldt and Mill City, about 40 miles west of Winnemucca, and came in a northwesterly direction across the Black Rock desert and in to Duck Flat a little south and east of that place, thence through the canyon there into Surprise valley, traversing the whole length of the latter on its western side until it reaches Bidwell, where it takes a turn to the east, passing south and east of the town, thence direct to Mr. Clough's, at which point it makes a large bend to the west, keeping near the foothills and crossing the canyon on a trestle-work just above Mr. Brown's house, from which place its direction is southerly again, all the time ascending at an easy and average grade until at a point due west of the post they have attained an elevation of about 400 feet above the lake. From this latter point a distance of about six and a half miles is traversed by a meandering line which has not a few excavations and embankments, several high trestles and tunnels, until a small pond is reached near the road over Lassen's pass, where a large tunnel will be made through the mountain, its western outlet being at the level of Fandango valley. The eastern entrance to the tunnel is at an altitude of about 900 feet above the lake on this side. Before the main tunnel is reached on this side of the mountain, an eccentric feature in the line is noticed, it winding itself into a spiral, crossing a trestle work over a gorge and the second time crossing on the same trestle but above the former crossing. After leaving Fandango valley it passes through Goose lake, crossing the head of that valley, from there through Drew's valley and the Spragne river country to the vicinity of Klamath, which, owing to the lateness of the season, is as far as the party ventured this year.

Promising Enterprises.

The San Juan ridge is probably the richest and most extensive mining belt on the coast. From French Corral to Moore's Flat, a distance of about 20 miles, there is known to be an ancient river channel running, and openings made upon it at different points prove that it is very rich and very extensive. Some of the best mines in the State are located upon this channel. The various claims belonging to the Milton mining and water company, the American mine and a dozen others of perhaps equal merit, the extensive grounds of the North Bloomfield water and mining company, and the divers claims of the Eureka Lake company, including those at Moore's Flat, Relief hill, Bloomfield, consolidated claims at Colmahia hill, and lots of other claims along the line, the names of which have escaped our mind, are all located upon the same channel, and as yet they have been barely scratched. We suppose that old channel hides from the world, among its sands and boulders, tons of yellow treasure which will, at no distant day, become a circulating medium of the country. We are glad to learn that the claims on this belt being worked are all proving rich and paying well, and we are still further gratified to know that there is a prospect of extensive operations in that section in the near future. It is proposed to throw open a section of this field and put it in shape where capitalists can make a permanent and profitable investment without buying out a whole mine and being compelled to personally supervise and assume the responsibility of its proper management. We learn that several mining experts have been looking over the ground on the ridge with a view to correctly report upon the same, and when done, if their report is favorable, capital stands ready to be invested. Mr. James D. Hague is one of them, and we learn has given the country a very thorough examination. He will report soon, and we judge favorably, as any one will who ever sees that section of the country. We further learn that there is talk of consolidating the immense property of the Eureka Lake company, and placing a part of its stock upon the market, with a view to more thoroughly and systematically opening up a portion of the extensive auriferous deposits belonging to it. The company own ground enough to make 40 mines, each one of which would yield rich returns if opened. We hope that this rumor will prove to be true, as it will make times lively all over the county. We think it is a duty the owners of the Eureka Lake property owe to the county to perfect some arrangement whereby their ground can be opened. There is too much treasure lying idle there to be profitable. We are satisfied, too, that moneyed men would be eager to invest in an enterprise where the returns will be so sure as in any of the mining or water property proposed to be consolidated by the Eureka Lake company.—*Nevada Transcript.*

BELOW ZERO.—The lowest temperature in the Arctic seas recorded by Captain Ross in 1820 was 50 deg. below zero; by Dr. Kane in 1853, 70 deg.; by Dr. Hayes in 1861, 68½ deg.; by Captain Nares in 1876, 72 deg. A Russian traveler named Niveroff once registered 72 deg. at Yakoutsk, Siberia.

MECHANICAL PROGRESS.

Large Bell and Clock.

The English *Iron* says: The great hell for the new town hall was successfully cast at Loughborough a few days since. The size of the hell is seven feet five inches across the month, and about the same hight to the top of the canons. It will weigh about seven tons. The note is G, and we are informed that it has a wonderfully fine full note. The legend running round the sound bow is "Ring out the false; ring in the true," in antique characters. This hell stands fourth in England for size and weight, hnt certainly first in tone and power. The three larger bells in this country are "Ben," of Westminster; "Peter," of York; and "Tom," of Oxford. Messrs. John Taylor & Co. are the founders, as they also are of the celebrated Worcester bells. The bell is expected shortly to be hronght to Manchester, and hung in the lantern of the tower.

The monster clock by Messrs. E. Dent & Co., of the Strand and Royal Exchange, which has been in course of erection during the past six months at the south end of the Crystal Palace, is now completed and in working order. This clock is almost a counterpart of the great Westminster clock (which was built by the same firm), with the exception of the striking and chiming apparatus; and the dial is the largest ever yet constructed, being 40 feet in diameter, or nearly 1,300 square feet in area. The diameter of the Westminster clock is hnt 23 feet. The hands, with their counterpoises, weigh nearly a quarter of a ton, the minute hand measures 19 feet in length, and moves half an inch at every heat of the pendulum. The distance traveled by the point of the minute hand is nearly four miles a week. During 17 days of observation the variation was eight seconds only.

PRECAUTIONS IN BOILER EXPLOSIONS.—By the report of inspections made by the Hartford steam boiler inspection and insurance company for the eight months ending Sept. 1st, 1876, says the *American Manufacturer*, it appears that during that time the company made 10,959 visits of inspection, and examined internally 7,162 boilers. The number of examinations, internal, external and at the quarterly inspections, was 22,147. Tha dangerous defects discovered were something over 2,000, which seems a large number. Among the defects enumerated are 409 cases of dangerous fractures. These are found through the rivet holes, or along the edge of the outer or inner lap o. the sheet. They are also found in and near the furnaces of the fire-box boilers, and along nr in close proximity to the fire surfaces. Deposit of sediment is another fruitful cause of trouble; we find not less than 600 dangerous cases in this eight months' business. Water is kept from the plates of the boiler, they are burned, contorted and fractured, and become very unsafe. Another serious trouble is corrosion, of which there were found 285 dangerous cases of external and 70 cases of internal. 1,115 steam gauges were found defective, 277 of which were so unreliable in their indications as to be positively dangerous. Their variations ran from —40 to +50. Many were found varying from —10 and 13 to +18 and 24.

A STEAM LAMP.—At the recent meeting of the British Association, Mr. R. Lavendar, Kirkcaldy, read a paper descriptive of a lamp specially adapted for collieries, tha merits of which was that it gava a great light at a small cost. The lamp, as shown at Kelvin Grove museum, consists of a glass lantern 18 inches square, with a funnel 24 inches high. Into this is introduced a jet of steam, about one-sixteenth inch in diam ct r, the object of which is to create a partial vacuum in tha lantern. The consequence is, that the surrounding air is forced through the burner of the lamp, causing almost complete combustion of the oil. A very brilliant light is thus produced, which is increased partly owing to the products of combustion being continuously removed and a volume of fresh air being introduced. The results obtained from a four-inch wick had been equal to a light of upward of 600 sperm candles.

IMPORTANT STRIKE.—The whole of the spring making trades in Sheffield are now on strike. The men have been paid 2s. 9d. to 3s. per cwt., and have been able to earn from £8 to £11 per week each—the highest remuneration in the town for this kind of labor. A short time since the masters tried to inforce a reduction of 9d. per cwt.—equal to a decrease of 27 per cent.—but the men have refused to accept the reduction. The smiths, forgers, fitters and other branches are at a standstill, and the strike threatens to be a very protracted one. The men contend that they are not overpaid considering the nature of the work and the fact that they have to pay their own underhands. The strike is seriously affecting local trade and causing great inconvenience to manufacturers.

NEW 150-TON GUNS.—Though designe for 160-ton guns have been prepared, *Iron* says there are good grounds for believing that the English government have no serious intention of ordering any of this size to be constructed, they having been advised not to go beyond guns of 150 tons for general service. Several of these will be made within the next 12 months, and it is probable that they will be used for both the land and sea service.

Designing Machinery.

At a recent meeting of Scotch mechanics an address was delivered by R. B. Bell on "Designing Machinery." He noted that in early days, in designing machinery, the proportion and strength of parts to accord with the strains to which they would be subject were not so much decided by minute calculation as they were by comparison and experience. The result here was a great waste of material, placed in positions not required, as may be seen in the designs of some of our older engines and machinery. In time, competition has come and a better knowledge of the principles of design and construction, and proper calculation of the strengths and strains, and the more extensive use of malleable iron in place of cast iron, in many parts of the work, and the result has been that the framing of machinery is not now made to represent Gothic churches or Grecian temples, but every member of the machine is designed with the intention of containing only the proportion of iron due to its own requirements, disposed in such a manner as to combine all the materials in the best forms to suit the purposes intended. Attempts at architectural effect and all other unnecessary interpolations are abandoned, and the result is that in a well-designed engine or tool, the eye is never offended by any unmeaning or incomprehensible member. The meaning and arrangement of every part is understood at a glance, and excites admiration by the beauty of the proportions and simplicity of the details.

In the first place, no man can design a machine in such perfection as I have attempted to describe, unless he has a thorough knowledge of all the principles of the machine he purposes to design, is well versed in practical geometry and mechanics, has a practical knowledge of, and is able to calculate strengths, strains and forces, and to apply the calculation necessary to apportion the quantity and form of the material in the various parts of the machine, so as to produce the greatest amount of strength with the least expenditure of material. Besides all this he must be a good free-hand draftsman and have cultivated an artistic taste for form and effect; otherwise, although, from possessing all the other qualifications, he may produce a machine perfect in all its working parts, and properly proportioned, yet, for want of such a faculty, his machine will turn out stiff and ungraceful, and wanting in form and effect. It may at first sight appear absurd to say that the study of anatomy can in any way assist the mechanical engineer in designing machinery; yet, on reflection, it will be found to be a matter of no small importance. If the anatomical class and the dissecting room are now part of the recognized studies of the artist who aims at perfection in the mere depiction of the human frame, how much more so should it be his study whose aim it is to produce imitations of its actions? To exemplify this, let us consider that our whole aim, in the study of mechanical appliances, is to be able to design works which will simply exaggerate the power which we possess in our own bodies, so as to concentrate the power of thousands into a unit, and to create of ourselves automatons in brass and iron, to imitate the actions which are performed by the body of man himself. The human machine can dig the ground, can hammer iron, can spin, sew, weave, propel boats, lift weights, carry itself, or carry loads from place to place by land or water, can burrow deep into the bowels of the earth, and fetch water and minerals to the surface—all this can it do of itself, and has done, without the aid of machinery.

To effect this by machinery, we, in our rude way, imitate nature as best we can, supplying the places of bones and joints, muscles and sinews, hands and feet, by shafts and rods, levers, straps and bands, wheels, cranks and connecting rods, all of which in endless combination are required for the purpose of producing what the legs and arms and hands and feet of man effect by the admirable system of natural appliances with which they are furnished, whilst the system of the human body in giving power and vitality to its members is copied by the steam-engine and its generator; and what, after all, is the appearance of the most perfect of man's combinations of machinery, in comparison with the perfection of the human machine itself? Therefore I say that the study of the human body, which in itself is the greatest perfection of a mechanical machine that it is possible to conceive, should be a part of the education of the mechanician. The beautiful mechanical arrangements with which it is furnished, the manner in which they are put together, and the forms into which they are molded, are all studies which are well worthy of the investigation of the mechanic. Let us take, for example, the arm and hand of man, so accurately proportioned in the strength of their various parts, so wonderfully shaped for the multifarious duties they have to perform, and with all this adaptation to every conceivable requirement for which their services may be demanded, yet so beautiful and graceful in their form and proportions. It cannot, therefore, be amiss in us, as part of a liberal education, to include the study of that which it is our main end to imitate, and yet, which, with all our efforts, we can never equal. I think, then, I am justified in saying that the study of anatomy is not foreign to the requirements of a cultivated mechanic. What I say of anatomy applies equally to natural history; in fact to everything that has life and motion.

SCIENTIFIC PROGRESS.

Action of Alcohol on the Brain.

Mr. C. T. Kingzett read a paper before the British Association for the Advance of Science "On the Action of Alcohol on the Brain." He said the question of what became of alcohol taken into the system had been extensively studied. Thudichum was the first to determine quantitatively the amount of alcohol eliminated by the kidneys from a given quantity administered, and the result he obtained was sufficient to disprove the elimination theory then widely prevailing. Dupre and many others continued these researches, from which, according to Dupre, they might fairly draw three conclusion: 1st, that the amount of alcohol eliminated per day did not increase with the continuance of the alcoholic diet; therefore all the alcohol consumed daily must of necessity be disposed of daily, and, as it was certainly not eliminated within that time, it must be destroyed in the system; 2d, that the elimination of alcohol following the taking of a dose was completed 24 hours after the dose was taken; and 3d, that the amount eliminated in both breath and urine was a minute fraction only of the amount of alcohol taken. In 1839 Dr. Percy published a research on the presence of alcohol in the ventricles of the brain, and, indeed, he concluded, "that a kind of affinity existed between the alcohol and the cerebral matter." He further stated that he was able to procure a much larger proportion of alcohol from the brain than from a greater quantity of blood than could possibly be present within the cranium of the animal upon which he operated. Dr. Marcet, in a paper read before the British Association in 1859, detailed physiological experiments which he considered to substantiate the conclusions of Dr. Percy, inasmuch as they demonstrated that the alcohol acted by means of absorption on the nervous centers. Lallemand, Perrin and Duroy had, moreover, succeeded previously in extracting alcohol from brain matter in cases of alcoholic poisoning. But all these researches left them entirely in the dark as regarded the true action, if any, of alcohol on cerebral matter, and no method of investigation was possible until the chemical constitution of the brain was known. Thudichum's researches in this direction, together with some more recent and published investigations by Thudichum and the author, had placed within reach new methods of inquiry regarding the action of alcohol on the brain. In his research he (Mr. Kingzett) had attempted this inquiry by maintaining the brains of oxen, at the temperature of the blood, in water, or in water containing known amounts of alcohol. The extracts thus obtained had been studied in various ways, and submitted to quantitative analysis, while the influences exerted by the various fluids on the brain had been also studied. These influences extended in certain cases to hardening and to an alteration in the specific gravity of the brain matter. Water itself had a strong action on brain matter (after death), for it was capable of dissolving certain principles from the brain. These principles included cerebrine, myeline, and apparently a new phosphorized principle insoluble in strong alcohol, together with that class of substances generally termed extractives. At the same time the brain swelled and attained a smaller specific gravity; thus, in one case, from 1,036 it became 1,007. It was notable that water, however, dissolved no kephaline from the brain. Alcohol seemed to have no more chemical effect on the brain than water itself, so long as its proportion to the total volume of fluid did not exceed a given extent. The limit would appear to exist somewhere near a fluid containing 35 per cent. of alcohol. But if the percentage of alcohol exceeded this amount, then not only a larger quantity of matter was dissolved from the brain, but the matter included kephaline. Such alcoholic solution also decreased to about the same extent as water the specific gravity of brain substance, but not from the same cause; that was to say, not merely by the lose of substance and swelling, but by the fixation of water. Many difficulties surrounded the attempt to follow these ideas into life, and to comprehend in what way these modes of action of water and alcohol on the brain might be influenced by the other matters present in blood. From Thudichum's researches it followed that the brain must be subject to every influence affecting the blood, and it was probable that what was written above regarding the action of water on the brain was likewise true of an extraordinary water serum in life. But if the serum were rich in salts, those salts, by a power of combination which they had for the cerebral principles, would preserve the integrity of the latter. On the other hand, it was difficult to see how any of the matters known to exist in the blood could prevent alcohol, if present in sufficient amount, from either hardening the brain (as it did after death) or dissolving traces of the principles to be henceforth carried away in the circulation; that was to say, should physiological research confirm the stated fact that the brain in life absorbed alcohol and retained it, it would almost follow of necessity that the alcohol would act as he had indicated, and produce disease, perhaps delirium tremens.

The Fac Simile Telegraph.

We have formerly mentioned this wonderful invention of Sawyer and Smith. It is been adopted by the signal service bureau at Washington. The *American Manufacturer* gives the following account: There was in operation between the signal service section of the Centennial exhibition and the chief signal office at Washington, on a circuit about 150 miles long, an instrument which transmits by telegraph the weather maps of the signal service, heretofore produced only in Washington. These maps contain what are called the isobaric lines, or lines running through the points where the barometer stands highest or lowest, and they show as well the different areas of the country. It has hitherto been impossible to present these maps to the public, owing to the inability of the ordinary telegraph to transmit anything but words and figures. This invention reproduces the map entire, with its lines and figures. It is then lithographed and printed for distribution on the presses with which the signal office is supplied.

The method may be briefly described as follows: The map, or message, to be sent is first written upon ordinary paper with ink in which a little glycerine has been mixed; then hsfore the ink is dry it is sprinkled with some powdered shellac, which adheres to the ink. The manuscript is then passed between rollers, with the face against a piece of hot zinc. The latter takes up the shellac, and a negative is produced in shellac, the best non-conductor of electricity, upon zinc, a good conductor. This plate is then bent around a cylinder, which is rapidly revolved, while a metallic point connected with the conducting wire is held to its surface by a spring and makes a spiral line over the face of the cylinder. At the receiving instrument a similar point traverses the face of a similar cylinder upon which is placed a piece of chemically prepared paper.

As the transmitting point comes to the line of writing the receiving point makes a dot on the paper by decomposing the chemically prepared paper, and as every portion of the writing is touched by the transmitting point the result will be a *fac simile* of the original writing or device. To produce this result it is necessary, of course, that the two cylinders should revolve exactly together, as, if one should go faster than the other, the discolored paper would be a confused mass of dots. In this consists the great novelty of the invention. Isochronous motion of the cylinders is secured by magnet at the receiving station which at each revolution of the transmitting cylinder accelerates if too slow, or retards if too fast. It is believed that this invention will prove a valuable adjunct to the present systems of telegraphy, or may, with further improvements, supersede them.

SPECIFIC HEAT OF GASES.—M. M. Kundt and Warburg, says *Nature*, have determined experimentally the ratio of the two specific heats of mercury vapor, which has been supposed by chemists to consist of monatomic molecules. According to the Kinetic theory of gases, supposing the gaseous molecule to consist of only one atom, the relation of the two specific heats (as Clansins has shown) would be 1.666. The lower number obtained by experiment for several gases may probably be explained by the complete constitution of their molecules. The method here employed was to produce a sound in two glass tubes placed end to end, and containing, one mercury vapor, the other air. Having introduced powder into the tubes they observed the distances between the nodes of vibration. Applying the formula for the velocity of sound which includes the densities, temperatures, and the ratio of the specific heats, and taking as the value of this ratio in the case of air, the number 1.405, they obtain, for mercury vapor, the number 1.67, which may be considered as fully in accord with the number 1 666 furnished by theory.

VORTEX SMOKE RINGS.—At one of the recent *conversaziones* of the British Association, Sir W. Thompson exhibited the vortex smoke rings. A box of about three feet square has a circular hole of about six inches in diameter cut in its front face, and the back is covered by a piece of tightly stretched canvas or linen. The vapors of ammonia and hydrochloric acid are admitted to the box, which soon becomes filled with the white smoke of chloride of ammonium. A sharp but gentle tap on the canvas back drives out a puff of the smoke, which traverses the room in the form of a beautiful ring. So great a velocity can he imparted to these vortex rings that even when at a considerable distance they have sufficient velocity to extinguish candles. The experiment is remarkably simple, and with a little care in securing good ventilation it may be performed without injury to persons or things in a drawing room.

GOLD IN PYRITES.—M. H. Schwarz melts 100 grammes pyrites with 46.6 grammes fine iron turnings under a layer of common salt. Tha mono-sulphide formed is powdered, and attacked with dilute sulphuric acid in a gas apparatus, the sulphurated hydrogen being received in ammonia. The matter insoluble in acid is collected, washed, dried and roasted. It is then mixed with borax and about two grammes granulated lead, and the mixture melted in a muffle until the lead collects in a single globule floating in ferruginous scoriæ. This globule is detached and submitted to cupellation.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to Nov. 23.		1 W'k to Nov. 29.		1 W'k to Dec. 7.		1 W'k to Dec. 14.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	....	....
Advance	....	....	....	....	....	....	....	....
Alpha	36	30	38¾	33	37	31	35½	32½
Alta	2¼	2⅛	2⅝	2⅛	3⅜	2	3¼	2⅛
Amer'a Flag	....	....	....	....	....	....	....	....
Amer'n Flat	....	....	....	....	....	....	....	....
Andes	2	1⅝	2	1.80	2	1⅝	2¼	2¼
Alpa	50c	....	....	....	....	....	....	....
Amazon	....	....	4	2	3⅜	3¼	3	2¼
Belc'm'e Con	4	2	3⅜	3¼	3⅜	3	3	2¼
Belcher	15¼	13¼	14¼	13½	14½	13⅜	14¼	12
Belmont	3¼	2¾	2¾	2¾	2¾	2½	2⅝	2⅜
Best & Bel	47	40	47½	42¾	46	41	44¾	42
Buckeye	....	....	2¼	2	2	1	....	....
Bullion	33⅜	30	33¼	30	32	31	30	....
Caledonia	10¾	8	11	10	14	11¼	13¾	12
California	54¾	46	54¾	47¾	51	47⅞	50¾	48¼
Challenge	3	2	....	....	2¾	....	3	....
Chollar-Pitsi	77	66	76	70	84½	70¼	83	77
Confidence	12	11½	13¾	11¾	12¾	12	12½	12
Con Imperial	2⅜	2.10	2⅜	2⅛	2.65	2.70	2.70	2.55
Con Virginia	51	42½	52¼	45	49	46½	47⅝	43¾
Crown Point	10	7¾	9¼	8¾	9¼	8¾	9	8
Coso Con	25c	22½c	....	....	40c	25c	25c	....
Daney	....	....	....	....	....	....	....	....
Dayton	3	....	3	2¾	3½	2¾	3½	2¾
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka(G V)	....	....	....	....	....	....	....	....
Eureka Con	11	10½	11	10¼	11	10⅜	11½	11
Exchequer	14	11¾	15	12¾	14	12¾	13⅜	12
Europa	....	....	....	....	....	....	....	....
Gila	75c	60c	1¼	1	1⅜	95c	9'c	70c
Globe Con	10c	....	....	....	35c	20c	20c	....
Golden Char	....	....	1½	....	1¾	....	2	....
Gould & Cur	14	10¾	14	11½	14¾	12¾	13⅜	11⅞
Hale & Nor	7⅞	6	7¾	6¾	7¾	7	7⅝	7
Ida Elmore	....	....	....	....	....	....	....	....
Jefferson	....	....	....	....	....	....	....	....
Julia	6½	5½	6¾	5½	6¾	5¾	6¾	5¾
Justice	27	22¾	26½	23½	26½	25⅝	26¼	24⅝
Jackson	....	....	3½	3	3	2¾	....	....
K K Con	....	....	2¾	....	....	....	....	....
Kentuck	11¾	10	10¾	9	10	9½	9¾	9
Knickerb'k'r	....	....	30	....	50c	30c	75c	50c
Kossuth	1⅝	1⅜	1⅝	....	2	1¾	2	1¾
Lady Bryan	55c	50c	25c	22½c	35c	27½c	25c	....
Lady Wash	2½	1½	2	1½	4¼	2½	3¾	2¾
Leu	....	....	....	....	....	....	....	....
Leopard	6¾	....	6¾	6¾	6½	5¼	6¾	5¾
Leviathan	1	70c	1⅝	1¼	1⅝	1	1⅜	1¼
Mahogany	....	....	....	....	....	....	....	....
Mansfield	20c	....	....	....	10c	....	....	....
Meadow Y	....	....	....	....	60c	....	60c	35c
Mexican	26¾	21¼	25	22	21¼	22¼	23½	19¼
Mides	....	....	....	....	....	....	....	....
Mint	....	....	....	....	....	....	....	....
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	75c	62½c	87½c	75c	1⅜	87½	1¼	1
Niagara	....	....	37½c	....	1'c	....	17½c	....
Northn Belle	32	27	33⅜	30	34⅜	31	3 34	33
New Coso	2¼	2¼	3⅜	3	3½	2¾	3¼	3
Occidental	2¼	2⅛	....	....	2	2	2¼	....
Ophir	46	41	45⅞	42¾	46	43¾	44	35⅝
Or Guld Hill	....	....	....	....	....	....	....	....
Overman	85	72½	91	81	122	96	118½	110
Pacific	....	....	....	....	....	....	....	....
Phil Sheridn	2	....	2	....	2¼c	....	....	....
Ploche	....	....	....	....	....	....	....	....
Poorman	8o	5c	30c	....	20c	15c	20c	....
Prospect	1½	1¼	1⅝	1	1¼	1	1	87½c
Putnam	....	....	....	....	....	....	....	....
Ray & Ely	3½	3	6¼	4½	5	4½	3½	....
Rock Island	1	75c	1	....	87½c	62½c	87½c	75c
Rye Patch	....	....	....	....	....	....	....	....
Savage	12	9	12	9½	12	10½	11¼	10
Seg Belcher	75	....	80	....	85	80c	90c	....
Sierra Nev'da	11¾	10	11⅞	11¾	13	11⅜	12½	11½
Silver Hill	9½	7½	10¼	9	11½	9	10½	9½
Sth Chariot	87½c	....	....	....	62½c	60c	50c	....
Succor	60c	....	80c	60c	62½	....	55c	....
Utaca Con	12¼	10½	12⅞	11¾	12	11¾	12	10⅞
Utah	16	14	16	15	15	14½	15	14¼
Wells-Fargo	10c	5c	8c	....	5c	....	20c	....
Woodville	1¾	1	1⅞	1	1⅜	1¼	1⅜	1
Yel'w Jacket	18¾	13¾	17½	15	17	15½	17⅜	16½

Sales at S. F. Stock Exchange.

FRIDAY, A. M., DEC. 8.

440 Andes.....2¾
520 Alta.....3½@3¼
160 Alpha.....3½
300 Best & Bel.....41½@41¾
55 Belcher.....14
100 Baltimore Con.....4¾@4
100 Buckeye.....1
3285 Caledonia.....12⅞@13¼
130 Crown Point.....9@ 8¾
460 Con Imperial.....2.65@2.70
845 California.....49¾@50
300 Chollar.....81¾@ 82
1045 Con Virginia.....47½@47¾
10 Challenge.....3
45 Confidence.....12@13¼
270 Dayton.....3¼@3
455 Exchequer.....13⅝@13⅜
355 Gould & Curry.....13@13⅜
70 Globe.....20c
185 Hale & Nor.....7¾@7⅝
1795 Justice.....26¾@26¼
100 Julia.....6½
375 Kossuth.....2
180 Kentuck.....1
990 Knickerbocker.....80c
540 Lady Wash.....3¼@3⅜
140 Lady B.....25c
365 Mexican.....23¼@23
540 New York.....1¼@1⅜
560 Ophir.....43⅝@44
410 Overman.....118⅛@11⅞
200 Occidental.....2¼
100 Sandstone.....87½c
100 Silver Hill.....3½
185 Savage.....10⅞
495 Sierra Nevada..12¾@12⅝
10 Seg Belcher.....85c
370 Union.....1¼@1⅜
50 Utah.....11¼@11⅝
150 Woodville.....1¼
935 Yellow Jacket. 17½@17

AFTERNOON SESSION.

170 Alta.....3
45 Belmont.....2½
260 California.....49¾@49½
535 Con Virginia..47½@47⅝
125 Chollar.....81¾
500 Coemopolitan.....10c
50 Eureka Con.....11@11¼
200 Grand Prize.....4c
175 Gila.....90c
120 Gen Thomas.....1⅛@1⅛
150 Hale & Nor.....7¾
3.0 Justice.....26½@26⅜
100 Jackson.....3½
1465 Leviathan.....1¼@1⅜
710 Leopard.....6@5⅝
900 Leeds.....2¼@2⅛
470 Manhattan.....15½@15⅜
450 Mexican.....23¼@22½
20 Meadow Valley.....50c
495 Medoc.....6¼@6½
375 Northern Belle.....33¼
140 North Con Vir.....1
1825 Ophir.....44½@44¼
30 Overman.....117⅝@117⅜
160 Poorman.....20c
100 Prospect.....1
230 Ray & Ely.....3¼
500 South Chariot.....60c
270 Trojan.....65c
160 Wells-Fargo.....20c
190 Yellow Jacket..17¾@17½

SATURDAY, A. M., DEC. 9.

705 Andes.....2¾@2⅝
830 Alta.....3¼@3⅜
50 Alpha.....35¾@35⅝
405 Best & Belcher.....43⅜
115 Belcher.....13¾@13⅝
210 Be mont.....2¾
755 Baltimore Con...2¼@2⅜
1400 Best & Belcher.....43¾
1110 Caledonia.....13@12¾
1325 California.....49¼@49½
20 Chollar.....79

4345 Con Virginia.....46@47
1350 Con Imperial..2.65@2.60
30 Dayton.....3¼
25 Geddes & Bert.....3
380 Gould & Curry.12¾@12½
780 Hale & Nor.....7¾@7
180 Julia.....6
615 Justice.....25¾@26
140 Leviathan.....1¼
495 Lady Wash.....3@2¾
210 Leopard.....6
60 Meadow Valley.....50c
700 Mexican.....21¼@21¾
10 New York.....1¼
3090 Ophir.....29¼@40
440 Overman.....115@116¼
100 Prospect.....1
350 Poorman.....20c
20 Rock Island.....87½c
20 Seg Belcher.....80
1085 Sierra Nevada.11¾@11⅞
100 Silver Hill.....3½
225 Savage.....10¼@10
245 Union Con.....11½
90 Utah.....15
45 Woodville.....1¼
1425 Yellow Jacket..16½@17¼

MONDAY, A. M., DEC. 11.

270 Alpha.....3¼@32½
100 Andes.....2¼@2⅜
90 Alta.....3@2¾
10 Sullivan.....30
350 Baltimore Con.....2½
55 Belcher.....13¾@13
225 Best & Belcher...41¾@42½
132 Belmont.....48¼@48¾
1800 Con Virginia.....43@43¾
205 Con Imperial.....2.60
110 Chollar.....78¾@77
1110 Caledonia.....12⅝@12¾
100 Dayton.....3¼
5 Exchequer.....12¾
500 Goald & Curry...12@11¾
150 Hale & Nor.....7¾@7⅝
560 Justice.....25¾@25⅜
105 Julia.....6⅝@6¾
510 Kuickerbocker.....50c
20 Kentuck.....9
780 Lady Wash.....3@3⅛
700 Leviathan.....1¼
2380 Mexican.....19¼@20
300 New York.....1@1⅛
200 North Con Va.....15o
3795 Ophir.....36⅝@36¾
510 Overman.....112⅜@110½
610 Sierra Nevada..11¾@12
5 Seg Belcher.....80
45 Savage.....10¼@10
75 Silver Hill.....3½
185 Union.....11
5 Utah.....15@14½
100 Woodville.....1
470 Yellow Jacket..16½@16⅝

AFTERNOON SESSION.

155 Best & Belcher.42¾@42½
50 Belmont.....2¾
525 California.....48½@48⅝
1165 Con Virginia.....44@43⅝
785 Caledonia.....12½@12¾
30 Crown Point.....5
590 Con Imperial..2.60@2.55
125 Gila.....90c
30 Gould & Curry.....12
300 Geddes & Bert.....2½
30 Hale & Nor.....7⅝
210 Leopard.....6¼@6
725 Leeds.....2¼
560 Mexican.....19¾@20½
85 Manhattan.....14¼
95 Meadow Valley.....45c
350 N Belle.....33¢33¼
1400 New Coso.....3¼@3
1400 New York.....1
95 Ophir.....36½@35¾
480 Overman.....111@110
320 Savage.....10¼@10⅜

50 Sierra Nevada..11¾@11¾
315 Un Con.....1@1⅛
70 Yellow Jacket..16¾

TUESDAY, A. M., DEC. 12.

75 Alpha.....35@34
470 Alta.....2¾@3
300 Best & Belcher...44@44½
130 Belcher.....13⅝
335 Baltimore Con...2½@2¾
2285 California.....49¼@50
1650 Caledonia.....12¾@12⅝
4285 Con Virginia.....45¾@46½
225 Crown Point.....8¼
520 Con Imperia 2.62½@2.60
65 Chollar.....81
40 Confidence.....12
15 Dayton.....2¾
50 Exchequer.....13
295 Gould & Curry.12¼@12¾
310 Hale & Nor.....7¾@7⅝
650 Justice.....26¼@25¾
540 Julia.....6@5⅞
200 Kentuck.....9
3325 Knickerbocker.....50c
125 Leviathan.....3¾
1275 Lady Bryan.....25c
1250 Mexican.....20¾@20¾
450 New York.....1¼@1⅛
760 Overman.....118@118
1570 Ophir.....36@37
100 Occidental.....2¾
50 Rock Island.....75c
25 Seg Belcher.....85
1405 Sierra Nevada.12¼@12¾
245 Savage.....11@10¾
470 Succor.....53c
105 S Hill.....10¼@9¾
435 Union.....12@11¾
350 Woodville.....1¼@1⅜
325 Yellow Jacket..17¾@17

AFTERNOON SESSION.

310 Alpha.....35¾@35
1660 Andes.....2¾@2⅞
305 Belmont.....2½
310 Best & Belcher.44⅝@44¼
160 Belcher.....13⅜@13⅝
160 California.....50c@49⅞
490 Con Virginia.....45⅞@45¾
40 Caledonia.....12¾@12⅝
240 Coso Coa.....25c
100 Crown Point.....8½
110 Chollar.....79¾@80
10 Eureka Con.....11½
80 Exchequer.....12¾
370 Gould & Curry.12¾@12½
100 Gila.....90c
100 Hussey.....27½c
160 Justice.....25¾@25⅞
200 Ko-euh.....1¾
575 Leopard.....6
400 Leviathan.....1¼@1⅛
115 Manhattan.....14¼@15⅝
470 Modoc.....6¾@7⅛
560 Mexican.....21¼@21
465 Northn Belle...33¾@33⅝
400 Con Coso.....3¼@3¼
130 North Coa Vir...75c@80c
1010 Ophir.....37¾@37
80 Overman.....115½
160 Prospect.....1
70 Ray & Ely.....3¼
20 Silver Hill.....10
210 Savage.....11@11½

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY, A. M., DEC. 7.

205 Alpha.....34@35½
10 5 Andes.....2
235 Alta.....3¼@3⅜
180 Best & Bel.....44¼@44¾
65 Belcher.....13⅞@13¾
110 Bullion.....32
100 Buckeye.....2
10 Baltimore Con.....2
3270 Caledonia.....12¾@12⅝
350 Chollar.....80@81
1580 California.....48
15 Crown Point.....9
4645 Con Virginia.....47½@47¾
1795 Con Imperial..2.65@2.70
20 Challenge.....2¾
235 Dayton.....3¼@3½
220 Exchequer.....12⅝@13
100 Globe.....20c
400 Gould & Curry.....13
180 Hale & Nor.....7¾@7½
70 Julia.....6½
465 Justice.....25¾@26½
110 Kossuth.....2
1775 Knickerbocker...40@50c
1000 Leviathan.....1
30 Lady Wash.....3¼@3⅝
150 Mexican.....22¾@23
80 Northern Belle.....34¼@35
450 North Carson.....75c
970 Ophir.....43⅜@43¼
895 Overman.....113@115
25 Occidental.....2¼
100 Rock Island.....87½c
125 Savage.....10⅝@10¾
1865 Sierra Nevada.12⅝@12¾
60 Sil Hill.....10@10¼
10 Seg Belcher.....85@c
780 Trojan.....75@50c
115 Utah.....14¾
240 Union Con.....12
100 Ward.....75c
545 Y Jacket.....16½@16⅞

AFTERNOON SESSION.

90 Beet & Belcher.44⅝@44½
1070 Belmont.....2⅝
1075 California.....49¾@50
690 Con Virginia.....47@47½
100 Coso Con.....22½c
915 Con Imperial..2.67@2.70
225 Caledonia.....12⅜@12¾
570 Gould & Curry.....13
50 Gen Thomas.....1¼
325 Gila.....75@80c
9 0 Geddes & Bertrand...2¾
50 Jackson.....2¾
400 Golden Chariot.....2@1¾
100 Hussey.....40.
163 Julia.....6@6¼
1425 Justice.....26@26⅜
1800 Con Virginia.....43@43¾
205 Con Imperial.....2.60
110 Chollar.....78¾@77
1110 Caledonia.....12⅝@12¾
100 Dayton.....3¼
5 Exchequer.....12¾
500 Goald & Curry...12@11¾
150 Hale & Nor.....7¾@7⅝
560 Justice.....25¾@25⅜
105 Julia.....6⅝@6¾
510 Kuickerbocker.....50c
20 Kentuck.....9
780 Lady Wash.....3@3⅛
700 Leviathan.....1¼
2380 Mexican.....19¼@20
300 New York.....1@1⅛
200 North Con Va.....15o
3795 Ophir.....36⅝@36¾
510 Overman.....112⅜@110½
610 Sierra Nevada..11¾@12
5 Seg Belcher.....80
45 Savage.....10¼@10
75 Silver Hill.....3½
185 Union.....11
5 Utah.....15@14½
100 Woodville.....1
470 Yellow Jacket..16½@16⅝

AFTERNOON SESSION.

155 Best & Belcher.42¾@42½
50 Belmont.....2¾
525 California.....48½@48⅝
1165 Con Virginia.....44@43⅝
785 Caledonia.....12½@12¾
30 Crown Point.....5
590 Con Imperial..2.60@2.55
125 Gila.....90c
30 Gould & Curry.....12
300 Geddes & Bert.....2½
30 Hale & Nor.....7⅝
210 Leopard.....6¼@6
725 Leeds.....2¼
560 Mexican.....19¾@20½
85 Manhattan.....14¼
95 Meadow Valley.....45c
350 N Belle.....33¢33¼
1400 New Coso.....3¼@3
1400 New York.....1
95 Ophir.....36½@35¾
480 Overman.....111@110
320 Savage.....10¼@10⅜

400 Trojan.....40c
340 Union.....11¾
205 Yellow Jacket..17¼@17½

WEDN'SDAY, A. M., DEC. 13.

26 Alpha.....34@34¼
1065 Andes.....2½@2¾
200 Alta.....3
105 Belcher.....13¾
10 Bullion.....30
410 Best & Belcher.....43½
675 Baltimore.....3½
2585 Con Virginia.....45@45⅞
105 Crown Point.....8¾@8¾
338 California.....49¾@50
1000 Con Imperial..2.65@2.60
1965 Caledonia.....12⅝@12¾
170 Chollar.....83@81
200 Dayton.....2⅞
310 Exchequer.....12¾@12¾
1000 Gould & Curry.....13
510 Hale & Nor.....7½@7⅜
640 Julia.....5⅞@5¾
705 Justice.....25⅝@25⅝
2000 Knickerbocker.....50c
1000 Kentuck.....9
405 Kentuck.....9¼@ 9¾
250 Lady Wash.....3¾@3¼
175 Leviathan.....1 40@1¾
405 Mexican.....21@21⅜
70 New York.....1¼@1⅛
925 Ophir.....38@37½
405 Overman.....115@114½
150 Occidental.....2½
1000 Rock Island.....75c
210 Silver Hill.....10
200 Savage.....11
145 Sierra Nevada....12@11¾
5 Seg Belcher.....85
320 Union.....11@10c
415 Union.....11¾@11
190 Yellow Jacket..17¼@17¼

AFTERNOON SESSION.

25 Andes.....2¾
440 Belmont.....2½
215 Gest & Bel.....43 @42¾
345 Con Virginia..44¾@44¾
345 California.....48¾@49
70 Chollar.....81
1845 Caledonia.....12@12¾
240 Con Imperial.2.65@2.57½
320 C Point.....8¼
1000 Exchequer.....12¾@13
720 Gould & Curry..11.12@12¾
170 Gila.....75@0o
50 G Charlot.....2
150 Gen Thomas.....1⅛@1¼
100 Grand Prize.....4
305 Hale & Nurcross.7¾@7¼
200 Hussey.....3 ¾@
380 Justice.....2 @2¼
940 Leopard.....6¾@6¾
1000 Leviathan.....1¼@1⅝
705 Modoc.....6⅞ @6¾
1105 Mexicon.....20¾@2
40 Meadow Valley.....35o
130 Northern Belle.....33¼
950 New Coso.....3¼@3½
340 Overman.....112@110
1375 Ophir.....36@ 36¾
600 Panther.....35o
70 Raymond & Ely.....3
190 Savage.....10¾@10½
470 Union Con.....11@11¾
135 Yellow Jacket...17@16¾

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Allison Ranch Franklin M Co	Cal	T C Connor	505 Front st	Annual	Dec 22
Andes S M Co	Nev	M Landers	Nevada Block	Annual	Dec 18
Georgia S M Co	Nev	R Wegener	414 California st	Annual	Dec 18
Gould & Curry S M Co	Washoe	A K Durbrow	309 Montgomery st	Annual	Dec 18
Lady Bryan M Co	Nev	W H McClintock	330 Pine st	Annual	Dec 18
Ophir S M Co	Washoe	G L McCoy	419 California st	Annual	Dec 20
Warrington M Co	Cal	G P Moore	320 Pine st	Annual	Dec 26
Theresa M Co	Nev	J W Tripp	408 California st	Annual	Dec 18
Troy Con Co	Nev	S C Herbert	525 Clay st	Annual	Dec 22
Santa Rosa G M Co	Cal	W H Reynolds	115 Davis st	Annual	Dec 28
Scaby Hill M Co	Nev	H A Whitley	419 California st	Annual	Dec 18
Mides S M Co	Nev	E Kaplan	Merchants Ex	Annual	Dec 18
Leopard M Co	Nev	R H Brown	426 California st	Annual	Dec 28
Jersey M & S Co	Cal	J F Place	401 Market st	Annual	Dec 20

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	C D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	Oct 11
California M Co	Washoe	G P Gordon	Nevada Block	2 00	Dec 15
Consolidated Amader	Cal	F B Latham	426 California st	25	Oct 9
Con Gold Hill Quartz M Co	Washoe	R Wegener	414 California st	25	April 17
Coins Virginia M Co	Washoe	A W Havens	Nevada Block	2 00	Dec 11
Comanche M & M Co	Nev	W W Traylor	Nevada Block	20	Oct 25
Empire M Co	Nevada Co	O A Jennings	401 California st	2 00	Aug 11
Empire M Co	Sierra Co	Chas Colliehonn		50	Sept 26
Empire M & M Co	Washoe	W E Dean	414 California st	25	April 17
Imperial S M Co	Washoe	W E Dean	414 California st	25	April 17
Leopard M Co	Nev	R H Brown	426 California st	50	Dec 15
Manhattan S M Co	Nev	W Gillespie	409 California st	1 00	Dec 15
Northern Belle M & M Co	Nev	W Willis	509 Montgomery st	1 00	Dec 15
St Patrick M Co	Cal	D F Verdenal	409 California st	30	Mar 10
West Comstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Feb 24

California Board—Latest Sales.

WEDN'SDAY, A. M., DEC. 13.

200 Alpine.....1
10 Alta.....2¾
145 Andes.....2⅝@2.35
1500 Baltic.....35@33c
10 Belcher.....13¾
100 Bullion.....2¾
70 Beet & Bel.....41
50 Ballion.....31
50 Beach & Paxton 3½
2340 Coso Con .....25@27c
950 Cosmopolitan...7½@8½c
10 Crown Point.....8¼
65 California .....49¾@49¾
115 Con Virginia.....45¾@45½
25 Gila.....80c
50 Gould & Curry...12¾@13
100 Globe.....2¾a 18c
50 Hale & Nor.....7¾@7⅝
275 Julia.....6@5¾
185 Justice.....25⅜@25⅝
200 Kossuth.....2
700 Knickerbocker.....40c
700 Leviathan.....1¾@1.40
70 Leopard.....6½
1700 Monumental.....28@31c
230 Mexican.....21¾@20¾
100 N Carson 13c
500 N Moaumental.....30o
50 N Coso.....3¼
125 Ophir.....36¾@37¼
100 Plotou.....87½c
50 Rock Island.....80c
250 Southern Star.....1¼
100 Savage.....10¾@10¾
250 Trenton.....9@9½
4700 Trojan.....36@29c
1200 Union Flag.....21@21½c
220 Woodville.....1⅝@1.15
5 Northern Belle.....33¼
200 N Coso.....3½
335 Ophir.....36½@36¾
20 Sierra Nev.....11¾
800 Trojan.....31@29c
20 Union.....10¾
210 Yellow Jacket.....17

AFTERNOON SESSION.

110 Andes.....2¾
35 Best & Bel.....43½
50 Cosmopolitan.....8c
1350 Coso Con.....25@27c
80 Con Virginia.....46¾
300 Con Imperial...2⅝@2.70
40 California.....49½
100 Dayton.....3¼
25 Gila.....90c
220 Golden Chariot.....2
151 Gould & Curry.12⅝@12¾
10 Hussey.....32½c
300 Jenny Glynn.....1
100 Jefferson.....3
100 Julia.....7⅝
320 Justice.....25@25¾
65 Kossuth.....1⅞@1¾
50 Knickerbocker.....40c
100 Lady Bryan.....18c
125 Mexican.....20@20¼
200 Mansfield.....5o
50 New Coso.....3¼
250 New York.....1.09@1.10
175 Ophir.....36¾ a 46¾
165 Oasis.....2¼
770 Oregon.....1@1⅛
100 Picton 81½c
1900 Rising Star.....12½c
200 Rock Island.....85c
150 Southern Star.....1¼
100 Succor.....50c
1200 Trojan.....3@3c

Pacific Board—Latest Sales.

WEDN'SDAY, A. M., DEC. 13.

80 Alpha.....31¼@31
1500 Andes.....2¼ ? 2¾
1525 Amazon.....5@15c
150 Alta.....2¾@2¾
240 Jas. & Sel.....43¾@43¾
70 Belcher.....13¾@13¾
14 Bullion 30
850 Coo Imperial.....2.60
2.0 Con Virginia.....45½@44¾
430 California.....49¾@49¾
225 Crown Point.....8½
20 Chollar.....82@83
205 Caledonia.....12⅝ a 12¾
1250 Gray's Point.....1½
105 Cosmopolitan.....5c
480 Exchequer.....12½@12¾
2800 E Justice.....10@15c
1 0 Gould & Curry.12¾@12¾
250 Hale & Nor.....7½
50 Julia.....5⅞
90 Justice.....25½@25¾
210 Kentuck.....9½
640 Knickerbocker..4¾@12¾c
200 Leviathan.....1¾
395 Mexican.....20¾ @21
500 Monumental.....29o
50 New York.....1⅛

1080 Ophir.....37¾@38
10 Overman.....115
75 Prospect.....1
50 Rock Island.....78o
50 Sierra Nevada.....12¾
200 Savage.....10½@10¾
550 Trojan.....30@40c
70 Trenton.....8½ a 8¾
250 Union Pacific.....1½
10 Utah.....11¾
465 Union.....11¾
225 West Belcher.....23½
90 Yellow Jacket..17¾@17¾

AFTERNOON SESSION.

100 Andes.....2¾@2½
50 Alta.....3
10 Alpha.....33½
15 Belcher.....13½@13¾
1000 Coso Con.....24@23c
1000 Crown Point.....8¼
350 California.....49 ? 48¾
60 Caledonia.....12½@12¾
320 Con Virginia.....43¾@43¾
620 Con Imperial.....2.60
20 Eureka Con.....11½
40 Gila.....75c
500 Gt Eastern.....1¾
60 Gould & Curry.....1⅞

Mining Share Market.

Mining atocka have not been at all active of late, and the paat week has abown no change for the better. In fact, a considerable decline haa been apparent. In Ophir particularly "bedrock" prices have been reached: Tbia decline haa been more than a anrpriae to many generally poated operatora, for they were unable to detect any immediate canae for the very marked diminntion in price. It is atated, however, on the authority of a gentleman who is supposed to be on tbe inside track of this and other mines, that Ophir waa in muob better ahape, and that a veritable bonanza haa been diacovered on the 1700-foot level, which will be unfolded to an expectant public as soon aa convenient. The Gold Hill *News* saya, however, that the decline was due more to a cessation of the atrnggle for tbe control of Ophir than to any adverae circnmstance in the development a of the mine. The reports from Ophir are good, and there is said to be plenty of money in the treaanry. Mexican is also said to have a good development of ore awaiting the proper time to be brought to light. The great bonanza of tbe Consolidated Virginia and California continues ita regular munificent yield and monthly dividends, with plenty of rich ore in sight. The opening np of the mysteries of the 1700 foot level progreasea bnt alowly, owing to hot, foul air and other adverse circumstances. The water in the Savage and Hale & Norcrosa is being alowly hut steadily reduced, and in due time tbe active development of those long snbmerged lower levels will be proceeded with. Good work is being done in the lower levels of the Yellow Jacket and Imperial, with good prospects for valnable developments. Overman, Caledonia, Baltimore and Lady Washington are all showing new and important featnrea in the way of ore developmenta. In fact, the chances for ore strikes in the southern or Gold Hill aection of the Comatock are better than they have been for some time. Justice is looming np grandly, and not only yielding anlendidly, but showing more and better ore every day.

The last monthly dividend for 1876 of Consolidated Virginia waa paid thia week, making $12,960,000 for the year. The mine paid, from May to December, 1874, the snm of $2,592,000 in dividends. In 1875 it paid $11,448,000, and this year, $12,960,000; total since the bonanza waa atruok, $27,000,000. Thia ia a princely sum to disbnrse in two years and eight months. No other mine in the ocuntry has ever been able to approximate it in the same time, or even in its entire history.

Upwards of $900,000 in aaaeasmenta on different minea became delinquent thia month. The *quid nuncs* predict a rise in the atock market on acoonnt of the redaotion of interest which haa been or is being made by the banka. The Bank of California haa led off with the reduction and the other banks will no doubt soon follow suit. This is good for everybody else as well as the hrokera.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertiseaents in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Deling'nt. Sale.	Secretary. Place of Business.
Adams Hill Con M Co	Eureka	8 25 Dec 7	Jan 12 Feb 2	W W Traylor 309 Montgomery st
Amazon Con M Co	Nev	8 20 Nov 28	Jan 4 Jan 25	J A Reichart 330 Pine st
Baltimore Con M Co	Washoe	13 50 Dec 7	Jan 10 Jan 30	C A Saakey 331 Montgomery st
Belmont M Co	Nev	10 50 Nov 22	Jan 4 Jan 30	F Swift 419 California st
Crown Point M Co	Washoe	28 1 00 Oct 26	Nov 29 Dec 21	J Newlands 4 9 California st
Dayton G & S M Co	Washoe	6 1 00 Nov 6	Dec 12 Jan 2	W E Deaa 419 California st
Florida M Co	Washoe	7 25 Dec 6	Jan 13 Feb 8	L Hermana 320 Sansome st
General Thomas M & M Co	Nev	3 50 Oct 27	Dec 1 Dec 20	W Willis 309 Montgomery st
Glasgow G & S M Co	Washoe	4 15 Dec 6	Jan 10 Jan 31	J A Reichart 330 Pine st
Globe Con M Co	Washoe	9 25 Oct 27	Nov 30 Dec 20	W F Bogert 402 Montgomery st
Golden Cheriot M Co	Idaho	18 50 Oct 26	Nov 13 Dec 26	W P Shaw 408 California st
Gould & Curry S M Co	Washoe	23 1 00 Nov 15	Dec 29 Jan 16	A K Durbrow 309 Montgomery st
Knickerbocker M Co	Nev	16 *1 25 Nov 13	Dec 16 Jan 4	J H Seyre 330 Pine st
Lady Bryan M Co	Washoe	14 50 Nov 2	Jan 28 Jan 18	W H McClintock 419 California st
Lady Washington M Co	Washoe	9 50 Nov 11	Dec 14 Jan 2	D L Thomas 4 9 California st
Lamoille M & M Co	Cal	2 20 Dec 1	Jan 8 Jan 29	L Hermann 320 Sansome st
Mansfield M Co	Cal	6 50 Nov 28	Jan 4 Jan 23	J M Buthngton 311 California st
Manitor Belmont M Co	Nev	— 25 Oct 17	Nov 20 Dec 18	B E Mizer 309 Montgomery st
Niagara G S M Co	Nev	4 25 Dec 4	Jan 5 Jan 29	W R Townsend Nevada Block
North Con Virginia M Co	Washoe	6 50 Nov 21	Dec 22 Jan 16	J Maguire 419 California st
Raymond & Ely M Co	Pioche	6 1 00 Dec 5	Jan 15 Feb 8	T W Colburn 413 California st
Rye Patch Con M & M Co	Nev	5 5 Nov 11	Dec 19 Jan 9	D F Verdenal 409 California st
Savage M Co	Washoe	25 1 00 Nov 25	Dec 28 Jan 17	E B Holmes 309 Montgomery st
Wells-Fargo M Co	Washoe	6 15 Nov 6	Dec 9 Dec 29	C H Bogart 402 Montgomery st
Yellow Jacket M Co	Washoe	24 1 00 Oct 28	Dec 4 Jan 3	G W Hopkins Gold Hill

*$1.25 old stock; 30c new.

OTH

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior in proximity to the mines mentioned.

California.

AMADOR.

GREENBACK CLAIM.—Amador *Ledger*, Dec. 9: The last clean-up made at Mace's mill yielded some $6,000 from about 90 tons of rock.

IRVINGS' CLAIM.—Irving Bros. opened up a claim last spring in the vicinity of Mace's mill. After taking out a quantity of ore, work was suspended. We are informed that a quantity of ore has been put through the mill, and yielded far better than the owners anticipated.

MONTERCHARD.—The Volunteer mill of five stamps and the Kearsing mill of four stamps are both running on Montarchard ore. There is enough rock out to keep them running several weeks.

VOLUNTEER.—This mine is being put in efficient condition. Steam hoisting works are being erected over the shaft. A good road has been made from the mine to the main road, to facilitate shipment of ore. It is the intention to increase the capacity of the mill to ten stamps.

LOYAL LEAD.—We mentioned that a vein of very rich decomposed quartz had been found on or close to the property of the Loyal Lead, between Amador City and Drytown. A number of miners started to work the vein on their own account, and were taking out large quantities of gold, when the Loyal owners got out an injunction, and compelled them to desist. Since then it has been suspected that the miners have taken out the quartz during the night time, to prevent which the company have placed a watch upon the ground. There is likely to be a contest for the rich vein between the Loyal Lead and the North Gover companies, both parties preferring claims thereto.

MONTEREAU GRAVEL MINE.—Treich & Belliard's mine at French hill is turning out well. The tunnel has been thoroughly repaired, and the workmen are now taking out the pay dirt in considerable quantities. The other day a nugget was washed out worth between $60 and $70.

ALPINE.

CONTRACT LET.—Alpine *Chronicle*, Dec. 9: Manager Chalmers has let the contract for building the new boarding house at the Exchequer mill to Perry & Duff, of San Francisco, who have just completed the I X L mill building. The new boarding house is to be 32 by 60 feet, two stories high, with wings, and will be completed in six weeks.

COMPLETED.—Perry & Duff, of San Francisco, have completed their contract for building the I X L mill building—and they have done a creditable job. The machinery is being placed in position, and it is the calculation to have the mill completed in two weeks.

WASHINGTON.—The Directors of this company will meet on Monday evening to organize. Work has been commenced on this claim and some very rich ore already taken out.

CALAVERAS.

HALL AND LASSEY CLAIM.—Calaveras *Chronicle*, Dec. 9: Favorable progress is being made in the quartz mine on the Middle fork of the Mokelumne, near West Point. A tunnel, already 300 feet in length, is being run to reach the vein, and it is expected that in a week or two the ledge will be cut. The tunnel will bisect the vein at the depth of 150 feet. A good deal of rich ore has been taken from the mine, through a shaft sunk from the surface, the quantity of water encountered putting a stop to operations. The tunnel will serve to drain the mine.

THE tunnel of the Glencoe Consolidated, situated to cross-cut two large veins, some 40 feet apart, is completed, and levels have been commenced on the east vein. The ore is of a uniform "ribbon" character, producing rich specimens. The west vein is 12 feet thick; the east vein three and a half feet. The company will build a large mill in the spring.

ANOTHER NEW ENTERPRISE.—Mr. W. W. Cook, notably connected with gravel mining operations in this vicinity, is about to open a hydraulic in the old "Morehouse claim," near the French hospital, a short distance from town. Preparations for piping are about completed, it being expected to have the claim in full operation next week. For extent of gravel mining interests Mokelumne Hill is outranked by only one or two towns in the State.

MACHINERY BOUGHT.—The parties who lately purchased the Tiger mine near Rich Gulch Flat, are making preparations for the erection of machinery. They have bought the mill at the Wolverine mine, and one of Asbury's big teams went up to haul it to the ground last Thursday. The boiler and engine will probably be new.

INYO.

AT WORK.—Inyo *Independent*, Dec. 2: Messrs. Broder & Moffat still have a force of men at work on the Uncle Sam mine, Sylvania district, and will continue prospecting operations during the winter.

REX MONTIS.—Manager Holt started for the Bay last Monday, having suspended work on the mine for the winter. He hopes to perfect arrangements so as to get back here in about a month and go to work in reconstructing the old Silver Sprout mill, and making all possible preparations for active and extensive work on the mine next summer. It is a conceded fact that there is enough high grade ore uncovered in the Rex Montis alone to keep the mill running to its full capacity all of next summer. This is only one of the several ledges in close proximity belonging to the same company, which, so far as outward indications show, are even more valuable than is the Rex Montis itself. Their situation is such that a tunnel, four by four, will cut them all (and most likely in one compact ledge) over 2,000 feet deep. This tunnel, to be run in soft, mineral-charged strata cross-cutting the ledges, is part of the programme for next season.

SUNRISE MILL.—Cor. Coso *Mining News*, Dec. 9: The machinery, etc., of the Sunrise mill is rapidly arriving and we will soon have everything on the ground. The building and mill sites are all graded and the building is in course of erection: Modoc is doing well, and very soon large shipments of bullion will also be made from Minnietta Belle, and we hope soon to add Little Mack to our number. There are several other companies incorporated in this locality which, I understand, will commence immediate operations after New Years, 1877, consequently we look forth to a speedy and bright future.

SANTA RITA.—Coso *Mining News*, Dec. 9: Mr. Wilkie Darling arrived here yesterday to fill the position of foreman of the Santa Rita mining company, and, for the present, will also act as superintendent. Mr. Darling will at once commence active work upon the mine and in grading for their furnace site, besides laying pipe from their springs, so as to be in readiness for the furnace on the arrival of the machinery.

DEFIANCE.—There is every probability that more effective operations are about to be inaugurated, and upon a much safer and better paying basis. There are now upon the dumps some 150 tons of well assorted ores, and nearly as much more in the mine which has been thrown down but not yet wheeled out. Altogether we think the Defiance shows better to-day than it ever did before, and we are satisfied that the deeper the explorations the more extensive will be the ore bodies be found and the quality of the ore enhanced, as in the case of the Cerro Gordo mines, which are now down to a depth of over 700 feet. The Defiance and all the mines in Darwin district are upon the same grand belt, and the formation is pronounced by the best judges to be identical with that at Cerro Gordo, consequently there need be no hesitancy in going down upon the ledges.

NAPA.

REDINGTON MINE.—Napa *Register*, Dec. 9: This mine continues to yield a handsome revenue to its owners, and produces large quantities of quicksilver. During the month of November 903 flasks were shipped via Napa and the steamer *Emma* to San Francisco, and from the 1st of December to date 321 flasks have been shipped, making a total since November 1st of 1,244. The quantity of quicksilver is reckoned at 90 pounds to the flask.

NEVADA.

CENTENNIAL.—Grass Valley *Union*, Dec. 12: We understand from the best authority that the Centennial mine of this place has now on the dump pile and ready for the mill about 75 loads of ore richer than any that has heretofore been taken out. The ore from this mine has never yet paid less than $100 per load. The next crushing will show big things. Saturday was the Centennial's pay day and something like the sum of $3,000 was divided up among the employees.

OPENING OF THE ALLISON RANCH FRANKLIN.—Monday was a gala day to the residents of Nevada county; for once more was revived the spirit of former years—the opening of a mine. At about 10 o'clock, everything being in proper condition, the whistle at the hoisting works sent forth the shrill announcement that the Allison Ranch Franklin had unveiled herself and gone forth to the criticism of the community. The Allison Ranch Franklin, after mature deliberation, thought it advisable to start up with only ten stamps to attest the validity of amalgamating in the batteries; if amalgamation in this manner proves a success they will immediately put ten more stamps. The stamps in use are of the average weight of 800 pounds, capable of crushing a ton and a quarter every 24 hours. Mr. Patrick Rogers has the entire control of the mill, and from his long experience at the Eureka and other mines everything will proceed satisfactorily to the owners of the property. John Ford has the control of the underground work, and that is enough to insure success. Martin Ford is superintendent of the company.

PAY GRAVEL.—*Foothill Tidings*, Dec. 9: The Godfrey company, which began sluicing out on Alta hill, a few months ago, for the purpose of opening one of the ancient channels known to exist there, reached the bedrock a few weeks ago and began drifting. On Wednesday of this week, we understand, they struck gravel, which turned out 75 cents to $1 each from several pans washed. The importance of this development to Grass Valley cannot be overestimated, as it is thought the deposit here will prove extensive, and likely lead to a better understanding of where the channel runs in other claims.

THE Monnier process is said to be working successfully on the bese ores of the Providence mine, near Nevada City. Mr. Ches. Grimes informs us that it is claimed up there that these ores can be closely worked by this process at a cost of not to exceed $6 per ton. Such being the case, there is no end to the richness to be unearthed in these parts.

CRUSHING as well as taking out rock is going on for the Homeward Bound mine, and next week some results may be known. The ledge is a fine large one in the south drift.

PLACER.

MINING ITEMS.—Dutch Flat *Forum*, Dec. 7: The weather continues dry, and the supply of water is limited. The various claims that were not entirely ready for washing at that date have had ample time and favorable weather for putting on any finishing touches necessary. The Polar Star and Southern Cross claims continue washing steadily in rich gravel. The Elmore Hill claim is washing and using water a few hours each day. Four powder blasts have been exploded, and the ground loosened thereby has mostly been washed away. It is the intention to work the banks hereafter in two branches. This claim is being very economically worked, and the gravel is rich. The Franklin claim is not yet washing, but work is being carried on. A large derrick is being erected, the main tunnel is being extended and powder-drifts are being run to be in readiness for a good water's washing. At Gold Run two claims of the Gold Run hydraulic mining company (limited) and the Indiana Hill claim are both being prepared for continuous washing. The Stewart claim, lying opposite the cement mill, at Indiana hill, which has been idle for some years past, has been fitted up and washing therein commenced.

HUMBOO MINES.—The Luke & Collins company are now working a large force of men, cleaning out undercurrents, canyons, etc., and are also working their hydraulic claims as usual, and obtaining handsome returns. The Peelar and Guler company have been hydraulicing for some time. The Davis & Doran company will soon have another run completed, as they have been washing for three weeks. The Sailor Bar, owned by a Chinese company, are working a large gang of Celestials, and are hydraulicing with two streams of water. From the extensive style in which they are working it is thought they are making big pay.

EUCHRE BAR MINES.—The Ross & Ford company turned off the water and cleaned up, on the 10th of October, with good results. Owing to a large increase of tailings in the river, which can only be removed by high water, it was found necessary to remove to a higher portion of the claim. At present the pipes are relaid and new flumes so nearly completed that water will be turned on and washing commenced in about five days.

BEAR RIVER MINES.—The Richie company are still drifting and washing, with good paying results. The Centennial company have made preparations to remain all winter. The Bartlett company have already shut down until spring. The Whipple company are highly elated over the big pay they are now getting. In extending one of their drifts through the rim rock they tapped a channel, which is said to be very rich. Numerous pieces are being picked up by the drifters, worth from $1 to $10. Present indications point to a bonanza.

SHADY RUN.—The Wild Yankee company, having completed a successful summer's work in their drift diggings, are now hydraulicing. The North American is now under full headway, and as they advance with their prospecting drifts the indications of an extensive paying mine are daily improving.

PLUMAS.

ITEMS.—Plumas *National*, Dec. 2: We learn that Mr. Richard Oliver sold one-half of his interest in the Pierson mine gravel claims near Nelson, one day last week, to Mr. Lanthier, of Sawpit Flat. Messrs. Cottingham and Chapman, of Indian valley, have discovered a quartz ledge in the new Montgomery district which pro-pects splendidly, and they think they have got a bonanza. Ah Sbune, who had the contract for digging the big cut in Jack's Golden Enterprise claim near Spanish Ranch, has finished the job in good style. Shune says he lost considerably on the contract, but will have his eyes open next time. Many new quartz locations are being made in the neighborhood of Indian valley, and numerous mining pateats therefor will soon be published. Some of the Chinamen on Grub Flat, near Meadow Valley, are said to be making $10 per day. The Light Bros. are having 25 tons of quartz hauled from their ledge above Taylorville to the Bonanza mill in the North Arm. They should have a small mill on that ledge and do their own crushing.

SIERRA.

GOOD PROSPECTS.—Yreka *Union*, Dec. 12: We are informed that the various quartz interests around Mugginsville are looking very well and that the various mines in that vicinity are excellent. The quartz in the stopes of the old Shepard mine, now being worked by A. M. Johnson is improving. Mr. Tomkins, who has a ledge there, is also taking out rich rock. Other parties are also taking out good rock, and from present indications the quartz mines in that vicinity will ere long furnish work to a large number of men.

SONOMA.

TAYLOR MOUNTAIN COAL MINE.—Sonoma *Democrat*, Dec. 9: We are glad to hear the most encouraging reports from the work in progress on this promising mine. The tunnel on this side is now into the hill about 150 feet, and night and day shifts are constantly at work. We anticipate an immense benefit to Santa Rosa from the opening of this mine.

TRINITY.

NEW CLAIMS.—Trinity *Journal*, Dec. 9: On Weaver creek, Messrs. Wallis & Cruthis are opening a claim in the point below the mouth of Democrat gulch. The point was worked to some extent by Powell & Knight, in 1850, by ground sluicing. As the boys will put a small "giant" on the claim, it will doubtless yield well. Hughes & Eddy are working a new claim on Trinity river, opposite Gerdes Bar. They have a channel with blue dirt, which we are told prospects well.

TUOLUMNE.

PIPE IRON.—Tuolumne *Independent*, Dec. 2: A large amount of hydraulic pipe iron, destined for the Philadelphia gravel diggings, above Columbia, has arrived in town, and is stored in the saddle-shop, formerly occupied by Charles Half. The iron will probably be made into pipe on the ground, in consideration of expense and convenience.

THIRTY-TWO pounds and seven ounces of gold was recently received in one lot from one of our quartz mines in the mountains, above Sonora.

Nevada.

WASHOE DISTRICT.

YELLOW JACKET.—Gold Hill *News*, Dec. 9: The new shaft is now down 185 feet. There is considerable seepage of water at the sides and bottom. The north winze on the 1710-ft level is down 40 feet, the bottom is very favorable ground. It is the intention to shortly start a drift from this winze to prospect the vein of ore out on the level above. The south drift on the 2040 ft level is also making good progress, and will reach and connect with the south winze some time during the coming week. This connection will greatly benefit the circulation of air in that section of the mine, and enable the running of cross-cuts and prospecting of the southern portion of the mine, all of which is in virgin ground, entirely unprospected by any of the drifts or cross-cuts that have yet been run on the 2040 ft level.

JULIA.—The main south drift on the 1600-ft level is in favorable vein matter. The face of the southwest branch of this drift, following the line of the ledge is the Julia ground, is in quartz and ore which assays from $8 to $25 per ton, which shows a steady improvement as the face is advanced.

BALTIMORE AND AMERICAN FLAT.—The main north drift on the 1050 ft level is advancing, the face is clay, quartz and porphyry, mixed. This drift is following the west or foot wall of the ledge. The north winze on this level is down 82 feet, the bottom still in quertz and ore. The upraise 200 feet south of this winze is up a distance of 205 feet, following the inclination of the ore vein. The streak of ore in the face of the raise still continues, and is of a very promising quality.

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JUSTICE.—Daily yield, 300 tons of ore. The ore stopes on the 400, 500, 600 and 700-ft levels are all showing splendidly. The general aspect of all the ore-producing sections was never better than at this time. The ore is very rich in sulphurets and stephanite of silver and all of it carries a considerable proportion of gold. The mine was never before in so fine a condition for working, or assumed as prosperous a look as now.

CALIFORNIA.—Daily yield, 500 tons of ore, keeping the mills all crushing. The ore breasts and stopes never looked better or yielded a finer character of ore than they do at this time. The south drift on the 1600-ft level has been trimmed up, a track laid and is now in the best condition possible for a rapid advancement. The face is still in rich ore. Sinking the C. & C. shaft is making the best of progress considering the strong flow of water.

CON. VIRGINIA.—Daily yield, 850 tons of ore. The ore stopes are looking well and yielding good ore at all points. One great trouble, however, has been experienced for some time past in the very poor quality of the air on the lower levels. This has been entirely caused by the very dry, lifeless atmosphere that this portion of Nevada has been blessed with for the past three months. A large force of men have been employed during the week enlarging the drifts and trying to benefit the circulation of air on the different levels.

BELCHER.—Daily yield, 200 tons of ore. Sinking the main incline below the 1600-ft level is making fair progress; it is now down 140 feet below that point. The drain shaft is being sunk at the rate of 3½ feet per day. This shaft is now down 138 feet below the 1700-ft level.

OPHIR.—Daily yield, 220 tons of ore, keeping the Nevada and Santiago mills running to the utmost of their crushing capacities. There is little or no change in any of the ore-producing sections of the mine. The ore prospect recently struck in the west cross-cut from the bottom of the winze on the 1650-ft level continues to show a decided improvement.

BULLION.—The Alpha drift on the 2000-ft level is steadily advancing along the west wall of the ledge, the face in soft porphyry, intermixed with streaks of quartz. The connection between the main incline and the winze which connects the 1400 and 1700-ft levels was completed last Wednesday, giving a splendid circulation of pure air.

CALEDONIA.—Sinking the main shaft is being pushed forward with all the energy possible. The north drift on the 1100-ft level has cut through the east clay wall of the ledge, and is showing some fine quartz.

CROWN POINT.—Sinking the main incline is going forward at the rate of three feet per day. It is now down 39 feet below the 1900-ft level.

SILVER CITY.—It will take about a week to get the old incline properly repaired and put everything in proper trim for deep operations, not only in the lower levels, but below. The machinery is being put into working position at the top of the incline and will be completed ready to start up in a few days. As we have before stated, this engine is being placed where the old one used to be, in the old tunnel or adit, about 100 feet from the month, and the smokestack will find exit through the old upraise or incline which runs through from the tunnel to the surface.

KOSSUTH.—The north and south drifts on the 600-ft level are each steadily advancing in very favorable ground. The water is gradually draining in that portion of the ledge, so that cross-cutting the ore vein on that level can now soon be commenced.

LEVIATHAN.—Cross-cutting is progressing rapidly at two points on the 600-ft level, with very encouraging results. At the north end the vein is pitching very flat and swinging rapidly to the east. At this point ore streaks of a highly favorable character were encountered last night.

UTAH.—Sinking the main shaft is going steadily ahead at a very favorable rate of progress. The rock in the bottom blasts well, and the water gives no trouble.

LADY BRYAN.—The new pumping machinery is gradually accumulating on the ground and will all arrive at the mine by the last of this week, the last of it having already been shipped from San Francisco.

COSMOPOLITAN.—Continued improvement is noticeable in the north drift from the bottom of the winze, and the chances for a good and extensive ore development in that direction are very good.

OVERMAN.—The south drift on the 1200-ft level is steadily advancing toward the south line, the face in very favorable ledge matter.

SUTRO TUNNEL.—Hard porphyry continues to be the principal features encountered in the face of the header at the present time. It blasts well, however, allowing of good regular progress. Total length of tunnel this morning, 14,296 feet.

FLORIDA.—Sinking the shaft and developing the fine ore prospects recently encountered while sinking, will shortly be the order of the day.

HALE & NORCROSS.—The pumps are kept steadily running, and are doing good work. The water is gradually draining, and it is confidently expected that the mine will be completely drained in 60 days more.

GOULD & CURRY.—The erection of the new pumping machinery is being pushed with all the energy possible.

TROJAN.—The ore developments at the 300-ft level continue of a very fair character at all points. The upraise from the north drift on that level is showing better.

LADY WASHINGTON.—The main east drift or cross-cut at the 850-ft level is now in 217 feet from the shaft. The face continues in quartz and other ledge material of a very favorable nature, and a considerable body of water is coming in, not enough, however, to interfere with the work.

NORTH CARSON.—The shaft is now down to the 500-ft level. The bottom is in porphyry, clay and streaks of low grade ore. The indications for finding a good vein of pay ore are excellent, and the proper openings for exploring with that view will be made shortly. Everything is said about the mine is on a good footing for the winter.

NORTH CON. VIRGINIA.—Sinking the shaft is pushed energetically ahead, the bottom in the best of ground for working and making a good substantial shaft. The flow of water is considerable, but is easily handled by the pumps.

SAVAGE.—The pumps are holding the water well in check below the 1100-ft level, at which point a large water tank is being put in, and another heavy lift pump inserted. As soon as this is finished, men will be set to work to clean out and repair the drifts, preparatory to prospecting and developing the levels in the most thorough manner.

SUPERIOR.—The tunnel from the reviae is driving ahead lively. The rock in the face is pretty hard, but blasts and works well. No increase of water.

IMPERIAL CON.—The north winze has reached the 2135-ft level, at which point a station is being put in preparatory to starting a drift south to connect with the north drift on the same level from the bottom of the south winze. This will give a good circulation of air and enable the cross cutting and development of the ore vein on the 2135-ft level.

SIERRA NEVADA.—The north and south drifts on the 1700-ft station are each advancing steadily, and are both showing a favorable improvement in the character of the vein material penetrated.

MEXICAN.—The upraise on the 1465-ft level is still in very favorable quartz and ledge matter. A cross-cut is also to be started on the 1700-ft level, on the south line, to cut and prospect the ore vein at that point.

SCORPION.—Owing to the delay caused by the foundry not being able to furnish the machinery complete within the time specified, the new pumping engine has not yet been set at work.

DAYTON.—The north and south drifts on the 700-ft level are making the best of progress, both still showing improvement.

ALTA.—Sinking the shaft is making excellent speed, the rock in the bottom being much softer than for some time past. The flow of water is giving no trouble.

SILVER HILL.—Sinking the main incline is making good progress, the bottom in fair blasting ground.

PROSPECTOR.—The main drift west, at the 400-ft level, is now in 208 feet. The face is in ledge porphyry, with seams of clay and quartz.

CHOLLAR POTOSI.—Daily yield, 100 tons of ore. Sinking the combination shaft is making excellent headway. Nothing new.

WARD.—The flow of water at the bottom of the shaft gives some trouble. The erection and completion of the new hoisting works building is nearly finished.

MINT.—Sinking the shaft is being pushed ahead with all the vigor possible, the bottom in good blasting ground.

PHIL. SHERIDAN.—Sinking the main shaft is making all the headway possible, the bottom still in very favorable ledge matter.

NEW YORK.—The enlargement of the shaft and cutting out for the pump stations and hob pits in the new compartment of the shaft is making the best of progress.

WEST BELCHER.—The ore developments of the 300-ft level are turning out splendidly, showing better and more of it as the various openings are proceeded with.

BALTIC CON.—The vein matter in the face of the drift shows considerable improvement this week, better and larger streaks of low grade ore coming in.

ROCK ISLAND.—The details of the new pumping machinery are about finished, and its erection is to be pushed to completion in a very short time.

BEST & BELCHER.—Cleaning out and repairing the drifts and winzes on the 1700-ft level, preparatory to cross-cutting, is still going ahead.

EAST ALTA.—Sinking the shaft making fair progress.

MINERAL HILL DISTRICT.

AT A STANDSTILL.—Eureka *Sentinel*, Dec. 8: We learn that operations at Mineral Hill are at a standstill, in consequence of an order delaying the starting up of the English company's mill. The different companies have about 2,000 tons of ore on the dumps, and were expecting to be able to get returns for their summer's labor sometime this month. Messrs. Lockwood & Ayres will ship four tons of ore to the Winnemucca reduction works. This is from a pocket in the Bonanza mine, which yielded about 20 tons, assaying from $1,000 to $4,000 per ton. Other companies will doubtless follow their example, and the returns will infuse new life into that prosperous camp.

PALMYRA DISTRICT.

RELOCATION.—Gold Hill *News*, Dec. 7: Charles Willard, an old prospector, has relocated six parallel leads of quartz, in the Palmyra mining district, in company with George L. Schwab, of Virginia City, and Dr. J. C. Hazlett, of Dayton. All produce the finest character of quartz, which will probably pay for its reduction. The one most worthy of notice is the Aurora, specimens of which have been assayed by Conrad Wiegaod, of Virginia, showing $485.55 in gold and $4.90 in silver. These mines are situated about 10 miles from Dayton, in an easterly direction.

Arizona.

BULLION.—Arizona *Miner*, Dec. 2: McLean, Christman and those associated with them in the Silver Flake and Kit Carson mines are still taking out large quantities of splendid ore. Perkins & Co., of the Agua Fria smelter, sent in to C. P. Head & Co. on Saturday 3,200 pounds of base bullion from ore purchased of these parties.

Two large silver bricks, aggregating nearly $4,000, came in from the Aztlan mill this morning. The Peck company are now realizing something over $10,000 per week from ores worked in this mill, under the superintendence of Dr. Goodfellow.

MORRISON, superintendant Pinal smelting company, we are advised left San Francisco yesterday for Prescott and will be here in about a week. It is presumed that he will be prepared on his arrival to start up the works and begin to boil out the bullion. Certainly such is the wish of every one concerned, many of whom are impatient of the delay that has already occurred.

Montana.

ORE SHIPMENTS FOR THE SEASON.—Butte *Miner*, Nov. 28: The shipments of copper ore from Butte for the

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The Engineer.

The Effect of Temperature on Iron Trusses.

The change in length in iron trusses caused by the change of temperature, is allowed for, as is well known, by placing rollers under one end of each span. Such a contrivance cannot be used with arches, and they consequently rise and fall at the crown as the temperature varies. The amount of play to be allowed is easily obtained by multiplying together the coefficient of expansion of the metal, the length of the span, and the number of degrees from the greatest heat to the lowest cold. It is found, however, that the allowance previously calculated is more than is needed, and the question arises which one of the above factors is in error. It is stated that the structure lags behind the air in temperature; when a thermometer in the open air is rising, one protected from the air and in contact with the iron will have a lower reading, and vice versa. During a long continued elevation or depression of temperature, we should expect that the two thermometers would give indications more nearly alike. The lower chord of a bridge which is covered or floored over on the upper chord, will be protected from the extremes of heat and cold, and the change of length will then be small. The difference in the amount of expansion of the two chords would have the effect of changing the camber, or causing the truss to rise and fall without alteration in mean length, The often observed fact that a bridge, even when at a considerable hight above the surface of the water, will so protect the river beneath as to hinder and sometimes prevent the formation of ice in winter, shows plainly that the covering ameliorates the temperature which would otherwise exist below.

Some few types of trusses are not internally strained by a change of temperature, but in others a change of shape from this cause initiates tensions and compressions in the different pieces, by which their lengths are modified. The resultant movement at one end may therefore be made of a variety of very small components which it would be difficult to trace out, but data from practical examples for given types of truss, would furnish a coefficient of expansion for use.

There is one other direction in which a reason might be sought for a less change of length in a bridge truss than is expected. The coefficient of expansion is not an absolutely fixed quantity, but increases with the temperature. In solids the increase between 32 degrees and 212 degrees, Fahr., is stated to be hardly appreciable, but for high temperatures the increase becomes a considerable quantity. This increase in the coefficients or expansion of bodies by rise in temperature is probably due to the distance between the particles being augmented with the heat, and their mutual cohesion being thus more readily overcome. The force exerted by an expanding or contracting solid may be measured by the power required to produce an equal change of length by compression or by tension. When a bar of iron of one inch in cross-section has its temperature changed 12 degrees, Fahr., its expansion or contraction exerts a strain equal to about one ton—that is, it will require a force of one ton to keep the bar at the original length. If then, the several pieces of a frame are under tensile or compressive stresses of some three or four tons on the square inch of section, and are thereby elongated or shortened—since the particles are separated to greater distances in the one case or forced more closely together in the other—will not the coefficient of expansion be less or greater than the one for the normal state of the metal under no stress, and correspond with that one which in the scale of temperature would be correct were the bar already heated or cooled to the same linear dimensions?

If this were a fact, we should expect that an iron arch would exhibit less sensibility to a given change of temperature with a heavy load than with a light one, or than the expected amount for a rib of the same span under no initial compression. The deflecting of the crown is easily measured. On the other hand the vertex of the curve of a suspension bridge cable ought to have a greater alteration of level for the same change of temperature.—*Iron.*

Tunnel Under the Hudson.

The work of excavating the tunnel which is to connect New York and Jersey City under the bed of the Hudson river, progresses slowly. The work was commenced in November, 1874, after extensive experimental borings down to the depth to be occupied by the tunnel. While occupied bricking the shaft, the Delaware, Lackawanna and Western railroad obtained an injunction stopping the work, and it was not until last month that the injunction was removed and the company enabled to get to work.

The depth of the shaft is a little over 70 feet, and the greatest depth of the water under which the tunnel will pass is 60 feet. The extreme grade is two in 100 feet descending from Jersey City, and then, ascending on the New York side, three in 100 for 1,500 feet, then two in 100 to the New York end. The borings already made show that the soil through which the tunnel will pass is, for the most part, of a tenacious silt, underlaid by sandstone. Near the New York shore rocks are encountered, and gravel, which is considered favorable for tunnel construction, not offering any serious difficulties to the builder, as would bare sand and mud. The tunnel walls will be constructed of brick and cement three feet in thickness and circular in form. The hight of the tunnel will be 24 feet and the width 26 feet. A double track will run through it, resting upon a stone ballast, five feet from the bottom. The walls will be painted white and lighted with gas. Heavy steel rails will be used, which the company have already prepared. Pneumatic tubes, gas, and water mains can run through the tunnel beneath the track, if desired, so that New York gas and water may be sent to Jersey.

Progress of the Channel Tunnel.

The London *Standard* says that the progress of this colossal work, so far as the English are concerned, is nothing. On the French side there has been quiet and steady onward movement on a small but useful scale. The dredgings of Sir John Hawkshaw on the French side were confirmed and enlarged by M. La Vallee and his staff some time ago, and a report made by him of considerable value in September last year. Since then, the English sea bottom of the channel has been sounded, and similar confirmations and extended knowledge obtained; and a boring has been commenced, and is just finished, at Sangatte, about six or seven miles west of Calais. This boring and its results are the latest attainments, and, as exact details are reserved for the second report of M. La Vallee, now in preparation, we must wait a little while to learn how far the French engineer has really advanced. What we know from a visit to the works at Sangatte is that the boring there was commenced on the upper white chalk at somewhat less than half its thickness, has penetrated the lower white chalk, and gone through about 66 meters of gray chalk identical in its beds and fossils and characters with the grey chalk on the English coast between Abbot's Cliff and Folkestone; and that it has further penetrated into the gault clay after passing a thin band of dark green upper greensand, the total depth of the boring—which was effected by the ordinary iron gouges and chisels—being 133 meters, and the diameter 24 centimeters, or about 9½ inches. We know therefore now, quite independently of the shore sections, the nature and mass of the stratum in which the tunnel is to be pierced, and of the beds immediately above and below it; and that although the thicknesses of all these diminish towards the French coast, yet they are of sufficient magnitude for the engineering requirements of the submarine tunnel; and this notwithstanding that the geological series underlying these beds, or those represented on the English coast between Hythe and Hastings, are all rolled up together in strata of only a comparatively few feet in aggregate thickness in the vicinity of Boulogne. Coupling with the exact details of M. La Vallee's last boring at Sangatte itself, Sir John Hawkshaw's previous boring midway between that village and Calais itself, and the boring there made in the marketplace many years ago for an artesian well, and the dip and inclination of these most important geological formations—the white and gray chalks and gault—will be accurately ascertained. All this, however, neither proves nor disproves the hostile theories which have long existed and still exist as to the occurrence of a vertical fissure along the whole median line of the English channel, and which discussion will only be really settled when the driftways of the tunnel itself are actually driven from the shores of both countries, and about to meet midway, under the bottom of the sea. That even this stupendous difficulty, if it really exist, will not be surmounted by the engineering skill of the 19th century we should be very loth to say. Nevertheless, every traveler by the fast mail steamers of the Dover and Calais line must certainly realize at every steamboat voyage the length of distance between even the nearest points of England and France; and, perhaps, may hope, if sensitive to the *mal de mer*, for the days of darkness and steam clouds under the sea in preference to the stormy winds and boisterous waves he has to endure upon its surface.

MEASURING THE CONTINENT.—Mr. George A. Fairchild, of the United States coast survey, is engaged in a transcontinental triangulation. The object of this survey is to determine the length of the 39th parallel from the Atlantic to the Pacific coast, and which will connect the surveys of the two coast lines. It will also furnish additional data for determining the shape of the earth's surface, and then all these triangulation points will give accurate data for the surveys of the different States. This will be the longest triangulation ever made in any country, the distance being some 3,000 miles. Eleven measurements of degrees for the determination of the curvature of the earth's surface have been made by other countries, of which nine only belong to the present century. The present triangulation across the continent was commenced several years ago. On the Atlantic coast the starting point was on the Chesapeake, and the triangulation is completed to Harper's Ferry, and from the latter point a special reconnoissance has been made to the Ohio river, striking it on the 39th parallel. Going east from the Pacific coast, Prof. Davidson, of the coast survey, is in charge of the triangulation from a point above San Francisco to the Sierra Nevada. Some three or four years ago the survey was started at St. Louis, working both ways to join the work from the east and west.

THE WATER SUPPLY AT WOOLWICH.—The water pumped from the artesian wells for the use of the troops at Woolwich, which, filtering through the Kent chalk-beds, is unusually pure, but also unusually hard, is now softened by adding to it a concentrated solution of lime, in the proportion of nine ounces to 40 gallons, which precipitates bicarbonate of lime, the hardening constituent. The lime water, if used pure, also coagulates and precipitates any dissolved organic matter. In four or five hours the hardness of the water is reduced from 21 degrees to six degrees, a result which could also be produced by the expensive process of boiling the water for two hours. The process works successfully, a million gallons being completely purified as easily as one gallon.

The Kroehnke Amalgamation Process.

Among the numerous special buildings situated west of machinery hall, says the *Iron Age*, is the one erected by the Republic of Chile, to accommodate a large, elaborate working model, serving to illustrate the Kroehnke amalgamation process. The model is very well executed, and is a copy in all its details of works at Antofagasta, Copiapo, province of Atacama. It is on the scale of one-sixth. The miniature engines which put it in motion are supplied with steam from an adjacent boiler.

The ore, which is, as we understand, both custom and purchased, is when delivered sampled. The sample is crushed in two pairs of rolls, and subsequently reduced to a fine powder, from which the material for the assay is taken. After sampling the ore is conveyed by means of a tramway to large cones lying in the rear above the crushing apparatus, into which its discharge is regulated by an automatic feeder, which, though its merits are not striking, possesses at least the advantage of being simple.

The crushing is effected a pair of wheels of 5,000 or 6,000 pounds each, rotating around a vertical axis in a trough. In the model there are six of these "trapiches," the capacity of which amounts to about six and one-half to seven tons per day, so that 12 are necessary for a mill working 75 tons. The power for such an output would foot up to about 70-horse power. The crushed ore is carried off from the trough by a constant stream of running water in the shape of slime, as it is considred imperative for the subsequent amalgamation that the ore should be in a fine state of division. The slime is allowed to settle in tanks, from which, after settling, the supernatent clear water is gradually drawn off as much as practicable. It is then dried, which in a climate like that of Chile is done by spreading it in the sun. The dry ore is carried to the amalgamating mill proper, and is charged into horizontal barrels of seven and one-half feet diameter and eight and one-half feet length, making from three to five rotations per minute. They are arranged in pairs, one on each side of the main line of shafting, to which they are directly geared. This arrangement does not permit the isolating of any one pair for the purpose of either changing its speed independently of the others, or of stopping it altogether. Therefore half the barrels at least must be charged and emptied at the same time, as the 24 barrels used are arranged in two sets of 12. They require 89 to 90-horse power, the same engine, however, sufficing to move other appliances to be mentioned hereafter. The capacity of the barrels varies, of course, according to the nature of the ore treated, but it may for ordinary rebellious material be placed at about 75 tons per day. The charge, varying from two and one-half to four tons, is mixed with a hot saturated solution of salt, until it has assumed the consistency of a thick paste, and then a saturated solution of subchloride of copper is added, this being the chief feature of Mr. Kroehnke's process, as it is destined to perform the chlorination of the silver, thus doing away with any previous delicate chlorination roasting process, which the European method of barrel amalgamation requires. Mr. Kroehnke prepares his solution of subchloride of copper by dissolving five per cent. of the weight of the ore in salt water, and by adding to it a solution of sulphate of copper of 20 degrees Beaume until saturation, and then heating the mixture by steam of three atmospheres. In order to prevent chemical changes he acidifies with sulphuric acid. The solution is considered fit for use when 50 c. c. poured into a liter of water becomes turbid from subchloride of copper.

The amount of solution used necessarily varies according to the amount of silver in the ore and the nature of the gangue. Clay and oxide of iron, which are indifferent, require less than, for instance, lime, which decomposes the subchloride. If there be more than one per cent. of antimony or arsenic in the ore a preliminary roasting is required; small amounts of the blende, copper pyrites or galena do not affect the results materially.

After having added the solution, the barrels are rotated for 10 to 12 hours, making about four revolutions per minute, at the end of which time the chlorination has been effected. In order to prevent a loss of quicksilver in the subsequent amalgamation by the formation of chloride of quicksilver through the agency of chloride of copper resulting from some of the chemical reactions during the period, metallic zinc or lead is added, which decomposes the chloride of copper. The same is done when docile silver ores containing horn silver are under treatment. An addition of 25 per cent. of lead silver in the ore has been known to have reduced the loss of quicksilver from 150 per cent. (?) to 25 per cent.

After the chlorination is complete, quicksilver in amounts varying from 20 to 25 times as much as there is silver in the ore is added. It is important that the mass should have the proper degree of consistency, so as to render a fine division of quicksilver throughout the whole possible. The barrels are again revolved for six to eight hours at the rate of three to five revolutions per minute, according to the nature of the material and its richness.

When the amalgamation is considered complete the whole is washed from the barrels and led through gutters into the settling apparatus, where the amalgam is separated from the slime by water kept in constant motion by revolving arms. The slimes pass off with the current of water, and the amalgam gathers in the bottom of the vessel, from which it is drawn. The liquid amalgam contains a large surplus of quicksilver, which Mr. Kroehnke removes by a centrifugal machine making 2,500 revolutions per minute, instead of filtering it through canvas, as is done in most mills. If the amalgam be white it is considered clean enough to proceed directly to distilling; if, however, it shows black streaks, indicating the presence of oxide and sulphide of copper, it is brought into two small barrels similar to the large ones, two of which are attached to every set of 12 In these barrels it is carefully cleaned by washing with hot salt water.

The pure dry amalgam is stamped into sheet iron cylinders composed of two parts, so that by drawing a bolt they may be easily removed, leaving a column of amalgam weighing from 1,200 to 1,500 pounds. It is conveyed to the distilling room, lifted by a crane upon a small car, on which stands a cast iron vat filled with water. The amalgam is placed upon a tripod standing in this vat. The sheet iron shell is removed, and the car run under a vertical wrought iron cylinder closed on the top. Its inside diameter is but little larger than that of the amalgam column, about 16 inches. The vat, tripod and amalgam are now raised by a simple contrivance, so that the two latter enter the cylinder, the lower end of which dips into the water for about six inches. We then have a vertical retort, closed at the bottom by water, and within its upper end the amalgam. The upper two-thirds of the retort is surrounded by a fire of charcoal or coke, inclosed within a cylindrical fire-brick furnace. The fire being started, the quicksilver of the amalgam distils, and its heavy vapors are condensed in the water closing the retort until after 14 to 16 hours the operation is finished. The silver is then lowered from the retort, the water poured off, and the quicksilver returned to the main mill, where, after having been used some five or six times in succession, it is found necessary to purify it by the addition of 20 grammes of Crooke's sodium amalgam to every 100 kgr. of quicksilver. Four retorts are deemed amply sufficient for the output of 24 barrels.

The metallic silver is remelted in a reverberating furnace and freed from arsenic, if present, by stirring with an iron rod. The silver is cast into molds holding from 70 to 90 kgr., placed on a car.

The whole distilling apparatus is so contrived as to be easily manipulated by one man, who may easily be controlled, thus avoiding the danger of loss by the pilfering propensities of the workmen, who are tolerably well aware of the value of the material which is being dealt with.

The chief feature of this process is the chlorination by means of the subchloride of copper solution, which, in most cases, when there is not too much antimony and arsenic, avoids any roasting whatever, and always evades a chlorination roasting, a difficult, costly and comparatively wasteful process, which, though very much improved by the introduction of several furnaces of recent date, has not yielded more than 95 per cent. of the entire amount of silver in the ore in the shape of chloride of silver. The process is said to be peculiarly adapted to the treatment of ores the chief gangue of which is calcspar, which in chlorination roasting would, if present in large quantities, require so large an addition of pyrites or sulphur for the decomposition of the salt as to make it practically impossible. Compared with the direct use of chloride of copper, the substitution of subchloride effects a very considerable saving of quicksilver, as has been proved by experience in Chile.

Mr. Kroehnke claims the process to be efficient also for the extraction of gold, but no data have come within our notice to warrant an opinion. It would be manifestly unfair to argue from the fact that in the European barrel amalgamation the extraction of gold is not so complete as in the Washoe process, that the same must apply to this process also. The losses of silver are asserted to amount to 1½ per cent.

Mr. Kroehnke has received an award both at the Chile exhibition at Santiago, in 1875, and at Philadelphia in 1876.

PROTRACTED TRANSFORMATION.—At a recent meeting of the entomological club of the American association for the advancement of science, Dr. Morris stated that three or four years since he had placed a number of cocoons of *Attacus Cynthia* on a shelf in his house, and that, after lying there all that time, some of them had this year produced the perfect insect. Dr. Hagen referred to an instance related by Kirby and Spence where a beetle (*Bopresis splendida*) was ascertained to have existed in the wood of a pine table more than 20 years.

Swamp Land Reclamation in San Joaquin County.

The reclamation of overflowed or swamp land in this county is perhaps being carried on to a greater extent at the present time than is generally known or appreciated, except to those immediately interested or employed thereon. Besides the work on Roberts island, by J. P. Whitney, Esq., which we have heretofore described, there is a greater and more extensive work going on in the reclamation of the adjoining island to the west, called Union island, by the Tide Land reclamation company, and known as Swamp Land district No. 282.

The district comprises an area of nearly 40,000 acres, requiring a line of levee about 45 miles in length. Work is now progressing on nearly all portions of this extended line, employing about 1,000 Chinamen, with a proportionate number of white foremen, carpenters and other employees, besides three engineers with their assistants in the field, with John Wallace, Esq., of this city, as chief engineer, and Capt. W. C. Walker as general superintendent.

The leveeing of this island will form a new era in the system of successful reclamation in this State. In most of the districts that have hitherto attempted reclamation, the work has been so imperfectly done that, after repeated breaks and overflows, doing an immense amount of damage and delaying the proper cultivation of the ground, it has been found necessary to enlarge the levee often more than once or twice before it became of sufficient size and strength to resist the attacks of the encroaching waters. But the company having the control of this district have adopted the better policy of building levees so strong and high in the first place as to preclude the possibility of future damage and loss of time.

The levees they are now constructing have an average base of 50 feet, with a slope of three to one on the side next the river, and two to one on the opposite side, with a hight of from eight to ten feet, and a width on top of five feet; these are the kind of levees built where the land is of a loamy character. Where the levee has to be constructed of the peaty turf common to the tule lands, it is made 45 feet base, 20 feet wide on top, with a hight of ten feet. The turf or sod of these levees is cut out in a regular shape and built up in the levees after the manner of brick work. These levees are placed about 200 feet from the bank of the river; the ditch from which the material is taken is between the levee and the river, and is from 120 to 160 feet wide and from three to four feet deep.

The machine invented by Col. A. W. Von Schmidt, the well known engineer, for pumping the mud out of the bottom of the river, to be used in the construction of levees in connection with the peaty sod, is in operation on a portion of the works. It would be difficult to adequately describe this machine, which displays great ingenuity in the adaptation of its different parts, and should be seen to be appreciated; but it supplies a want that has long been felt by all builders of levees, who must be satisfied that the tule sod alone is not a fit substance to be used in their construction, without the help or admixture of some more cohesive or compact material, which this machine is intended to supply, and apparently with satisfactory results.

The reclamation of Rough & Ready island, a small body of land embracing 1,600 acres, lying three miles west of Stockton, has been going on in a small way for years. The first settler on the island was James Crozier, who began building up the land for his extensive orchards over 20 years ago. He began on the principle of raising all the land above high water level, excavating earth from the interior of the island and wheeling it to the vicinity of the bank. This was of course a laborious and expensive process, although satisfactory in the end. But a few years ago the land included in the island, aside from the 160 acres owned by Mr. Crozier, was purchased by other parties, who surrounded it with a levee ten low and weak to be of any permanent service, as it broke with each succeeding freshet. The present year, however, they have awakened to the necessity of building high and strong embankments and since August 1st a force of 40 Chinamen has been constantly employed enlarging and strengthening the levee. From two to three feet have been added to the hight of the embankment, and the width has been correspondingly increased. The work will be complete in a few days. The island was flooded with water last winter, which has remained standing upon it throughout the summer until in August, when it finally evaporated, leaving the land in a condition ready for the plow. A few years will see the whole of this spot, now covered with tules, converted into a perfect garden. A portion will be put into wheat this year.

We are informed that the upper district of Roberts island, comprising some 20,000 acres, has been finally enclosed with a strong levee, sufficient in all parts to keep out ordinary flood water. Gangs of Chinamen are still at work, however, in different parts, strengthening weak places that are more exposed to the river current than others. The greater portion of the land has been leased and will be broken up for a crop this winter. It is Mr. Whitney's intention next year to double the size of the present large and strong levee, making it safe beyond a peradventure.—*Stockton Independent.*

Useful Information.

Good Roadways.

We are not aware that any system of road making where proper materials are available, is superior to the old method of McAdam. The following are the directions prepared by Mr. McAdam, and will doubtless be of value to many readers:

Stone is to be procured in some form in almost every part of the country, and a road made of small broken stone to the depth of ten inches, will be smooth, solid and durable.

The size of stones for a road should be that of a hen's egg, or a half a pound weight. It must be in due proportion to the space occupied by a wheel of ordinary dimensions on a smooth level surface: this point of contact will be found to be longitudinally, about an inch; and every piece of stone put into a road which exceeds an inch in any of its dimensions, is mischievous.

In repairing an old road no addition of materials is to be brought upon it, unless in any part it be found that there is not a quantity of clean stone equal to ten inches in thickness.

The stone already in the road is to be loosened up and broken, so that no piece shall exceed six ounces in weight. The road is then to be laid as flat as possible; a rise of three inches from the center to the side is sufficient for a road 30 feet wide.

The stones, when loosened in the road, are to be gathered off by means of a strong, heavy rake, with teeth two inches and a half in length, to the side of the road, and there broken, and on no account are stones to be broken on the road.

When the great stones have been removed, and none left in the road exceeding six ounces, the road is to be put in shape, and a rake employed to smooth the surface, which will at the same time bring to the surface the remaining stone, and will allow the dirt to go down.

When the road is so prepared, the stones that have been broken by the side of the road are then to be carefully spread on it—not to be laid on it in shovels full, but scattered over the surface, one shovel full following another, and spreading over a considerable space.

Only a small piece of road should be lifted at once; five men in a gang should be set to lift it all across. Two men should continue to pick up and rake off the large stones, and to form the road for receiving the broken stone, the other three should break stones—the broken stone to be laid on as soon as the piece of road is prepared to receive it, and then break up another piece; two or three yards at one lift is enough.

The proportioning the work among five men must of course be regulated by the nature of the road; when there are many very large stones, the three breakers may not be able to keep pace with the two men employed in lifting and forming, and when there are few large stones the contrary may be the case; in all this the surveyor must judge and direct.

But, while it is recommended to lift and relay roads which have been made with large stone, or with large stones mixed with clay, chalk or other mischievous materials, there are many cases in which it would be highly unprofitable to lift and relay a road, even if the materials should have been originally too large.

When additional stone is wanted on a road that has consolidated by use, the old hardened surface of the road is to be loosened with a pick, in order to make the fresh material unite with the old.

Every road is to be made of broken stone, without mixture of earth, clay, chalk, or any other matter that will imbibe water and be affected with frost; nothing is to be laid on the clean stone on pretence of binding; broken stone will combine by its own angles into a smooth, solid surface, that cannot be affected by vicissitudes of weather, or displaced by the action of wheels, which will pass over it without a jolt, and consequently without injury.

Flint makes an excellent road, if due attention be paid to the size; but, from want of that attention, many of the flint roads are rough, loose, and expensive.

Limestone, when properly prepared and applied, makes a smooth, solid road, and becomes consolidated sooner than any other material; but from its nature is not the most lasting.

Whinstone is the most durable of all materials; and, wherever it is judiciously and well applied, the roads are comparatively good and cheap.

Spontaneous Ignition of Lampblack.—Within three years, says the Boston *Commercial Bulletin*, there have been three shops destroyed in Massachusetts from lampblack. A hand, damp with perspiration, a drop of water, a bit of grease, or a sprinkle of oil, will create the combustion which will start the lamplack aglow like charcoal, and so ignite the package, and hence the blaze. In lampblack factories, while great precaution is taken to prevent fire, a rainy or sharp frosty day will start a dampness upon the inside of a window pane, and the flying particles of dust lighting upon this creates a spark, which, communicating with the pile, sends a glow of fire with wonderful rapidity through the galleries of the shop. In cleaning up the smoke galleries, if the men let a drop of perspiration fall into a pile, they instantly scoop up the lampblack in and about where it lodges, and carry it out of the house.

Peat Manufacture.

At a meeting of the English society of engineers a paper by Mr. Charles E. Hall, "On the Conversion of Peat into Fuel and Charcoal," was read. The *Colliery Guardian* says: The author stated that his object was to place on record the cost and value of peat fuel, and charcoal, to describe the best machinery and processes for producing them, and to draw attention to the superiority of ground charcoal for duet fuel in many metallurgical operations. The author first noticed the difficulties attending the working and manipulation of peat in its crude state, and briefly explained why certain methods of treatment had proved failures, and, by samples, pointed out the superiority of the system of condensation over that of compression. He then described the Lead company's peat works at Middleton-in-Teesdale, showing the lowest cost at which peat fuel can be made under favorable circumstances, and giving the cost of working and production per ton for the last four months. The author referred at considerable length to the drying difficulty, and made some suggestions for the improvement of the process, showing the fallacy of artificial drying. A new system—or rather an improvement on the existing system—of condensation designed by the author and Mr. Bainbridge, illustrated by diagrams and working models, was next brought before the notice of the members. The author described this operation as condensation by freely bleeding the peat, and this was stated to be very effectively done by the machine described, the samples showing how thoroughly the fibers had been cut up and disintegrated. This improved machine is intended for the production of the densest charcoal, fit for any metallurgical operation. Samples of finely-powdered charcoal, suitable for iron founder's blacking, were exhibited, also samples for sanitary and agricultural purposes. The continuous peat carbonizing process was explained by the author, and a cost sheet, showing the probable cost of manufacturing charcoal on a large scale, was given. A novel construction of common fire-grate, suitable for economically burning peat or other light fuel, was also described.

Good Health.

Typhoid Fever.

A. L. Loomis, M. D., in the *Medical Record*, says: It is difficult to determine the period of incubation, or length of time the poison must remain in the body before symptoms of the disease are manifest. The history of isolated cases would lead to the conclusion that the period varies from 14 to 20 days.

The next question that arises is, how does the typhoid poison gain admission to the human body? Undoubtedly there are two principal sources of infection, namely, the air we breathe and the water we drink. A large number of well authenticated histories have now established the fact, that this fever may be developed by gases which emanate from privies, sewers, etc., which have been the receptacle of excrement from typhoid patients, and also by drinking water from springs and wells which have become contaminated by matters from adjoining privies and cesspools. It is also now an accepted belief, or rather is regarded as an established fact, that water remains contaminated, though far remote from the point where it came in contact with a defective sewer or water-closet.

Soil pipes and sewerage may be defective for a long time, perhaps a year, or even longer, and no case of typhoid fever occur, when suddenlyan endemic of typhoid fever breaks out, and careful investigation shows that its development was preceded by the introduction of the excrement of a single individual sick with the disease.

It is the belief of some that milk can convey the typhoid poison, and there is evidence in favor of this opinion; but I think there is stronger evidence that the water in the milk, and not the milk itself, is the medium through which the poison is transmitted.

This poison has great vitality. Typhoid fever frequently occurs in the same locality year after year, when the surrounding conditions are favorable to its development. Those conditions which favor its development are more frequently present in the autumn than at any other season of the year, and for this reason it has been called autumnal fever.

Usually it makes its appearance in a locality, year after year, at about the same time; case after case is developed until entire households and neighborhoods become its victims. Individuals who come to care for the sick may contract the disease, and even persons who visit houses in which the disease is prevailing may afterwards develop the fever, contracting it, not from the sick, but from the infected atmosphere of the locality.

Age must be regarded as a predisposing cause of typhoid fever. It is much more likely to occur in young than in old persons. It occurs most frequently between the ages of 15 and 25, and is rarely met with in persons over 50.

There are also individual idiosyncrasies which seem to predispose to this fever. Some contract it upon the slightest exposure to the influence of the poison, while others, frequently brought in contact with it, through long endemics, escape. Again, an individual may have repeated attacks of typhoid fever. I have in mind a physician who had typhoid fever four times, the last attack proving fatal. A person who has had typhus or scarlet fever is not likely to have a second attack, but no such immunity follows an attack of typhoid fever. Whatever view we take of the exact nature of the typhoid poison, it has been quite conclusively demonstrated that the typhoid poison differs very essentially from that of other fevers.

From this brief review of the etiology of this fever, we are led to the following conclusions:

First.—That its development is independent of over-crowding, and that it attacks the rich and poor indiscriminately.

Second.—That it may be communicated from one person to another through the excrements which have undergone decomposition after their discharge.

Third.—That an endemic of typhoid fever only occurs where the air or drinking water of the locality has become poisoned by emanations from typhoid excrements which have undergone decomposition, and that, if the fever becomes epidemic, it is a circumscribed epidemic, and not widespread.

Fourth.—That the exact nature of the typhoid fever poison is still unknown.

Don't Worry About Yourself.—The *Journal of Health* says: To regain or recover health persons should be relieved from anxiety concerning diseases. The mind has power over the body. For a person to think he has a disease will often produce that disease. This we see effected when the mind is intensely concentrated upon the disease of another. It is found in the hospitals that physicians and surgeons who make a specialty of a certain disease are liable to die of it themselves; and the mental power is so great that sometimes people die of diseases which they only have in imagination. We have seen persons sea-sick in anticipation of a voyage, before reaching the vessel. We have known a person to die of a cancer in the stomach when he had no cancer, nor any other disease. A man, blindfolded and slightly pricked in the arm, has fainted and died from believing that he was bleeding to death. Therefore, persons in health, and desiring to continue so, should at all times be cheerful and happy, and those who are sick should have their attention drawn as much as possible from themselves. It is by their faith men are saved, and also by their faith that they die. If a man wills not to die he can live in spite of disease; and if he has little or no attachment to life, he will slip away as easily as a child falls asleep. Men live by their souls and not by their bodies. Their bodies have no life of themselves; they are only resources of life—tenements of their souls. The will has much to do in continuing the physical occupancy or giving it up.

Diphtheria Successfully Treated.—Dr. E. Chenery, M. D., Boston, Mass., cites a very large number of cases, 158 within his own practice, saved by the use of hyposulphite of soda. The dose of the hyposulphite is from five to 15 grains or more in syrup, every two or three hours, according to age and circumstances. It can do no harm, but if too much is given it will physic. As much as the patient can bear without physicking is a good rule in the severer cases. The tincture can be used in doses of five drops to a half drachm in milk. The amount for thorough stimulation is greater than can be taken in water. I usually give it in such doses as can be easily taken in milk, using the milk as food for small children. One fact, however, needs to be borne in mind, namely, the hyposulphite prevents the digestion of milk, and should not be given in less than hour from it. They may be used alternately, however, without interference, in sufficiently frequent doses. Judging in this disease as I judge in others, I am fully persuaded that the treatment I have so long used, and which has not failed me yet, will save nearly every case of diphtheria if seasonably and vigorously employed, and there is no reason why it should not do as well in the hands of others as in my own. In none of my cases have I used any alcohol.

The Disease Germs.—The germ theory of disease is pronounced upon by the members of a medical society as follows: That so far as inquiry has been made as to the results of the active principles in infective diseases, it is probable that in a certain number the matter is particulate or molecular in form, and in the instances named, in no sense a soluble substance. That in regard to the causes of septicæmia, pyæmia, puerperal fever, erysipelas, and hospital gangrene, and in cholera, small-pox, the carbuncular diseases of men and animals, of typhoid and relapsing fevers, and diphtheria, there is not satisfactory proof that they are necessarily connected with minute vegetable organisms. That the real nature of these causes is still uncertain.

New Febrifuge.—Dr. Brunnetti, of Constantinople, recommends the following mixture as being not only much cheaper but more efficacious than quinine in malarious fevers: Chloride of sodium, 12 grammes, (185 grains); carbonate of iron, one gramme, (5¾ grains); mix and divide into three powders. These three doses are to be taken in one day, one powder being taken in the morning, another at midday and the third at night. In order to prevent a relapse, one powder should be given every morning for eight days. He finds it also superior to other anti-pyretics in tuberculosis, in smaller doses than the above, but continued for a longer time.—*Chemist and Druggist.*

MINING AND SCIENTIFIC PRESS

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Our latest forms go to press on Thursday evening.

San Francisco:
Saturday Morning, Dec. 16 1876.

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NEW ADVERTISEMENTS.

A. L. Fish & Co., Machinery, S. F.; Ashestos Coating, Salamander Felting Co., S. F.

BULLION SHIPMENTS.—Since our last issue shipments from prominent mines have been made as follows: Tybo Con., Dec. 3d, $8,620; Washington, Dec. 4th, 338 oz. of amalgam; Comanche, 5th, $6,402.22; Northern Belle, 7th, $12,008.43; California, 9th, $196,351.17—total for November, $1,256,516 79; Laopard, 6th, $6,900; Modoc, 8th, $5,500—total to data, $28,600; Manhattan, 8th, $11,870.24; Tybo Con., 8th, $8,558.33; K. K. Con., 8th, $4,000—total to data, $15,500; California, 9th, $196,-351.17—total to date, $11,256,516.79; Manhattan, 12th, $11,000—this month to date, $35,-341.28; Arizona, $2,349.95; Con. Virginia, 11th, $118,250.14; Tybo, 8th, $4,351.20; Modoc, 10th, 223 bars—total to date, $34,100; California, 12th, $78,936.57; K. K. Con., 11th, $3,750—total to date, $19,255; Northern Belle, 10th, $18,006.96.

TRADE MARKS.—The Commissioner of Patents has received a communication from the Commissionar of Patents of Great Britain, informing him that by an Act of Parliament, foreignars have been accordad the privilega of registering trada marks in that country upon the same terms as British subjects. Our Patant Office will hereafter registar trada-marks for Britisb snbjects upon the sama terms and under the sama regulations as those now prescribed by it, in accordanoa with the Act of Congress, for citizens of this country.

WORK has been commenced on the new shaft of the Virginia coal company in El Dorado canyon.

Dissatisfied Mining Shareholders.

The officials of several of the mining companies have not held their usual undisputed sway over the properties under their control during the past year. In a number of instances where business was not carried on in accordance with business principles, the stockholders took occasion to protest in a very vigorous manner. They not only asked for explanations, but where such were not satisfactory they took measures to kick the managers out, to put it plainly, and elect people to office in whom some confidence could be put. All this is very proper, and the only wonder is that it has not been done earlier and oftener. The year 1876 has not been a satisfactory one to the chronic trustee—he who waxes fat financially out of assessments paid by others. Such trustees and officials as have acted "queerly" have been overhauled and their transactions as far as possible brought to light. Unfortunately for them, in almost every case good cause of complaint has been proven. If the movement inaugurated this year is only kept up it may have the effect of weeding out some of the old stock whose business it is to "manage" mining companies, and it will without doubt keep such persons in wholesome fear of detection so that they will act more honestly in the future.

Several of the little struggles between managers and stockholders such as we refer to, are now in progress. We mentioned in our last issue that the "Sharon party" had come off victorious in the fight for officers in the annual election of the Mexican mine. There was a very strong contest at the time. On one side the old officers, who are representatives of Senator Sharon, the controlling genius of the mine, were struggling for re-election. The other aspirants were L. P. Drexler, of Virginia City, H. H. Noble and the McDonalds, of San Francisco, and several friends. The contest was a close one, and resulted in favor of Senator Sharon, owing to a point raised by his legal advisor, that under the provisions of the new code, no proxies could be given unless the possessor had been a bona fide stockholder for 10 days prior to the election. This point being sustained by the President, some 16,000 proxies held by the Drexler party were ruled out of the fight, and victory was then a comparatively easy matter for the Sharon representatives. Mr. Drexler intends bringing the matter before the courts, basing his hopes on what he claims is a loose wording of that section of the code bearing on the subject of the right to vote by proxy. He claims that the mine is not properly managed; that there is a rich ore body on the 1465-foot level which ought to be worked, instead of which the superintendent is drifting and prospecting around in every direction where there are no indications of ore; that the managers are depressing the stock to buy it in cheap. Section 312 of the Code says: "At all elections or votes had for any purpose there must be a majority of the shares subscribed capital stock, or of the members represented either in person or by proxy in writing. Every person acting therein in person or by proxy or representation must be a member thereof, or a bona fide stockholder, having stock in his own name on the stock books of the corporation at least 10 days prior to election." Mr. Drexler, referring to this, says: "Now, my point is this: that the above section of the Code is faulty. It says that a stockholder must have stock in his own name on the books 10 days prior to the election, but it fails to specify the amount. It might be one share, or it might be 10,000. Therefore, I contend that as I had a portion of my stock on the books as specified, I am lawfully entitled to the management of Mexican, especially as I came into the election with 50,376 votes."

On Monday evening last a number of dissatisfied stockholders of the Mansfield mining company met, 22,500 shares being represented, or a little more than one-third of all the stock. Mr. L. Diedring occupied the chair. A committee that had been appointed at a previous meeting to examine into the reasons for the late assessment, reported that they had, after considerable opposition on the part of the managers of the company, been allowed to examine the books. They found that the company is charged with a debt of $23,178, the entire amount being due to the President, who is also Treasurer, and that the present assessment is levied to pay this debt. They are convinced that there is plenty of paying ore now lying at the month of the mine, and can see no reason why it is not hauled to the mill, as the returns will more than pay off the entire debt. A committee was appointed to receive stock from any dissatisfied holders and deposit same in the Safe Deposit vaults, so that in the event of sufficient stock being handed in, the dispute could be brought to a successful issue. The committee will advertise their office and hours for receiving stock. The meeting then adjourned to await a report from this committee.

A meeting of the dissatisfied stockholders of the Lady Bryan company was also held on Monday evening. The report of the committee appointed at a previous meeting states that the committee waited upon two leading lawyers to ascertain the cost of a lawsuit against the present board of directors. The committee recommended the retaining of Mr. Lloyd; also, that the stock and proxies of the dissatisfied stockholders be deposited with the Collateral Loan and Savings bank, corner Post and Kearny streets, the owners taking a receipt for the same. They further recommended that an assessment of two and a half cents per share be levied on all dissatisfied stock to pay the expenses of hall hire and lawsuit.

Mr. Tarpey stated that 30,000 shares were in the name of Mr. McClintock, and that the Lady Bryan mine had been incorporated under the new Code, which provides that in order to permit stockholders to vote the stock must stand in their names upon the books of the company for at least ten days before the election. The following named gentlemen were appointed a committee to solicit proxies from stock brokers for the purpose of defeating the coming election: J. Tyler, J. McIntosh, D. Tarpey, M. W. Fox and Mr. Kitts. A member who had looked at the books of the company a few days before, stated that $195,741.36 clear profit, on assessments, were unaccounted for, and that the books were mutilated.

Another meeting of the same company was held on Wednesday evening. The committee appointed to compass the expulsion of the management of the mine made a further report to the effect that steps had been taken to secure all stock deposited in the Collateral Savings and Loan bank from sale under the last assessment. In case the present trustees are ousted the owners can procure the return of their stock at once. Another meeting will be held on Monday evening.

The Bostonian dissatisfied stockholders on Tuesday filed a report in the county court of a meeting held on Monday, when three trustees of the corporation were ousted. On the first of the present month, a majority of the dissatisfied petitioned Judge Wright to allow them to hold a meeting, and upon the prayer being granted, a meeting was held on Monday, at which there was 60,000 shares of the Boston stock represented. A. Carter was chosen chairman and John Stewart, secretary. James Brady offered a resolution to the effect that the meeting proceed to elect directors in place of A. P. Bacon, E. T. Bacon and S. W. Jones, who were by vote removed, and J. P. Cushing, John Stuart and E. C. Morton were substituted by a unanimous ballot.

Forward and high and low pressure. Light load, inward stroke.

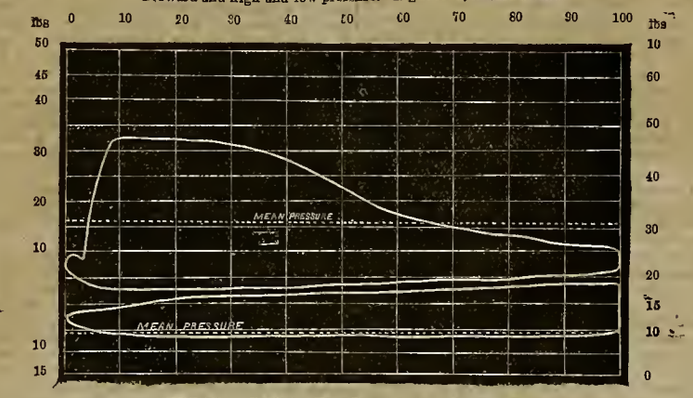

FIG. 7. CARD FROM ALTA ENGINE.

High pressure cylinder, mean pressure, 16 8-10 pounds; low pressure cylinder, mean pressure, 8 78-100 pounds. High pressure horse power = 1.86 horse power; low pressure horse power = 2.57 horse power. Total inward stroke = 4.43 horse power.

Backward and high and low pressure. Heavy load, outward stroke.

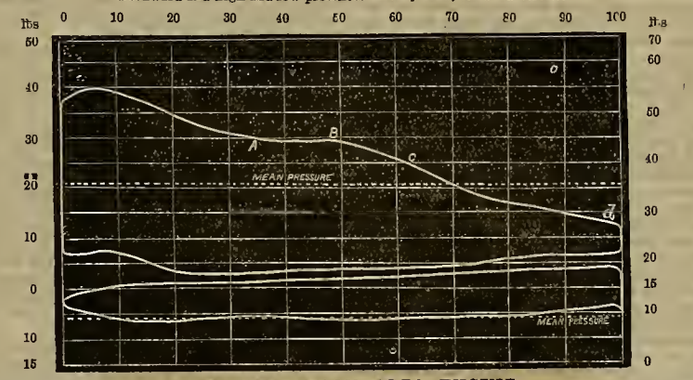

FIG. 8. CARD FROM ALTA ENGINE.

High pressure cylinder, mean pressure = 21¾ pounds; low pressure cylinder, mean pressure = 8 73-100 pounds. High pressure horse power = 2.43 horse power; low horse power = 2.65 horse power. Total outward stroke = 5.13. Total horse power indicated = 4.43 + 5.13 = 9 56.100 horse power.

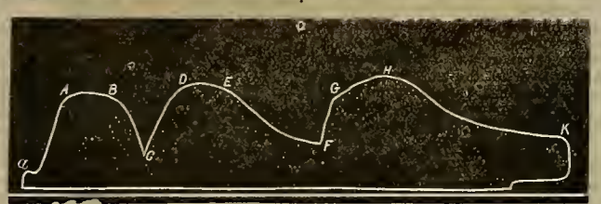

FIG. 11. SAFETY OARD FROM ALTA ENGINE.

Mechanical Ore Concentration and Separation.—No. 14.

[Written for the PRESS by FRANCIS M. F. CAZIN, M. E. Santa Fe, New Mexico.]

Ritter Von Rittinger.

This learned author was well acquainted with all the practices introduced, and he contrived to establish the physical principles on which all efficacious constructions were based. He also began to improve on different constructions on the basis of these principles, now put in the reach of every one by the publication of his book. Others followed, and the first consequence was, the general adoption of continuously and automatically acting machinery, where the manual help was reduced to the utmost and where human skill formerly was required in a high degree, simultaneously with hard manual work, the machinary had now to do the main work, leaving to human art only the regulation of machinary or the accommodation of proportions to the capacity of the machines.

I, therefore, believe myself justified in describing, extensively, only the few machines which have established their superiority by long practice.

As the first in the line must be designated the jigs selected in Europe for the most prominent mineral dressing works at Clausthal.

The Hartzer Jig.

[Mr. Cazin sends the full construction drafts of the four different kinds introduced for three different sizes of material and one for material of lower specific gravity. These drafts are copied from the official description of said works, edited by E. Kntscher in 1873.—EDS. PRESS.]

In the description of the Falun mineral dressing works, published in 1873, by E. Heberla, and lately translated from the German for the MINING AND SCIENTIFIC PRESS, by O. Rneger, these jigs are also stated to have had the preference in constructing these extensive and costly works.

As stated, the Hartzer jig is used in four varieties, each adapted to a special size or special material, and for a complete mineral dressing plant at least one of each will be required.

The Drainage of the Comstock Lode.

[Written for the PRESS by P. ARN. HUMBERT.—No. 2.]

Besides being injurious to the machinery, the cushion is shown to be costly, and it is for these reasons that it should be most carefully avoided, for tho benefit of the greater number of strokes is only arrived at with cost and danger. If more mass is acquired, the cushion must necessarily increase, so that with great depth it is a very serious mistake to use it.

Figs. 6 and 7 represent the diagrams of the Alta—Davey's differential compound pumping engine; diameter of high pressure cylinder, 27 inches; diameter of low pressure cylinder, 44 inches; five-foot stroke. At the time the diagrams were taken the engine was making 1.15 strokes per minute (double,) at depth of 520 feet. It is to be remarked that the shaft is being sunk, the most trying operation for an engine, the balance column is down but 300 feet, two rods and two columns of pumps, while the sinking pump, attached to one of the rods, throws the engine out of balance, especially when this pump takes air. The engine works with a directly attached condenser.

The energy of the mass is, in these figures, calculated the same way as in the preceding ones. The area above the mean pressure line, minus the area below the mean pressure line, ormed by the expansion, minus the back pressure, must equal zero. It will be remarked that the cut-off is not very decided, especially in Fig. 8, and that from the point *A* to *B*, an increase of pressure is noticeable; this is due to the automatic cut-off; before reaching *A*, the velocity of the mass was such as to require a cut-off to take place, but the engine having a light mass at the point *A*, the energy had decreased to such an extent as to require a fresh supply of power to finish the stroke, hence the opening of valve, the admission of more pressure to *B*, from whence to c and *d*, the regular expansion takes place. This proves the admirable working of the Davey differential valve gear when properly applied. Any person comparing the diagrams of the Alta with those of the Savage will immediately see the benefit of using expansion to stop the mass.

After having explained the part which energy plays in pumping machinery, we will examine the most important agent to control this force in a direct acting engine.

Davey's Differential Valve Gear.

This invention has three objects: to regulate the pause, to be an automatic variable expansion and to insure safety to the engine in case of a break in the rods.

The pause can be obtained by the usage of the old Cornish cataract, and a constant expansion, variable by the adjusting of the valves, can be attained, but an automatic variable expansion and safety can alone be arrived at by the invention of Mr. Henry Davey. Fig. 9 represents the valve gear at the end of the engine stroke. The pause cataract, *G*, is worked by the steam cylinder, *F*, and its speed is regulated by the valve, *R*, while the expansion and safety cataract, *I*, is rul-d by the steam cylinder, *H*, and its speed by the valve, *S*. *T* is a hand lever to start the motion. When the engine concludes its stroke, the cross-head, *A C*, strikes one of the tappets, *N* or *O*, opening the slide valve of the steam cylinder, *F*, causing it to make its stroke, at the conclusion of which the arm, *E*, strikes the tappet, *P* or *Q*, starting the slide valve of steam cylinder, *H*, which, by making its stroke, opens the valves of the main engines.

The cross bend, *A C*, is connected in its middle, *B*, to the valve rod of the engine; at *C* it is connected to a reduced motion through levers of the piston stroke of the engine, while *A* is attached to the piston rod, *K*, of the safety cataract. In opening the valves, the point *C* is the turning point for the lever, *A C*, while on the closing of the valves the point *A* answers the same purpose. The opening and closing of the valves are attained by the difference in the speeds of the points *A* and *C*, which move in opposite directions.

A too great speed of the piston therefore closes the valves, while a reduction of speed causes them to open. The expansion equal to the work performed will be attained by the speed of the piston increasing, and safety by the augmenting of this speed by removing the load. Should the speeds of *A* and *C* be equal, no motion will take place to cause the valves to open, and a too great speed of the piston will reverse them if necessary.

The diagram Fig. 10 demonstrates this more clearly. We will call *A B* the stroke of the engine and *C D* the stroke of the safety cataract, and we will put *A B* = *C D*, and also that the piston stroke of the engine shall be from *B* to *A* and that of the cataract from *C* to *D*.

We will suppose the engine to start at one-fourth stroke of the cataract and cut off steam at half stroke; further, we will not consider the lap of the valves and the radius of the connecting rod between the crosshead at *B* and the reduced engine stroke, shall of such radius as to make the arc described by *B* = *O*, or a straight line. When the cataract commences its stroke the point *d* connected with the valves is at zero, and the valves are closed; when the point *C* moves to *K* the point *B* will move to *I* and *d* to *f*, opening the valves a distance equal to *t f*, sufficient to start the engine. We will now suppose the speed of point *I* in reaching *G* to equal twice the speed of the point *K* to *L*, so that, irrespective of arcs described, the point *C* will reach *L* when the point *I* reaches *G*; this will require the point *f* to reach *i*, causing the valves to make the distance from *b* to *i* equal to *t* to *f*, consequently closing them. We will now first suppose that this acquired speed is such as to carry the engine to the end of its stroke at the same speed as the cataract runs; then, when the engine is at point *F* and the cataract at point *M*, the valves will be at c, consequently closed, and when the piston is at *A* and cataract at *D*, the valve will return to *d*, remaining closed. We will now suppose that when the engine reaches *G* she stops for want of power, and the cataract reaches *M* before she moves; then the point *G* will go to *G'*, and consequently the point *i* will return to *b'*, opening the valves a second time and closing them in the afore-explained manner. We now suppose that the work be thrown off the engine and that it reaches *E* while the cataract is at *M*; then the point *d* will go to *e*, making a distance *e t* = *a i* = *i b* = *t f*, consequently opening the valves on the reverse side and obliging the engine to make the contrary stroke, preventing by this means the piston's going through the head of the cylinder, therefore insuring safety to the engine. This shows how expansion and safety is automatically arrived at. It is to be remarked that the distance *C K* must be equal to the lap and the time to start the mass; the lap can be a fixed quantity but the time to start the mass is an increasing quantity with depth, consequently the speed of *C K*, being the speed of *C D*, has to be reduced, and this reduction is the same for *A B*, consequently the speed of the engine decreases with depth.

We will now suppose that the cataract has to travel from *C* to *D* before the engine starts, then the point *B* will go to *H*, causing the point *d* to go to *g*; consequently when the point *H* reaches *A*, the point *g* will have returned to *d*; in this case the valves will close at the end of the engine stroke, allowing no expansion to take place and removing all safety from the engine.

An engine made to run at too great speed and using a cushion will work in this manner. To this way of working direct acting engines, supplied with the Davey differential valve gear, is to be attributed all accidents, such as breaking of the cylinder head, etc., and not to the safety motion, which has no chance to work.

From the diagram, following rules must be complied with to insure correct working of the Davey motion. The engine must be calculated of such capacity as to work with expansion; in compound engines a larger expansion must be used than that existing by the relative volumes of the two cylinders. The valves should open quickly. A cushion of steam should not be used, as it reduces the safety. The speed of the engine should decrease in relation to the depth. It will be found that the want of safety which exists on most all the direct acting engines on the Comstock is due to the non-observance of these fundamental rules.

That the practical working of the Davey cataract agrees completely with the theoretical explanation, will be proven by the indicator card taken by myself from the Alta engine to ascertain the degree of safety the engine was working at; it is represented in Fig. 11.

The card was taken in the following way: The throttle valve opened so as to increase the speed of the engine; the safety cataract was slowed. The working of the valves was the following: From *a* to *A*, steam is let into the cylinder, the valves being open and the cataract ahead of the piston of the engine; at *B* the engine stroke over hauls the cataract, the valves close and expansion takes place; at *C* the speed of the piston is too slow for the cataract, consequently the valves reopen; from *D* to *E* the piston speed overhauls again the cataract and expansion takes place by closing the valves to *F*; the same play continues to *K*, when the engine concludes its stroke. It is at once clear that if the work had been thrown off at *C*, *F* or *K*, the expansion lines would have been continued down to the back pressure line, causing the engine to stop, or, if the energy of the mass had carried it beyond, the valves would have been reversed. This diagram removes all doubts as to the safety of the Davey cataract, when properly applied. It will be found, moreover, that the Davey motion is misapplied in most every case, so that accidents are to be expected at any moment.

It has already been remarked that the waters on the Comstock occur in variable quantities, so that the speed of the pumps must be such as to handle small as well as large quantities of water.

In direct acting engines, by the pause cataract the speed can be made much more variable than in geared engines, so that less stripping has to be done, reducing the consumption of steam when small quantities of water have to be pumped. This will be found a very desirable agent in reducing the consumption of fuel, and besides the other advantages of the direct acting principle, this is one not to be undervalued.

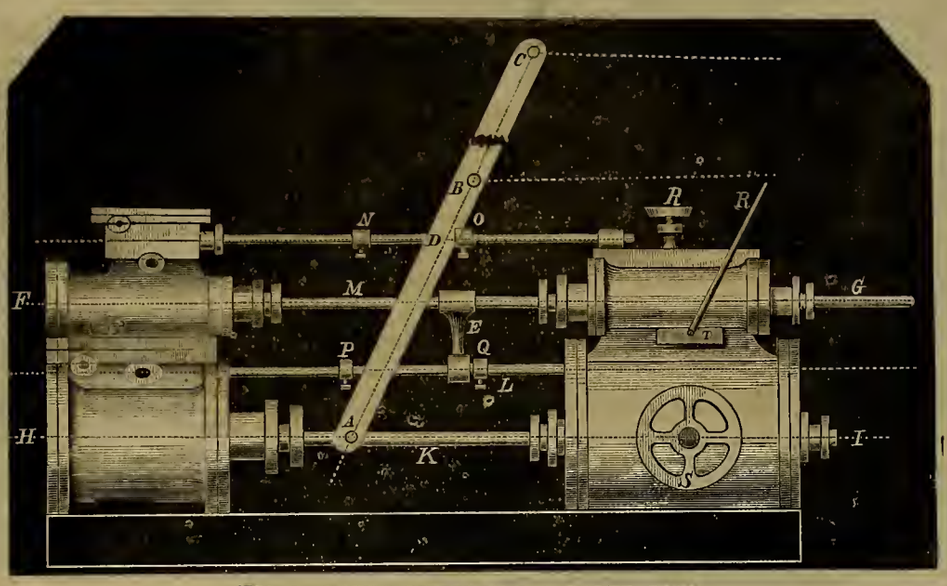

FIG. 9. DAVEY DIFFERENTIAL VALVE GEAR.

DIAGRAM OF DAVY'S CATARACT.

CUPRO-SCHEELITE.—At the last meeting of the San Francisco Microscopical Society Mr. Henry G. Hanks called attention to an interesting mineral which is only known to occur on the Pacific coast. It resembles scheelite, in which a part of the lime is replaced by oxids of copper. Prof. Whitney, who first described it, has named it cupro-scheelite. This mineral affords an example of the importance of the microscope in the determination of mineralogy. When first discovered it was thought to be a mechanical mixture of scheelite with some copper mineral; but upon a careful examination under the microscope it was found to be perfectly homogenous. Subsequent discovery of crystals of cupro-scheelite proved it to be a distinct and new species, as shown by the microscope. One peculiarity of this mineral is the ease with which the tungstic acid it contains can be isolated. Tungstic acid, combined with soda, forms tungstate of soda, the solution of which renders cotton cloth incombustible. It was suggested by Mr. Hanks that if tungstic acid could be produced cheaply, the theatrical managers could afford to prepare the cotton upon which their scenery is painted, and thus greatly lessen the danger from fire. Cupro-scheelite is said to occur in considerable quantities both in Upper and Lower California.

THE Arctic expedition still excites comment in England. The conviction is gaining ground that the outbreak of the disease of scurvy caused the break-down and return, after one winter in the Polar circle. The admiralty authorities are arraigned on the question of an inadequate supply of lime juice. The law compelling small trading vessels to carry anti-scorbutics has been disregarded by the admiralty, thus ruining the finest expedition ever equipped for Polar discovery.

A BILL introduced in Congress by Mr. Piper concerning the Black Hills country proposes the immediate creating and organizing of a territorial government for the region. He considers this very important, and, therefore, will urge a prompt passage of the bill.

MR. J. S. PHILLIPS, the well-known mining engineer and assayer, has removed his office from 640 Clay street to 504 Washington street. The new rooms are in the Government building and the laboratory, etc., are all fitted up in very convenient shape.

LEEDS DISTRICT, Utah, is now called the "Pioche extension" on account of that place being nearly made up of people from Pioche. A 10-stamp mill in Bullionville has been taken down for removal to Leeds.

Mining Decision in Relation to Tunnels.

The Right to Prospect for Blind Lodes.

GENERAL LAND OFFICE,
DEPARTMENT OF THE INTERIOR,
Washington, Nov. 3d, 1876.

Register and Receiver, Central, Col. Gentlemen:

On the 24th of Novemher, 1875, W. G. Pell, Samuel Cockran and John W. Nicholson filed in your offics an application for patent for 1,500 linear feet of the Slide lode, Gold Hill mining district, Boulder county, Colorado.

The notics was pnhlished in the weekly Sunshine *Courier* for the period of 60 dsys, to wit: From the 4th of Decemher, 1875, to the 12th of Februsry, 1876, inclusive.

The plat and notice were dnly posted upon the premises and in the Register's office.

By an abstract of title on file, from the office of the county clerk of Boulder county, Colorado, it is shown that said lode was discovered on the 26th of July, 1875, located July 30th, and recorded the 31st of July, 1875. It is also shown that said applicants have record title to the whole of said location.

The applicants have shown compliance with the law.

On the 20th of January, 1876, the Corning tunnel, mining and reduction company, by its President, Frederick A. Squires, filed an adverse claim against said application.

In his sworn statement, Mr. Squires alleges that he is the president of the said company: That said Slide lode is within the location of a tunnel site claimed by said company; that said Slide lode is a blind lode, and was discovered subseqnent to the location of said tnnnel site; that said tunnel site was located in accordance with the mining act of May 10th, 1872, and upon which said company has expended a large amount of money; that the rights of said company were acquired long prior to those of said applicants.

By a copy of the location notice, it appears that George C. Corning and three others, on the 18th of September, 1872, located snd recorded said tunnel site, and on the 14th of July, 1873, made record of a second location of said premises, dated July 9th, 1873.

In this second location, the tunnel is described as seven feet high, six feet wide and 130 feet in length.

It is also shown that said company has the record title to said tunnel site and location.

The applicants for patent have filed the sworn statements of John J. Scholes, Thomas Cryder, Daniel Drnmmond, Jehial Franklin, Smith E. Stevens and Burrell McPherson.

In his sworn statement, Mr. Scholes alleges that he was the discoverer of said Slide lode, that he was led to dig for and to discover said lode by the indications and outcroppings of the said lode on the surface; that they were very distinct and marked; that it was no hlind lode in any sense of the word; that it showed very plainly; that at the time of tbe application for the patent there was a tunnel run in on the lode 50 feet, and a straight shaft sunk on said lode at least 50 feet, and other outside work done, of a total valne of at least $2,000.

In his sworn statement, Cryder alleges that he is well acquainted with the Slide lode; that he saw the Slide lode ahout a month after its discovery, and very frequently since; that it is no blind lode, hut was discovered from the surface; that the outcroppings on said lode are qnite distinct and marked, and that good ore was obtained at tbe immediate surface.

Drnmmond, in his sworn statement, states that he is well acquainted with the Slide lode; that tbe croppings on said lode "are visible on the surface—situated in line—that there are several prospect holes on the said lode, and the aforesaid croppings are on a line between these prospect holes on the said lode; should say emphatically that the Slide lode was not a hlind lode, and that it was discovered from the surface."

Franklin, in his sworn statement, alleges that he is a practical miner, and has heen engaged in the business many years; that he was at the said Slide lode within a week after its discovery, and a great many times since; "that the outcroppings on said lode are so evident as to justify any one in digging for said lode, and that it was not a blind lode, and was discovered from the snrface."

McPherson, in his sworn statement, alleges that he is well acquainted with said Slide lode; that "he knows that the said Slide lode is not what is called a blind lode, hecause of the croppings of said lode plsinly appearing on the surface, and of its also being discovered from the snrface."

Stevens, in his sworn statement, corroborates the statements above referred to, to the effect that the surface indications and outcroppings conclusively demonstrate the fact that said lode is not a blind lode.

The fourth section of the mining act of May 10th, 1872—Revised Statutes, section 2,323—provides that "where a tunnel is run for the development of a vein or lode, or for the discovery of mines, the owners of such tunnel shall have the right of possession of all veins or lodes within 3,000 feet from the face of snch tunnel on the line thereof, not previously known to exist, discovered in such tunnel, to the same extent as if discovered from the surface, and location on the line of such tnnnel of veins or lodes, not appearing on the surface, made hy other parties after the commencement of the tunnel, and while the same is being prosecuted with reasonable diligence, shall be invalid; but failure to prosecute the work on the tunnel for six months shall he considered as an abandonmsnt of the right to all undiscovered veins on the line of the said tnnnel."

The uniform construction given to this section of the law hy this office is embodied into ths land office report for the year 1872, psges 60 and 61. As the construction therein given has heen followed, I embrace the same in this decision as showing the rights acquired by tunnel locations:

"The line of the tunnel is the width thereof, and no more; and that upon this line only is prospecting for hlind lodes prohihited while the working of the tunnel is in progress, and the right is granted to the tunnel owners to 1,500 feet of each hlind lode not prsviously known to exist, which may be discovered in snch tonnsl, but that other parties are in no way deharred from prospecting for hlind lodes or running tunnels so long as they keep without the line of the tunnel as herein defined, the said line heing required by regulations to he marked on the snrface hy stakes or monnments placed along the same from the face, or point of commencement, to the terminns of the tunnel line aforesaid.

"When a lode is struck or discovered for the first time by running a tnnnel, the tnnnel owners have the option of recording their claim of 1,500 feet all on one side of the point of discovery or intersection, or partly npon one and partly upon the other side thereof, hut in no case can they so record their claim as to absorb the actnal or constrnctive claim or possession of other parties on a lode which has heen discovered and claimed outside the line of the tunnel, hefore the discovery thereof in the tunnel."

The location nnder which said company olaim their title describes a tract of land 3,000 hy 1,500 feet and embraces more than 100 acres of land.

There is no authority for location of this size, either in the local laws or Congressional enactments.

It has always been the policy of the Government, as shown by the statutes providing for the disposal of the public lands containing minerals, to prevent an individual or company from acquiring title to large tracts of mineral land.

To recognize a location of the extent claimed by said oompany would he without authority of law and contrary to its expressed provisions.

The tnnnel location can only be recognized to the extent as authorized by law, to wit: Six feet wide and 3,000 feet in length along the course of said tnnnel.

Said adverse claimants filed a plat representing the conflict hetween said claims, oo the same day that said adverse claim was filed, to wit: Jannary 30th, 1876.

This plat represents that said tunnel, if projected, will intersect the said Slide lode at the distance of twelve hnndred and forty-three and one-half feet from the face of the tnnnel, and about two hnndred and twenty-five feet sonthwesterly from the discovery shaft on said Slide lode.

On the 4th of February a second plat was filed, which is certified to by the same depnty surveyor who certified to the plat filed on the 20th day of Jannary.

This represents the Slide lode in the same position with reference to said tnnnel that the first plat does. But an evident error appears upon this plat, in stating that it is nine hnndred and twenty feet from the face of the tnnnel to the intersection with said lode.

As hefore stated, the plat shows that the discovery shaft of the Slide lode is about two hundred and twenty-five feet southwesterly from the point whence the tunnel, if projected, will intersect said lode.

The papers seem to establish the fact that the Slide lode is not a hlind lode, hnt one which was discovered on the snrface.

The law gives to the tunnel owners only snch lodes as may be *discovered* in such tnnnel, and only prevents the location by other parties of lodes npon the *line of such tunnel*, "not appearing on the surface."

The adverse claim in this case was sworn to hefore A. J. Macky, Depnty Clerk of Bonlder, Colorado.

The applicants nrge that said adverse olaim was not verified in accordance with the Mining act of May 10th, 1872, and the Revised Statutes of the United States.

The Revised Statntes of the United States, section 2,335, provide that "all affidavits required to he made nnder this chapter, may be verified before any officer anthorized to administer oaths within the land district where the claims may he sitnated."

The honorable acting Secretary of the Interior, on the 28th day of October, 1873, in the case of the Dardanelles mining company vs. the California mining company, gave a constrnction to this section of the law, and rejected the adverse olaim, as the same had been sworn to before a Commissioner of Deeds for Nevada, in the State of California, and not hefore an officer anthorized to administer oaths *within* the land district.

This rule was also followed by the honorable Secretary of the Interior in the case of J. H. McMurdy, *et al.* vs. E. S. Streeter, *et al.*, April 30th, 1874.

The adverse claim in this case was not sworn to within the land district, and, under the decision of the head of the department, cannot operate as a bar to the issnance of a patent upon said application. Said adverse claim is accordingly rejected. Yon will inform all parties in interest and acknowledge the receipt heieof.

J. A. WILLIAMSON,
Commissioner.

Leeds District, Utah.

A correspondent of the Salt Lake *Tribune* writes as follows from Silver Reef City: Engaged as I have been for the past fortnight in inspecting the minss of this region and examining every foot of ground, entering every tunnel, shaft and "coyote hole," I cannot yet say I havs seen one-tenth of the mining ground in the vicinity. Vsry few men have done as mnch as ths three or four pioneers of southern Utah. For two years havs they struggled, and now they are about to see the realization of all their wishes.

During the past three weeks our city, now consisting of 250 or 300 hardy miners and hosinsss men, has sprung into existence, and where then nothing hut sage hrush could he seen, to-day we have the

Liveliest Town on the Coast.

Silver Reef City adjoins Bonanza City, and is situated abont one mile northwest of Leeds, at the head of the Pride of the West or White Reef, the richest and most extensive mine ever discovered. I say "mine," for althongh 15 locations, one adjoining the other, have been made, the entire reef is hnt one mine. It has heen opened at 20 different points, and the same ore is found all through it. The most thoronghly developed are the following; Lemon & Shephard, Bonanza, Barbee, Walker, McMnllin, Thompson, Mc Nally and McKelvey, which all show the best grade of ore, in veins averaging from one to seven feet—ore that rnns from $200 to $1,200. A new strike in the Bonanza of

Nins Feet of Ore,

sampling $874, was made on the 25th ult., and the owners are jnhilant.

The Barhee is shipping from 10 to 20 tons of $340 ore daily. A portion of this ore, however, is taken from the Tecumseh, whioh has produced the highest grade of ore, and is really entitled to the oredit of first attracting foreign capital to our camp.

The Thompson, owned by yonr townsmen, Dr. Thompson and Henry C. Bodley, is working three men and extracting from three to five tons of high grade ore daily. The Walker has a force of 15 men engaged in taking out ores.

The Leeds Mining Company's Mill

Is now *en route* from Pioche, and is expected to he in operation within 60 days.

John R. James is now negotiating for a mill, and expects soon to commence operations on a large scale. Two other companies also are endeavoring to bring in mills for custom work, and whichever comes first is sure to realize a fortune, as many thousand tons of good ore are awaiting the arrival of mills. We can easily supply half a score of 10-stamp mills with custom ores.

RECLAIMING THE COLORADO DESERT.—At a meeting of the Academy of Sciences, held this week, Dr. Wozencraft, the originator of the plan to reclaim the Colorado desert, was introduced and gave an interesting account of the scheme. According to his theory the desert was once a portion of the hed of the gnlf of California, but the depoaits hrought down from the mountains by the rivers formed a har that eventually cut off the waters at what is now the head of the gulf, and what remained was gradnally evaporated. The desert has been shown hy the snrveys of Lieutenant Williamson to he over 70 feet helow the level of the ocean, and by turning the waters of the Colorado into irrigating canals around the horders of the desert, the land can he utilized for agricultnral purposes. By thus reducing the temperature a rainfall will be caused over the desert and the adjacent connties of San Diego and San Bernardino in California. Dr. Wozencraft expects to obtain assistance from the Federal government in carrying ont his project, and has sent bills to be introdnced hefore the next Congress, providing means for prosecnting the work.

FOOTPRINTS.—The Pottsville *Journal* is informed of the recent discovory in the Ellangowan shaft of the P. & R. C. & I. Co., near Shenandoah, Pa., of Saurian footprints on coal slates of the Mammoth veins, and adds that these prove the existence of air-breathing animals in the tropical forests which formed anthracite coal, and of a mnch more recent date than those discovered by Prof. Isaac Lea, in the red shale rocks near Mt. Carbon hotel, about one mile south of us, and under the conglomerate rock which forms the basis of our coal deposits. We hope to have a full description of the above recent discovery, to be furnished to the Academy of Natnral Sciences, of Philadelphia, by W. Lorenz, Chief Engineer of the Reading railroad, who is in possession of the remarkable specimen referred to in this paper; he considers these discoveries the more remarkable from the fact that they are the only sign of animal life ever fonnd in the 400 square miles of anthracite, except one shell from the Raven Dale mines, and a few others from the deep shaft in Wyoming valley.

PARTICLES OF IRON IN ATMOSPHERIC DUST.—Mr. Tissandier has been examining various specimens of dust contained in atmospherio air, and finds that, in all cases and under all circumstanoes, they contain minnte particles of magnetic iron. The same particles are also found in rain and snow water, even in specimens taken from Monnt Blanc, at a hight of 2,712 meters above the level of the sea. Mr. Tissandier believes they are of cosmical, and not of terrestrial origin, and considers them to be remains of meteoric masses.

Tybo District.

A correspondent of the Eureka *Sentinel*, writing from Tybo district, says:

The mines are yielding more and hetter ore than heretofore, and as depth is being attained, the attrihutes ars fast becoming more discernihle. The usual quantity of ore is daily mined, extracted and dslivered at the furnaces; snd the various stopes and ore-hreasts of the different leads are yielding up their mineral treasures as ahnndantly as ever they did. The ledge is all that could be desired and the ore is heginning to exhibit a greater admixture of galena toward the deep than it did on the upper levels; so that, taken altogethsr, the outlook is unnsually promising. This is as it should be, for the

Tybo Consolidated

Company has been most prodigal in its outlay and it is but proper that it should have an equitable return from the large sums that have heen expended in placing the property in the fine condition in which we find it at present. Less than two years have elapsed since the smelting operations of the company were inaugurated with but one furnace of a 20-ton capacity. Now there are twa of a united daily reduction power of 50 tons. They are constantly employed in the production of hullion whose grade is not surpassed hy that produced by any other company on the coast. It is not often that we find base hullion to average $460 per ton in gold, silver and lead, as does the bullion molded in this camp. Taking this value of $460 per ton aa a basis for calculation, and the average has, I believe, heen higher, we find that the value of the bullion which has been made and shipped hence since the company first commenced to smelt, as I said less than two years ago, with one small furnace, gives an aggregate retnrn of nearly $850,000 in shining mint drops. Who will, after this announcement, impugn the prodnctive capacity of the Consolidated company's property? This, it will be noted hy the intelligent miniog operator, is no insignificant return when the obstacles and difficulties which always attend the first operations of any undertaking are properly taken into account. But though large the above sum is hnt a mere bagatelle com pared to what the futnre will prodnce.

The Better Times.

The hetter times, for which we had waited so long that we had almost become hopeless, seem to have dawned at last. Business is reviving. The spindles hegin to whirl again; the merchant has his customers; once more that which is produced finds a ready market; and once more there is labor for the workman, and bread and clothing and shelter for the lahorer. After the terrihle lesson we have received, it is a good time to talk about the futnre. Are we to go on again in the old way, and fill up, within a limited period of years, the old measure of foolishness, and tumble again into the old consequences?

It is not necessary that we should do so. We have, from mere necessity, begun to he economical. Let us continue so. Let us huild smaller houses; let us furnish them more modestly; let us live less luxuriously, and tune our personal and social life to a lower key. We have hravely hegun reform in public and corporate affairs. Let us ountinne this, and vigilantly see to it that our trnsts are placed in competent and honest hands. We are committed to a reform in the civil service—a reform which will extinguish the trade of politics, that haa done so mnch to dehauch and impoverish the country. Let us see to it that thia reform is effectively carried ont. Our cohhle houses have tnmhled ahout our ears; let us not reboild them. Our speculations lie in ruins, with the lives and fortnnes they have absorhed. Our fictitious valnes have been extingnished; let us not try to relight the glamour that made them. Our long credits and our depreciated currenoy have wrought incalculable evils; let us not continne them. Let us cease to deal in paper lies and pay in gold our honest debts. Above all, let us he content with modest gains, cease trying to win wealth in a day, and get something ont of life hesides everlasting work and worry. Fully one-half our wants are artificial, and these terrihle struggles for money are mainly for the supply of wants that we have created.—*J. G. Holland, in Scribner for December.*

WOODEN PAPER.—The mannfacture of paper from wood, which is getting to be an established industry, is accomplished by means of a process somewhat as follows; The wood of pine and fir trees (oak is of no nse whatever), is cut into small pieces a little less than an inch long hy half an inch wide and a third of an inch thick, which are then comminnted hy passing them into a machine very like a large coffee mill. It is then boiled, nnder a pressure of 10 atmospheres, in a solntion of oanstic soda for abont four hours. The residue is well washed, hleached, pressed, and lastly dried and ont up into sizes snitable for packing. It is also sent ont unhleached, in which form it is used for a variety of purposes, besides making brown paper. The greatest demand hitherto has heen in Germany and Austria, the former country producing, it is estimated, 250,000 tons of paper a year, and Austria 100,000 tons. If only one-fifth part of this he made with cellulose, that would mean 70,000 tons of this material, which would require 280,000 tons of wood for its prodnction.

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12 WALL STREET, NEW YORK,
Allow interest at the rate of Four per cent. upon daily balances of Gold and Currency.
Receive consignments of Gold, Silver and Lead Bullion, and make Cash advances thereon.
Invite Correspondence from Bankers, Mining Companies, Merchants and Smelting Works.

French Savings and Loan Society,
411 Bush street, above Kearny..... SAN FRANCISCO
4v27tf G. MAHE, Director.

Business Directory.

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GRAY & HAVEN,
ATTORNEYS AND COUNSELORS AT LAW
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BARTLING & KIMBALL,
BOOKBINDERS,
Paper Rulers and Blank Book Manufacturers,
505 Clay street, (southwest cor. Sansome).
2-3m SAN FRANCISCO

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Manufacturer of
Dr. Bly's Patent Artificial Limbs.
OFFICE AND ADDRESS,
No. 166 TEHAMA STREET,
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Awarded the Highest Medal at Vienna.
E. & H. T. ANTHONY & CO.,
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Manufacturers, Importers & Dealers in
ENGRAVINGS, CHROMOS and FRAMES,
STEREOSCOPES & VIEWS.
ALBUMS, GRAPHOSCOPES, PHOTOGRAPHS
And kindred goods—Celebrities, Actresses, etc.
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We are Headquarters for everything in the way of
STEREOPTICONS and MAGIC LANTERNS,
Being manufacturers of the Micro-Scientific Lantern Stereo-Panopticon, University Stereopticon, Adventurer's Stereopticon, Artopticon, School Lantern, Family Lantern, People's Lantern, each style being the best of its class in the market. Beautiful Photographic Transparencies of Statuary and Engravings for the window.

Catalogues of Lanterns and Slides, with directions for using, sent on application. Any enterprising man can make money with a Magic Lantern. ☞ A full stock of views of the Exposition Buildings and their contents.
☞ Cut out this advertisement for reference. ☜

SANBORN & BYRNES,
STAIR BUILDERS,

Mechanics' Mills, Mission Street,
Bet. First and Fremont, San Francisco. Orders from the country promptly attended to. All kinds of Stair Material furnished to order. Wood and Ivory Turners. Billiard Balls and Ten Pins, Fancy Newels and Balusters.

D. LANGELL'S ASTHMA & CATARRH REMEDY.

Having struggled twenty years between life and death with ASTHMA, I experimented by compounding roots and herbs and inhaling the medicine. Fortunately discovered a sure cure for ASTHMA and CATARRH. Warranted to relieve any case of Asthma instantly, so the patient can lie down to sleep. By mail, $1.00 per box. Address D. LANGELL, Apple Creek, Ohio.
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A first-class 16-page Agricultural Home Journal, filled with fresh, valuable and interesting reading. Every farmer and ruralist should take it. It is immensely popular. Subscription, $4 a year.
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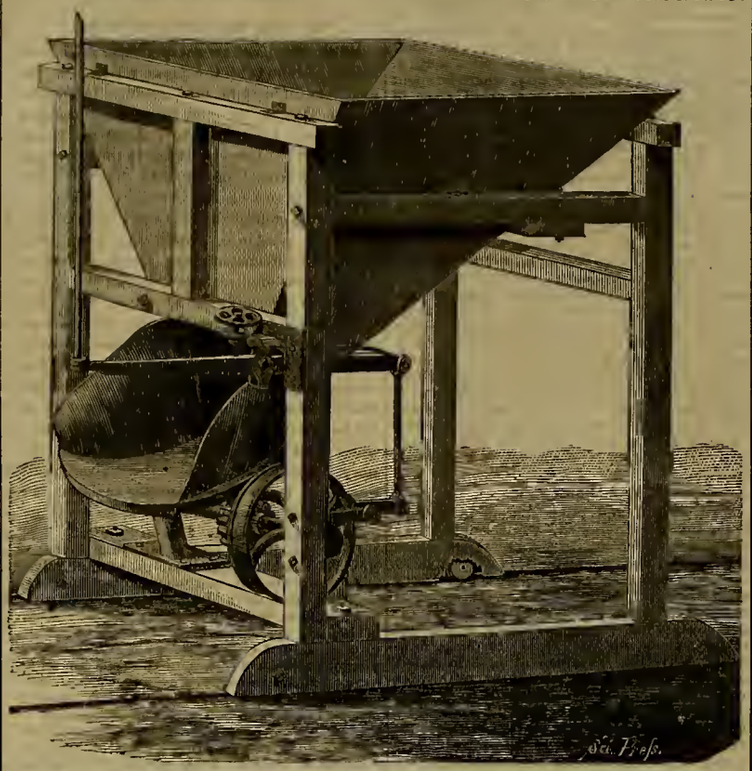
ANGELL'S CHAROOAL DENTAL SOAP for Whitening and Preserving the Teeth. J. W. ANGELL, Prop., San Francisco

$1,000 Challenge Ore Feeder,
AWARDED FIRST PREMIUM
At the Tenth Industrial Fair of the Mechanics' Institute.

It may be considered as now fully demonstrated, by careful and long-continued experimentation, that the plan upon which a perfect ore feeder must be constructed is that of the *carrier*, and not that of the shaking table. Uniform and accurate feeding is not possible upon the latter plan. The ore must be evenly carried, upon a steadily advancing plane, or table, to the line of discharge, and there simply *dropped*. Spasmodic or jerky contrivances will not answer the purpose.
REFERENCES.
A letter received from the Julian Mill, Newcastle, says, of the Carrier Feeder: "It is the most perfect Feeder we have ever seen; don't see how any mill can do without them."——A letter from Mr. C. O. Belding, of Amador County, speaks in the highest terms of them.——Two of the machines were shipped to the Bunker Hill Mill, also Gover Mill, Amador County.——Mr. Stevenson, of Boston Mill, Gold Hill, Nevada, says they are the best Feeder he has ever seen.——Sonlsby Mill, Tuolumne County.——California Company, Nevada City.——Omaha Gold Mining Company, Grass Valley.——St. Patrick Mill, Placer County.

$1,000 CHALLENGE.
Backward in Coming Forward.
O. P. STANFORD FAILS TO COME TO TIME ON THE CHALLENGE OF $1,000 TO TEST THE MERITS OF HIS ORE FEEDER AS AGAINST MINE. THE CHALLENGE IS STILL OPEN TO HIM OR ANY ONE ELSE. *GENTLEMEN, PUT UP OR SHUT UP.*
A letter has been received from the Crescent mine, Plumas county, in which it states that the Tulloch is a failure as against the $1,000 Challenge Feeder of Hendy's.
We warrant the machines to give perfect satisfaction, and to be a better and more durable Feeder than any other in the market, and will sell them as cheap as any other of its class.
For Description, Send for Circular to
J. HENDY, Sole Manufacturer,
Nos. 49 & 51 Fremont St., - - San Francisco, Cal.,
WHERE IT CAN BE SEEN IN OPERATION.
ALSO, MANUFACTURER OF
HENDY'S IMPROVED AMALGAMATOR and CONCENTRATOR,
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MACHINE WORKS,
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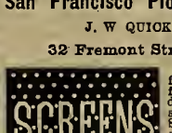
Hoisting Engines.
MANUFACTURERS OF
STEAM ENGINES AND ALL KINDS OF MILL AND MINING MACHINERY,
For Mining and Other Purposes.

AMERICAN MACHINE —AND— **Model Works**

Experimental and fine Special Machinery, Dies, Taps, Punches, Reapers and other tools made to order. Planing, Gear Cutting, Machine Repairing, etc. Models and Patterns for Inventors promptly executed, in wood or metals.
I. A. HEALD, 514 Commercial St.,
Between Sansome and Leidesdorff Sts., San Francisco.

San Francisco Pioneer Screen Works,
J. W QUICK, MANUFACTURER,
32 Fremont Street, San Francisco.


Several first premiums received for quartz mill Screens, and perforated sheet metals of every description. I would call special attention to my SLOT CUT and SLOT PUNCHED SCREENS, which are attracting much attention and giving universal satisfaction. This is the only establishment on the coast devoted exclusively to the manufacture of Screens. Mill owners using battery Screens extensively can contract for large supplies at favorable rates. Orders solicited and promptly attended to.

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IMPORTERS OF AND DEALERS IN
ASSAYERS' MATERIALS
Chemical Apparatus and Chemicals, Druggists Glassware and Sundries, etc.
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We would call the special attention of Assayers Chemists, Mining Companies, Milling Companies Prospectors, etc., to our large and well adapted stock
ASSAYERS' MATERIALS
—AND—
Chemical Apparatus,
Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.
☞ Our Gold and Silver Tables, showing the value per ounce Troy at different degrees of fineness, and valuable tables for computation of assays in Grains Grammes, will be sent free upon application.
7v25-tf JOHN TAYLOR & CO.

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Assay Office and Chemical Laboratory,
524 Sacramento Street, S. F.
Deposits of bullion received, melted into bars, and returns made in from 24 to 48 hours.
Bullion can be forwarded to this Office from any part of the interior by Express, and returns made in the same manner.
Careful Analyses made of Ores, Metals, Soils, Waters, Industrial Products, Etc. Mines examined and reported upon. Consultations on Chemical and Metallurgical questions.

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21 First street, 3 doors from Market, S. F.
Ores worked by any process.
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Assaying in all its branches.
Analysis of Ores, Minerals, Waters, etc.
Working tests made.
Plans furnished for the most suitable process for working Ores.
Special attention paid to Examinations of Mines; plans and reports furnished.
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Mining Engineers and Metallurgists.

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(Opposite the U. S. Branch Mint.
SAN FRANCISCO CAL. 7v21-3m

Instructions in Assaying,
Chemical Analysis, Determination of Minerals, and use of the Blow-pipe.
HENRY G. HANKS
Will receive a few pupils at his new laboratory, 617 Montgomery street, up-stairs. TERMS MODERATE

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PAUL'S DRY PROCESS.
I am now prepared to test gold and silver milling ores in any quantity from TEN POUNDS to FIFTY TONS, and assert my ability to prove, by machinery NOW UP, and open to public inspection, and by practical testing of its merits, that I can increase the yield of gold mills, working wet batteries and copper plates, from FIFTY to ONE HUNDRED PER CENT., and on silver ores a much larger percentage than by pan amalgamation, and at less expense than any known method of working quartz well; and from some "gold" ores of California can extract more silver extra with the gold, which is now lost, than all the expenses of mining and milling. Having had 25 years' practical experience in milling gold and silver ores, I presume to know whereof I speak, and AM PREPARED TO PROVE ALL I ASSERT. These mills, for simplicity, cheapness practicability and perfection in working, challenge the skill of the age to surpass. Quartz miners who desire to investigate and have their ore tested, are invited to a critical examination of the machinery and process, and can receive permits for examination, particulars and pamphlets explaining process by calling at my office. ALMARIN B. PAUL.
Room 20, Safe Deposit Building, 328 Montgomery St

Assaying Taught. *Practical Instructions on General Analysis.*
J. Phillips M.E.
EXAMINER OF MINES, MINERAL ASSAYER &c.
640 CLAY ST S.F.
Author of Explorers', Miners', & Metallurgists' Companion, 672 pages, 831 Illustrations. Price 2d edition, $10.50. Also, "WEE PET" Assaying Machine. Price, $100.

Continued from Page 397.

sesson just closed have amounted in the aggregate to 1,300,000 pounds, of which the average per cent. of copper in these ores has been a little above 40, showing a value, at Salt Lake prices, of these ores sent to the States of nearly $5% 000. Independent of copper ores, there has been 700,000 pounds of silver ore, representing a value (estimated) of about $100 000, shipped to the East. These shipments combined, amounting up a thousand tons and showing a value of over $150,000—while comparatively light in comparison with older mining camps of other Territories, are, for a new place like Butte, a very encouraging indication of the growing prosperity of this section of the Territory, when taken in point of view with the shipments for the same time in the year previous, which were less than one-tenth, or about 100 tons of both copper and silver ores combined. To transport these ores to the railroad there has been paid to freighters during the season $35,000, or nearly 25 per cent. of their value. This heavy cost for moving ores a distance of less then 500 miles has prevented the shipment of hundreds if not thousands of tons additional of lower grade ores from this camp during the season, as after paying all expenses for taking them to a market, the margin of profit has been too small to make it remunerative for miners to send other than their high grade ores.

Colorado.

CASHIER.—Coloredo *Miner*, Dec. 2: It is reported on good authority that this valuable property is about to change hands at a fair price. With proper development it will doubtless prove a formidable rival to its neighbor, the Terrible.

RICH STRIKE.—Messrs. Egerton, Westfall & Co., leasing on the Steamboat lode, Leavenworth mountain, have struck it big. They are driving a drift east from the bottom of the 90 foot shaft sunk from the tunnel level, and at the distance of 40 feet have an ore streek of one and a half to three inches of ore, which runs from 1,500 to 3,000 ounces per ton. They have yet 100 feet to drift before they reach the surface, and we trust their luck will hold all the way.

STEWART REVIVUE.—It is pleasent to note the fact that the irrepressible J. C. Stewart has come up again, bravely as ever, rising from his ashes in better form than the fabled Phœnix. He has a neat little five-stamp mill, with leaching process (modified Hunt & Douglass) attached, in successful operation, and will be pleased to see his old friends and customers at the office once more. A large lot of Gilpin county gold ore has been treated lately with excellent results.

NEW LODE.—W. A. Campbell is now engaged in the development of a lode located about four miles northwest of Fall river, near Silver City, which makes a remarkably good showing for that district. At a depth of 150 feet, the vein carries from six to ten inches of ore, which runs one and a half ounces gold and 238 ounces silver per ton.

BOULDER CO.—Bonlder *News*, Dec. 2: Prof. Hill was in town yesterday, looking after the business of his large ore establishment here. It is now ready for business, bnilding complete, machinery set, and one pile of ore on hand—15 tons of the rich stuff from the Melvina. Than the establishment of this market, no more important step was ever taken in the advancement of Boulder county mining.

Oregon.

THAT RICH MUD.—Oregon *Sentinel*, Dec. 6: T. G. Reamea received last week, from H. B. Catman, of Portland, a can of the "mud" taken from the newly discovered silver mines on Crooked river, Wasco county, which now are attracting the attention of the people of Willemette valley, and about which there has been so much said in the newspapers recently. This discovery is said to be a number of boiling hot springs which continually throw to the surface a muddy substance resembling soap, and strongly impregnated with alkali, in which pure chloride of silver is found in such quantities as to assay from four to twelve thousand dollars per ton. The can which Mr. Reems received is one in which a pound of white lead had been put up, and the "mud" weighed exactly one pound, which shows that it is very heavy. We understand that 300,000 shares of stock in this mine, at ten cents a share, was put upon the market of Portland and was readily disposed of.

Idaho.

EMPIRE.—Owyhee *Avalanche*, Dec. 9: Work is progressing very favorably at this mine, and the developments are unusually satisfactory. There are 300 tons of ore on the dump awaiting crushing, and the parties engaged in running the mine are sanguine of very favorable results.

It is expected that operations will be resumed at the Poorman mine in a few days. With the exercise of some care and prudence in crushing the ore, that mine could be made a magnificent fortune to its owners.

ROCK is now being hauled from the Belle Peck mine for crushing at the Shoenbar mill.

SOUTH MOUNTAIN.—Some time ago Messrs. Vincent & Vinton sent 4,200 pounds of ore from two of the mines here to San Francisco, and are anxiously awaiting the result of the smelting thereof, as it will, in all probability, prove a good advertisement for the camp.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING DECEMBER 5TH.

COMBINED HOSE-CART REEL AND IRRIGATOR.—Edward J. Delaney, San Jose, Cal.

DEVICES FOR PULLING FILES AND POSTS.—Richard Hillyer, S. F., Cal.

CLAMPS FOR WIRE ROPES.—Henry R. Taylor, S. F., Cal.

CAR TRUCKS FOR PRISMOIDAL TRACKS.—Edward B. Dorsey, S. F., Cal.

RULERS.—Charles M. Hays, Silver City, Idaho.

ENVELOPES.—Levi J. Henry, S. F., Cal.

CLAMPS FOR HOLDING HAND RAIL WREATH PIECES.—Christopher Lamb, S. F., Cal.

SPRING BED BOTTOMS.—Ambrose J. Lattin, Alvarado, Cal.

MINING RIFFLES.—August Mann, Big Oak Flat, Cal.

RE-ISSUE.

VEHICLE SEATS.—Frederick Oppenheim, S. F., Cal.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

THE CASE of the Emma silver mining company (limited) of London, against Trenor W. Park, Henry H. Baxter and Wm. M. Stewart to recover $5,000,000 is on trial in the United States Circuit Court of New York.

Comstock Papers.

No. 12.

Emanuel Penrod,

Who owned, at one time, a sixth of the Ophir ground, besides valuable claims at Gold Hill, came overland from Illinois and settled in Washoe early, having prior to the Comstock discovery never been in California. He took up a ranch on Clear creek, a few miles south of the present site of Carson City, where he spent his time between cultivating a small tract of land and placer mining, which latter calling he followed on the bar at Chinatown, and along Gold canyon. He was among the first to obtain a foothold in the new silver mines, the value of which he seems to have appreciated from the first. Being, however, a cautious and prudent man, he disposed of nestly all his interests early, realizing only moderate figures for the same. For his one-sixth share in the Ophir, sold to Judge Walsh, he received $6,200. He remained on his ranch for some time and until it became quite valuable, when he disposed of it and removed to Elko county, Nevada, where for several years past he has been engaged in hydraulic mining, and, according to report, doing remarkably well. Penrod always enjoyed among his neighbors and those who had dealings with him, an excellent reputation for honesty and good sense. He was also a person of fine courage and superior business qualifications, being, in fact, a good type of the straight-forward, enterprising Western man.

V. A. Houseworth.

Like Penrod and other settlers in western Utah, this man, tempted, while on his way overland to California, to tarry and try his luck in the placer diggings along Gold canyon, or to turn aside and seek refreshment for his famished stock and jaded teams in the grassy valleys that lie along the foot of the Sierra, remained through the approaching winter and finally made up his mind to stop altogether, converting what was at first intended as a mere sojourn into a permanent settlement in the country. Houseworth came from western Pennsylvania, and being a blacksmith by trade, settled soon after he arrived in the country at Gold Hill, where he found profitable employment shoeing the horses and sharpening the picks of the miners. Being a man of intelligence, steady habits and good character, he was elected first recorder of the district. He owned in the Yellow Jacket and other claims about Gold Hill, and also one twenty-fourth of the Ophir, which last he disposed of for the sum of $2,000, Judge Walsh and Dr. Ober, an old and well-known resident of San Francisco, being the purchasers. The various mining interests which he parted with in 1859-60 for $3,000 or 4,000, would have brought him $500,000 or more had he held on to them a year or two longer. Having made a little "stake," which no doubt seemed to him a great deal of money, Houseworth returned to his old home soon after; and, although he came back to Washoe a few years later, he does not seem to have remained long. The probabilities are that he saw little opportunity, under the changed condition of things, for a man like him to further increase his "pile" or make another raise, and so betook himself again to a country where the chances for realizing a fair return for his labor were more certain, if not quite so tempting.

Naming the Mines—History of their Etymology.

In a majority of cases the names applied to the original locations on the Comstock lode require no explanation, the terms themselves, though in many instances wholly fanciful, sufficiently indicating their derivation and meaning. Of the 43 claims that may properly be referred to this class, 26 have been named in accordance with the rule here mentioned, 17 bearing the names of the parties who took them up or bought them from first hands soon after they were first located. Those at all conversant with this branch of etymological history need not be told how whimsical and even absurd are sometimes the primary reasons that operate upon the mind of the prospector when selecting names for his mining locations; hence the far-fetched and tautastical appellations so frequently given them. In the Comstock vocabulary this absurd style of nomenclature is not conspicuously apparent, the terms Ophir, Bullion, Exchequer, Challenge, Confidence, Empire and Imperial, as suggestive of certain ideas and properties, being appropriate enough; nor can any exception be taken to the remainder of this class, though not so happily chosen as the above.

The Allen and the Mexican Grounds.

We have already spoken of the fate of Allen, locator of the ground lying between the Utah and the Sierra Nevada, in which he was at one time largely interested and which still bears his name. The Mexican mine was so called after the Meldonado Brothers, two Mexicans who bought it in 1860 and afterwards worked the ores by the patio method, preparing at Virginia City an extensive yard with many arastras for the purpose. These were the only works ever erected in Washoe whereat this plan of ore reduction was practiced on a large scale. The Meldonado's were skilful miners in their way, working their ore more closely than was generally done by others at the time. They made money, and finally sold their mine to Alsop & Co. for a good price, after which they returned to their native country. This piece of ground went for a long time by the name of the Spanish claim, and is so designated on the earlier maps, the Mexicans being indifferently called Spanish, referring to the nationality of their ancestors and the language they speak, as the Americans are for the same reasons called English.

Another Mining Swindle.

The Silver Mud Springs of Oregon.

Within the past few weeks articles have been going the rounds of the press relative to the discovery of certain mud springs in Wasco county, Oregon, the mud from which assayed all the way from $300 to $12,000 per ton in silver. The "discovery" was in the appropriate neighborhood of Crooked river. There were said to be a number of boiling hot springs, which were continually throwing to the surface a mushy substance, resembling soap, and strongly impregnated with alkali, in which pure chloride of silver was found in such quantities as to assay up to $12,000 per ton. The bait seems to have taken, for only this week we notice that the Oregon *Sentinel* states that 300,000 shares of stock in one of the mines was readily disposed of in Portland at 10 cents per share; how much more was sold we do not know. We have refrained from mentioning this "find" while waiting for some verification of the story. Meantime, samples of the "silver mud" were sent to Prof. Silliman for analysis, and his reply, dated from New Haven, he gives us permission to publish. It is as follows:

I am this day in receipt of your favor of Nov. 25, covering a small sample of the "silver mud" from Oregon, and the clip from the Portland *Bee*, detailing in Munchausen style the wonderful find in Wasco county, telling of "acres of boiling springs, which, instead of water, flow streams of chloride of silver. Shiploads of precious metal are represented to be in sight in the shape of a soapy gray substance, somewhat resembling quicksilver. The molten masses bubble and boil with escaping gases. * * * About 160 acres are covered with these springs, ranging from a few feet to a hundred yards across. Each one is surrounded with a rim of crystallized silver," and more of the same wonderful narrative which need not be quoted, as any vivid imagination can make as much of such moonshine as may suit the taste.

But I hasten to inform you that I immediately put the marvelous mud, which you sent me, under examination. It is a light gray dry powder, quite fine, and resembles mill tailings or pulp when wet up.

Boiled with ammonia it yields not a trace of silver chloride.

Boiled with nitric acid it evolves red fumes and the filtrate treated with hydrochloric acid gives a copious curdy precipitate of silver chloride. From this reaction I was nearly certain that the silver existed in the metallic state in the pulp, and proved it beyond doubt, as follows: To demonstrate this a portion of the powder was separately washed by water in a test tube, and the successive washings decanted. The heavy residue was mostly white, with some angular fragments, quite small, and a few black grains like iron sand. This concentration examined by reflected light under a low microscopic power—two inch—at once displays a great number of pure white frosted masses which are opaque by transmitted light, resembling exactly the form taken on by silver when precipitated from solution by copper, or more closely the frosted lumps left by treating silver chloride by zinc and dilute sulphuric acid. To make sure of there being no optical deception, these masses, while yet in the fluid of the instrument, were treated with a dilute solution of ammoniam sulphide. They at once commenced to gain color, first yellowish, and finally dark brownish-black, leaving no doubt whatever of their nature. But any miner with his "horn" will at once solve this little riddle by washing a small particle of the stuff free of slimes and rubbing down the heavy grains in an agate mortar, or between two slips of glass, when the brilliant grains of polished metallic silver will at once appear as thin scales.

I am not surprised that Prof. Price found nearly $3,000 to the ton of this silver mud! It has plainly been very severely 'salted.'

Perhaps the honest miners who have made this very interesting 'find' will kindly tell us the curious chemistry of Waeco county, Oregon, by means of which thermal springs throw up metallic silver (and "crowbars" also!) and the nature of the escaping gases which cause "the molten mass to bubble and boil!"

Yours truly, B. SILLIMAN.

In verification of Prof. Silliman's opinion, a private letter was received from Portland on the same day as the report, (Thursday,) stating that the mud springs are reported a dead beat. Moreover, that they were salted by the same parties who not long since put up the job of base metal placer gold, purporting to have come from the Stickeen river mines. Some $30,000 in this bogus gold was sold in the British possessions before the fraud was detected. We have no means of knowing how much was made on the silver speculation. Lookout for a lead mine swindle next!

THE Wellington coal mines at Nanaimo, which were lately on fire, are again putting out coal at the rate of 140 tons per day.

New Publications.

From Bancroft & Co. we have received "English History in Short Stories." This little book is not a history of England. It is a compendium of facts about England, its history, government and antiquities—facts which all English-speaking people ought to know, and which are not readily accessible to those Americans who do not have good libraries at hand. It also contains a series of sketches of each of the English monarchs; not histories of their reigns or complete biographies, but estimates of the historical importance of each. As an appendix to the work are published brief descriptive sketches of the countries of Great Britain and Ireland. The facts are given in a condensed form and the little book forms a very convenient and pleasantly written hand book on the subject of which it treats.

"Theoretical Mechanics," by W. Rossiter, is No. 6 of Putnam's Elementary Science Series, (Payot, Upham & Co). This is an elementary hand book on the subject, with 145 diagrams. The main purpose is to explain, in simple language, so much of the science of theoretical mechanics as is deemed necessary. "Applied Mechanics," by the same author, (No. 7 of the series), is, as the title indicates, supplementary to No. 6. Both are of value as works of reference. A great variety of information is given in a form which makes it easy for reference and in a condensed form. The engravings are simple and intended only to illustrate the text.

"The Complete Practical Machinist," by Joshua Rose, (Bancroft & Co.) illustrated with one hundred and thirty engravings, has been before referred to. The subjects embrace lathe work, vise work, drills and drilling, taps and dies, hardening and tempering, making and the use of tools, etc. The author states as his aim the desire to develop from the promiscuous practices of the workshop its inherent science, and present it to the mechanic so arranged that he will find each formula the natural sequence of its predecessor; and while explaining its positive conditions to so present its negative ones that the mind will instinctively seek the remedy which its successor will supply. A large portion of the contents of this work originally appeared during the past two years in the *Scientific American*. The various subjects, however, are here treated more fully, while a large quantity of entirely new matter has been added. The book is one of the most valuable to mechanics that we remember. The variety of information given and the style in which it is written recommend it to the mechanic, while—as the title indicates—the practical character of the contents render it useful both in and out of the workshop. A large amount of information will be found in these pages difficult to gather elsewhere unless by practical work; and even the most skilled mechanic can profit by the experience of many, so that to him, no less than to the apprentice, Mr. Rose's work will be of value.

"Theory and Calculation of Continuous Bridges," is the title of No. 25 of Van Nostrand's Science Series. This little volume is by Mansfield Merriman, instructor in civil engineering in the Sheffield Scientific School of Yale College. It is divided into three chapters. The first presents by way of introduction some of the elementary principles of continuous girders, and the fundamental ideas relating to the calculation of strains. The second gives the theory of flexure, as applied to the continuous truss of constant cross-section, and exhibits it in formulæ, ready for application to any particular case; and the third gives an example of the computation of strains in a continuous truss of five unequal strains, with some useful hints concerning the practical building of such bridges. The work will be found of value to bridge engineers as well as to students in general. Payot, Upham & Co. have this for sale.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

ARGENTA M. Co.—Dec. 8th. Location: Nevada. Directors—G. W. Grayson, E. M. Hall, M. J. McDonald, M. Herman and John F. Cassel. Capital stock, $10,000,000.

CHAMPION M. Co.—Dec. 8th. Location: Nevada county. Directors—J. J. Rey, Henry Steinberger, George C. Hurlburt, George Fletcher and H. Vogelmann. Capital stock, $300,000.

SUMMIT COAL M. Co.—Dec. 9th. Location: Alameda county. Capital stock, $10,000,000. Trustees—S. N. Putnam, Charles Hadsell, A. J. Stevens, J. Richards and N. Hamilton.

WENONA M. & M. Co.—Dec. 9th. Capital stock, $10,000,000. Trustees—J. H. L. Tuck, H. S. Huntington, Ira G. Hoitt, W. Ayer and J. Pentscost.

F. A. SEABURY, who was in Belmont, Nye county, Nev., in 1867-9, when last heard from, will learn of something of importance by calling or addressing the PRESS office, 224 Sansome street, San Francisco, Cal. Any information concerning Mr. Seabury's whereabouts will be thankfully received.

THE BANK OF CALIFORNIA has decided to reduce the rate of interest on commercial paper to nine per cent. per annum. It is probable that the other banks will take a similar course.

THERE are a large number of men in Virginia City unable to find work. The Gold Hill *News* warns workingmen to keep away from that region.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

General News Items.

The Spanish Cortes has passed a law making education obligatory.

The war between Egypt and Abyssinia is to be prosecuted.

Cardinal Simeoni has taken the oath of office and entered on his duties as Antonelli's successor.

Alfred Ver Mehr, the defaulting clerk of Parrott & Co., has arrived from Mexico in charge of a detective.

M. Abbadie, who had accumulated a fortune of $4,500,000 through the manufacture of paper for cigarettes, died recently in France.

E. A. McCullough has been appointed Revenue Storekeeper of the First District of California.

The New York *World* says that more than 30 vessels are ashore near Sandy Hook because of the late fearful gale.

Benefits will be given in all the theaters in this city in aid of the sufferers by the great calamity in Brooklyn.

One of the workmen engaged in excavating in Sansome street, in front of the Bank of California, for a sewer, shoveled up a man's skull on Saturday.

It is almost conceded now that the British ship *British King* will never be heard from again. She was a fast sailer and is long overdue.

The Oxford University rowing club has declined the challenge of the Yale and Cornell clubs to a four-oared race on the Thames next August.

Austria intends to appropriate 700,000 florins in order that her industries may be worthily represented at the Paris Exposition of 1878. Of this sum 200,000 is to be employed in 1877.

The attendance at the Moody meetings in Chicago is steadily on the increase, instead of falling off, as was anticipated with the severe weather. The temperance meetings especially are largely attended.

A bill introduced by Senator Merrimon provides that the Secretary of State, or in case of his death, the Secretary of the Treasury, shall succeed to the presidency in the event of the death or resignation of both president and vice president.

The block bounded by Brannan, Third, Townsend and Fourth streets, where the great fire raged in August, is being rebuilt. The carhouses and stables of the Bay View and Potrero company are being built of brick, with corrugated iron roof. These buildings, three in number, are to be as near fire-proof as possible.

The Spring Valley's water bill against the city has grown to about $230,000, because of the improvement of the public squares and the consequent increase in the amount of water consumed. Judge Dwinelle's decision in the $92,000 mandamus case will be rendered soon, and the case will doubtless be taken to the Supreme Court.

Advices from Panama are to the effect that the gentlemen whom the civil and international society appointed to survey the Paya and Caeania route for the inter-oceanic canal arrived at Aspinwall, and are making preparations to commence the survey as soon as the dry season sets in. The exploring party comprises representatives from the principal countries of Europe except Germany.

No efforts have been made this session in behalf of the Texas Pacific railroad bill, all special legislation yielding, for the present, to politics. The general feeling of the House is to adjourn at an early date until after the holidays, if the Senate will concur, or otherwise to meet and adjourn every third day, until the House investigating committee shall have returned from the South.

A Berlin dispatch says, the fact that the Russian government does not prohibit private meetings to promote the purchase of American vessels, to be used as privateers in case of war, is creating much comment among German ship-owners, who, being largely engaged in the carriage of Russian merchandise, fear the ruin of their trade if England should ever be compelled to resort to reprisals.

LEATHER.

[WHOLESALE.]

WEDNESDAY, M., Dec. 13, 1876.

Sole Leather, heavy ₰ lb	25@ 28
do do light ₰ lb	20@22
Jodot, 8 Kil., per doz	48 00@ 50 00
Jodot, 11 to 13 Kil., per doz	85 00@ 79 00
Jodot 14 to 18 Kil., per doz	82 00@ 84 00
Jodot, second choice, 11 to 16 Kil. ₰ doz	57 00@ 74 00
Cornellian, 12 to 18 Ko	57 00@ 67 00
Cornellian Females, 12 to 13	63 00@ 67 00
Cornellian Females, 14 to 16 Kil	71 00@ 76 50
Simon Ulmo Females, 12 to 13, Kil	58 00@ 62 00
Simon Ulmo Females, 14 to 15, Kil	66 00@ 70 00
Simon Ulmo Females, 16 to 17, Kil	72 00@ 74 00
Simon, 18 Kil., ₰ doz	51 00@ 63 00
Simon, 20 Kil. ₰ doz	65 00@ 67 00
Simon, 24 Kil. ₰ doz	72 00@ 74 00
Robert Calf, 7 and 8 Kil	35 00@ 40 00
French Kips, ₰ lb	1 00@ 1 15
California Kip, ₰ doz	40 00@ 60 00
French Sheep, all colors, ₰ doz	8 00@ 13 00
Eastern Calf for Backs, ₰ lb	1 00@ 1 25
Sheep Roans for Topping, all colors, ₰ doz	9 00@ 13 00
Sheep Roans for Linings, ₰ doz	5 50@ 10 50
California Russett Sheep Lining	1 75@ 4 50
Best Jodot Calf Boot Legs, ₰ pair	5 00@ 5 25
Good French Calf Boot Legs, ₰ pair	4 00@ 4 75
French Calf Boot Legs, ₰ pair	4 00@ —
Harness Leather, ₰ lb	24@ 32½
Fair Bridle Leather, ₰ doz	48 00@ 72 —
Skirting Leather, ₰ lb	33@ 37½
Welt Leather, ₰ doz	30 00@ 50 00
Snff Leather, ₰ foot	17@ ½
Wax Side Leather, ₰ foot	17@ —

METALS.

[WHOLESALE.

THURSDAY, M., Dec. 14, 1876.

American Pig Iron, ₰ ton	20 00 @ —
Scotch Pig Iron, ₰ ton	29 00 @ 30 00
White Pig, ₰ ton	— @ 30 00
Oregon Pig, ₰ ton	— @ —
Refined Bar	— @ 4¼
Boiler, No. 1 to 4	5½ @ 8
Plate, No. 5 to 9	5¼ @ 8½
Sheet, No. 10 to 14	— @ —
Sheet, No. 16 to 20	5½ @ —
Sheet, No. 22 to 24	5 @ —
Sheet, No. 26 to 28	6½ @ —
Horse Shoes, per keg	— @ 6 00
Nail Rod	— @ —
Norway Iron	8½ @ 9½
Rolled Iron	7½ @ 9
COPPER.—	
Copper Tin'd	— 37 @ — 40
Sheathing, ₰ lb	— 37 @ — 40
Sheathing, Yellow	— 21 @ — 23½
Sheathing, Old Yellow	— 14 @ — 11
Composition Nails	— 21 @ —
Composition Bolts	— 24 @ —
STEEL.—English Cast, ₰ lb	— 14 @ — 25
Anderson & Woods' ordinary sizes	— @ — 16
Drill	— @ — 16
Flat Bar	— 16 @ — 20
Plow Steel	— 8¼ @ — 12½
TIN PLATES.—	
10x14 I O Charcoal	10 50 @ — —
10x14 I X Charcoal	12 50 @ — —
Roofing Plate I O Charcoal	10 00 @ 10 50
Banca Tin	— 24 @ — —
Australian	— 18 @ 18 ½
ZINC.—By the Cask	— @ — 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₰ lb	— @ — 11
do do 7x3 ft, No 11 to 14	— @ — 11½
do do 8x4 ft, No 8 to 10	— @ — 12½
do do 8x4 ft, No 11 to 10	— @ — 12
NAILS Assorted sizes	3 50 @ — —
QUICKSILVER, per lb	— @ — 55

GENERAL MERCHANDISE.

WHOLESALE.]

WEDNESDAY, M., Dec. 13, 1876.

BAGS.

Eng. Stand Wht..	9¼@10
Neville & Co's..	
Hand Sewed 22x36	9½@10
24x36	10½@11½
22x40	11 @12
Machine do 22x36	9½@10½
Flour Sacks ¼s	9 @11
" " ½s	8 @ 7
" " ¾s	4½@ 5
Hessian 60-in	11 @12
do 45-in	9 @10
do 40-in	8 @ 9
Wool Sacks, 3½ lbs	45 @50
do "	50 @52½
Stand. Gunnies	11½@12
Bean Sacks	7 @ 8

CANNED GOODS.

Asst'd Pie Fruits	
1lb 2¼ ₰ cans	2 75 @ 3 60
do Table do	3 75 @ 4 25
Jams & Jellies	4 25 @ —
Pickles ¼ gl	— @ 3 50
Sardines, qr hoxi	65 @ 1 90
do hf boxes	3 00 @ —

COAL.—Jobbing.

Australian, ₰ ton	8 00 to 8 25
Coos Bay	8 00 @ 8 00
Sellingham Bay	— @ 8 00
Seattle	— @ 8 00
Oumberl'd	14 00@17 00
Mt. Diablo	5 75 @7 75
Lehigh	— @22 00
Liverpool	8 50 @ 9 00
West Hatley	— @14 00
Scotch	8 50 @ 9 00
Scranton	13 00 @16 00
Vancouver's Isl.	10 50 @12 00
Charcoal, ₰ sk	75 @ —
Coke, ₰ bbl	— @ 50

COFFEE.

Sandwich Island	— @ 21½
Costa Rica per lb	21 @ —
Guatemala	20½@ 21½
Java	— @ 23
Manilla	20 @ 21
Ground in oil	25 @ —
Unioory	27 @ —

FISH.

Sac. Dry Cod, new	5 @ 5½
cases	6 @ 7
do boneless	8½@ 10
Eastern Cod	8 @ 8½
Salmon in bbls	6 50 @7 25
do ½ bbls	3 75 @4 00
do 2lb cans	2 65 @ —
do 1lb cans	1 80 @ —
do Oil	4 25 @4 50
Pick. Cod, bbls	22 00 @ —
oo ½ bbls	11 00 @ —
Mack'l No. 1, ½bls	11 00 @ —
" Extra	@12 00
" in kits	1 25 @2 50
" Ex mess	3 50 @4 00
" Ex mess, ½bs	@12 00
Pic'd Herr'g, hx	3 00 @ 3 50
Bost. Sm'k'd Her'g	40 @ 50

LIME, ETC.

Lime, S'ts Orux	— @ —
₰ bbl	2 00@ 2 25
Cement, Rosendale, do	2 75@ 3 50
do Portland do	4 75@ 5 50
Plaster, Golden Gate Mills	3 00@ 3 25
Land Plaster, ₰ ton	10 00@12 50
Palu	@ 7½

NAILS.

Assorted size, keg 3 25 @4 00

OILS.

Pacific Glue Co	
Neat Ft'l No. 1	1 00 @ 90
Pure	— @ —
Castor Oil. No. 1	2 25 @ —
Saker's A A	1 25 @1 30
Olive Pickling	2 25 @2 50
do Possel	4 45 @4 50
Palm lb	9 @ —
Linseed, raw	— @ 75
do boiled	— @ 80
Cocoanut	— @ 80
China nut in oa	— @ 70
Sperm	1 60@1 65
Coast Whales	50 @ 55
Polar, refined	62½@ 65
Lard	1 10@1 15
Oleophine	— @ 44
Devoe's Brill't	44 @ 45
Nonpariel	50 @ —
Kureka	32½@ 38
Barrel kerosene	32½@ —
Cowee Kerose'e	45 @ —
Elaine	— @ 42

PAINTS.

Pure White Lead	9¾ @10¾
Whiting	@ 1¾
Putty	4 @ 4½
Chalk	— @ 1½
Paris White	— @ 2½
Ochre	— @ 3½
Venetian Red	— @ 3½
Averill Chemical Paint, per gal. White & tints	2 00 @2 40
Green, Blue & Ch Yellow	3 00 @3 50
Light Red	3 00 @3 50
Metallic Roof	1 30 @1 80

RICE.

China No. 1	5¾@ 6
Hawaiian, ₰ lb	— @ —
Carolina, ₰ lb	10 @ —

SALT.

Cal. Bay, per ton	10 00@14 00
do Common	5 00@ 7 00
Carmen Island	12 00@15 00
Liverpool fine	15 50@16 50

SOAP.

Castile ₰ lb	10 @ 10½
Common brands	4½@ 6
Fancy do	7 @ 8

CANDLES.

Orant's	16 @ 16½
Mitchell's	18 @ 20

SPICES.

Cloves ₰ lb	45 @ 47½
Cassia	23½@ 25½
Citron	28 @ 30
Nutmeg	95 @ 97½
White Pepper	14½@ 15½
Cayenne	16 @17½
Gr'nd Allsp'r dz	@1 00
do Cassia do	@1 50
do Cloves do	@1 50
do Mustard do	@1 50
do Ginger do	@1 00
do Pepper do	@1 00
do Mace do	@2 00
Sowen's Pure Ground ₰ lb	@ 50

SUGAR, ETC.

Cal. Cubs per lb	— @ 13½
Circle A crushed	— @ 13½
Powdered	— @ 13⅜
Fine crushed	— @ 13½
Granulated	— @ 13
Golden C	— @ 11½
Hawaiian	10 @ 11
Cal. Syrup in kgs	— @ 72½
Hawaiian Molasses	25 @ 27½

TEA.

Oolong, Canton lb	19 @ 25
do Amoy	28 @ 50
do Formosa	40 @ 80
Imperial, Canton	25 @ 40
do Pingsuey	40 @ 80
do Moyune	60 @1 00
Gunpo'der, Cant	75 @1 00
do Pingeney	50 @ 90
do Moyune	85 @1 25
Yng Hy., Canton	28 @ 40
do Pingsuey	40 @ 70
do Moyune	85 @ 87
Japan, ½ obesta, hulk	50 @ 75
Japan, lacquered bxs, 4½ and 5 lbs	45 @ 67
Japan do, 3 lb hxs	45 @ 90
do pl'n bx, 4½ lb	35 @ 65
do ½ & 1 lb paper	30 @ 55

TURPENTINE.

Eastern	50 @ 55

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by Sutro & Co.]

SAN FRANCISCO, Dec. 13, 3 P. M.

Legal Tenders in S. F., 11 A. M., 92¾ to 93¼. Silver 6¼@6½.

Gold in N. Y., 107⅜.

Gold Bars, 880 to 890. Silver Bars, 8@10 per cent. discount.

Exchange on N.Y., 50@55-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¾; Paris, five francs per dollar; Mexican dollars, 1½ per cent. premium.

London — Consols, 96⅝; Bonds, 102¾.

Quicksilver in S. F., by the flask, per lb. 50c.

Goon Printing Ink.—We prefer Chas. Enen Johnson's printing inks, having used them on this paper for the past four years. H. S. Crooker & Co., printers, stationers, blank book and paper dealers, are Johnson's S. F. agents.—Dewey & Co., Publishers.

SACRAMENTO, May 29th, 1876.

Messrs. Dewey & Co.—*Gentlemen:*

Yours of the 27th inst. is received. The patent came duly to hand yesterday, by express. Please accept thanks for your promptness in obtaining the same.

Very respectfully, Dunoan Beaumont.

Painful and repulsive fissures in the palms of the hands, which incapacitate those afflicted with them from performing manual labor, can be readily healed, and permanently so, by washing the parts affected with Glenn's Sulphur Soap, which is sold everywhere

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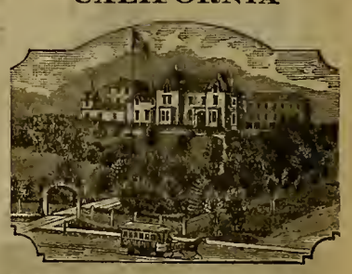
Notice is hereby given, that at a meeting of the Board of Directors held on the 11th day of November, 1876 an assessment (No. 1) of four dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, 418 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 18th day of December 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the eighth (8th) day of January, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors

J. W. CLARK, Secretary.

Office, Room No. 2, 418 California St. San Francisco, Ca

CALIFORNIA



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"Speaks Well," Etc.—We would return thanks for an exchange and back numbers of the Mining and Scientific Press, published by Dewey & Co., of San Francisco, Cal. It is a well edited, interesting, and valuable journal, and speaks well for our Pacific neighbors.—*U. S. Milling and Manufacturing Journal.*

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References: United States Government Buildings and principal manufacturing establishments in the East and on the Pacific coast; principal mines and mills in Nevada, etc., etc.

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Yours, respectfully, I. L. HEALD.

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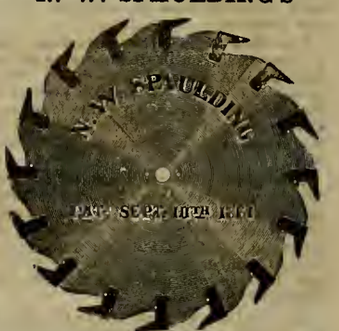

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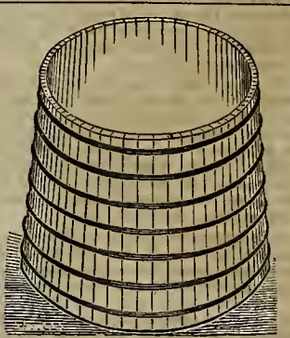

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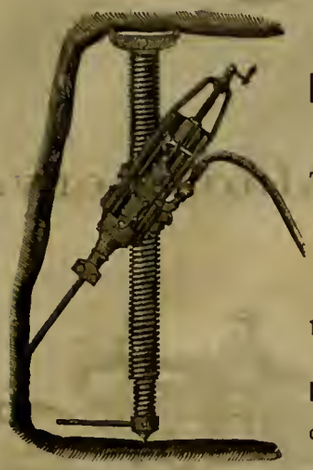

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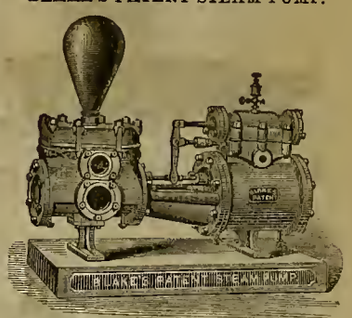

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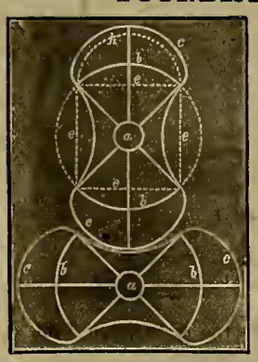

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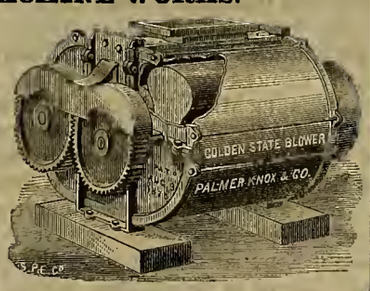

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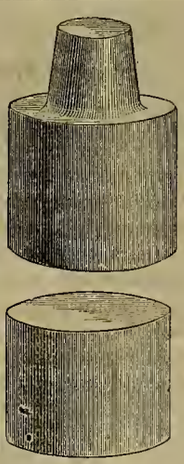

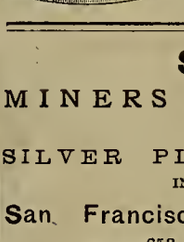

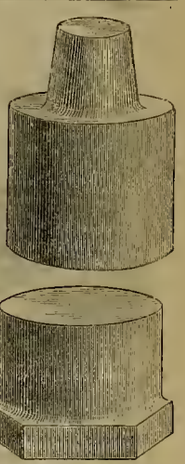

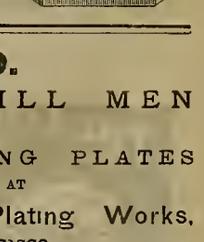

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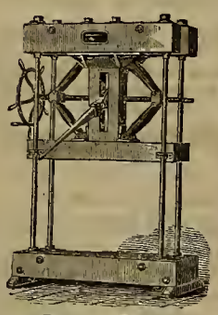

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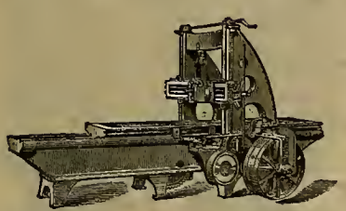

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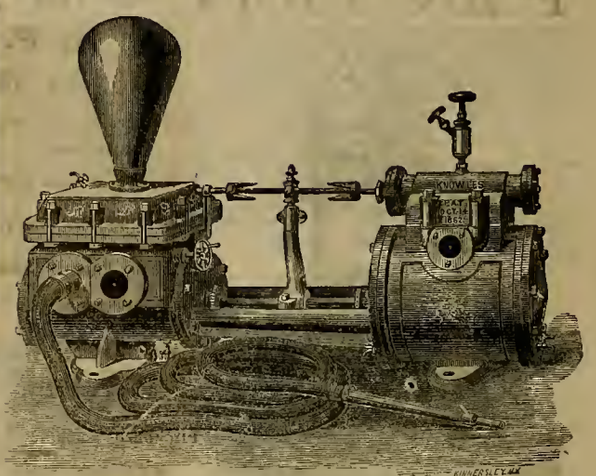

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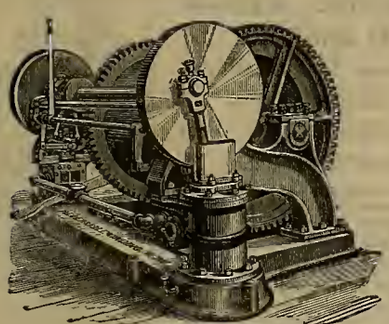

Bacon's Hoisting Engine.

Especially adapted to use in Mines, Hotels, Factories, Quarries, and Steamships, with Bacon's Safsty Stop.

Office of Amazon and Glasgow Mining Co.,
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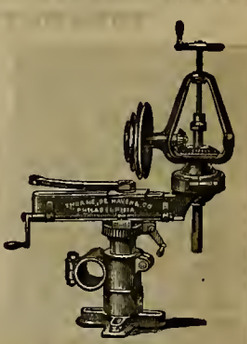
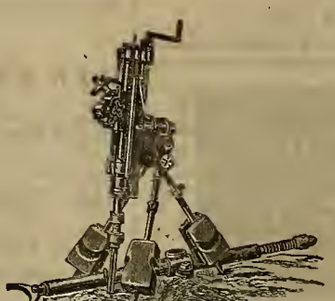
A. L. Fish & Co., Agents for Knowles' Patent Steam Pump,

Gents: After using many devices for pumping mines I must say the DOUBLE ACTING PLUNGER MINING PUMP (Knowles' Patent), bought some time since for the Amazon and Glasgow mines, is seemingly as near perfection as it is possible to be. We carry steam 500 feet to the pump, raising water 400 feet, which it does easily with 40 pounds of steam, without the slightest jar on the pipes, and is perfectly noiseless. Gravel cannot wear the cylinder, and it is by far the simplest, cheapest and most economical way I know of for draining mines. I would cheerfully recommend them. Yours truly,

A. Caldwell, Superintendent.



Thorne & DeHaven Drill.



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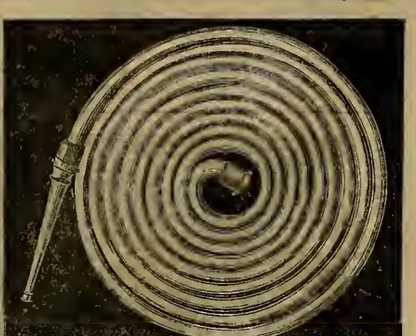

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Engines, Boilers, Quartz Mills, Saw Mills, Etc., Etc.

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, DECEMBER 23, 1876.

VOLUME XXXIII. Number 26.

Improved Hydraulic Nozzle.

Richard Hoskins, of Dutch Flat, well known in connection with his various improvements in nozzles for hydraulic mining purposes, has just received a patent through the MINING AND SCIENTIFIC PRESS Patent Agency, for an improved sectional jointed nozzle for hydraulic machines, such as are used for concentrating and directing the force of a stream of water against a gravel bank.

In the patent No. 43,468, issued to J. M. Allenwood, July 12th, 1864, and reissued, a discharge-pipe and nozzle is represented as being made in two parts which are connected by a canvas or other flexible joint so that the extreme end of the nozzle can be moved in any desired direction. By moving this hinged extremity in either direction so as to cramp it upon the stream of water which was passing through the nozzle, it acted as a rudder to carry the pipe in an opposite direction.

Patent No. 177,419, which was issued to H. C. Perkins May 16th, 1876, shows a supplemental attachment in the shape of a short tube or deflector—as he styles it—placed at a short distance in front of the nozzle and only attached to the nozzle by a universal joint at one place, leaving an open space between the end of the nozzle and the rear end of the short tube or deflector, thus permitting the water to fly back through the opening and drench the operator when the stream is cramped by the deflector. This deflector is also described as being larger in dismeter than the extreme end of the nozzle.

Mr. Hoskins' improvement consists in making the nozzle itself a deflector by attaching it to the end of the discharge pipe by means of a ball and socket or other water-tight joint, so that it will not only serve as a nozzle for the main pipe to carry and direct the stream, but will serve as a rudder to change the direction of the discharge pipe by cramping it upon the stream. The end of the discharge pipe is provided with an enlarged semi-globular head, and over the head is fitted a socket. The socket is attached to the head by a pivot or journal both above and below, so that it can swing from side to side. The front end of the socket has a short circular neck or flange formed around the opening and projecting out in front of it, through which the water issues, and the flange is tapped with screw threads. The nozzle is then screwed upon this threaded flange, thus completing the attachment of the nozzle. At the end of the discharge pipe is the lever by means of which the deflector or nozzle is operated.

When this lever is moved to the right or left the nozzle will point in an opposite direction, forming an angle between the pipe and nozzle, against which the water, passing through with great force, will act and cause the discharge pipe to turn and point in the direction in which the lever is directed. The discharge pipe being always balanced with a counterpoise there is no difficulty in elevating or depressing it; the difficulty is only in moving the pipe horozontally or from side to side. Hence the joint has only two pivots, but it desired it can be made to operate vertically by making the pivot holes oval, so as to allow the joint to vibrate vertically when the lever is moved up or down, thus forming a sufficient angle in the pipe to allow the water to act in the nozzle and move it in this direction also.

By this means Mr. Hoskins provides a discharge pipe with a hinged nozzle so that the nozzle itself will serve as a deflector to move the pipe by cramping it upon the stream, and when the pipe is stationary it will serve as an ordinary nozzle to condense and deliver the stream.

BERTHS for shipping are now plentiful at the wharves.

Academy of Sciences.

The regular meeting of the California Academy of Sciences was held on Monday evening last.

Dr. A. Kellogg described species of flora of the Gulf of California, collected by Mr. W. J. Fisher, in the "*Harvest Queen*" expedition, now in the Gulf.

Mr Henry Edwards' paper on Pacific Coast *Lepidoptera*, No. 21, was presented. This series is being continued, and is published in the proceedings of the society.

Hon. Horace Davis, Chairman of the committee of nominations presented the following report: The committee appointed to present a ticket of officers to the Academy of Sciences, to be voted for at the coming election, beg to offer the following report: They have esrefully considered the responsible duty assigned to their charge, and have nnanimously resolved to recommend to the academy the re-election of the present officers and trustees.

They were lead to this conclusion by a consideration of the unsettled condition of the temporalities of the academy. Many matters of grave importance, and at the same time affairs of a complicated and delicate nature, have often been under discussion at the joint meetings of the council and the board of trustees, and it seems to them only ordinary prudence to continue these gentlemen in their duties for the present. They, therefore, recommend the following ticket: For President, George Davidson; for Vice President, Henry Edwards; for second Vice President, Henry O. Hyde; Corresponding Secretary, Dr. A. B. Stout; Recording Secretary, Charles G. Yale; Treasurer, Edward F. Hall, Jr.; Librarian, C. Troyer; Director of Museum, W. G. W. Harford. Trustees—D. D. Colton, R. E. C. Stearns, Wm. Ashburner, Thomas P. Madden, Geo. E. Gray, Ralph G. Harrison, John G. Miller.

Mr. Davis offered some remarks upon the report, which, without discussion, was unanimously adopted.

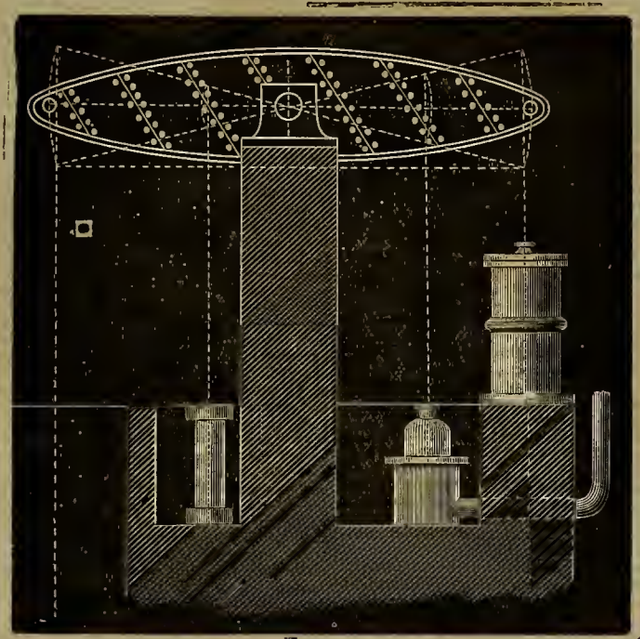

FIG. 15. CORNISH ENGINE.

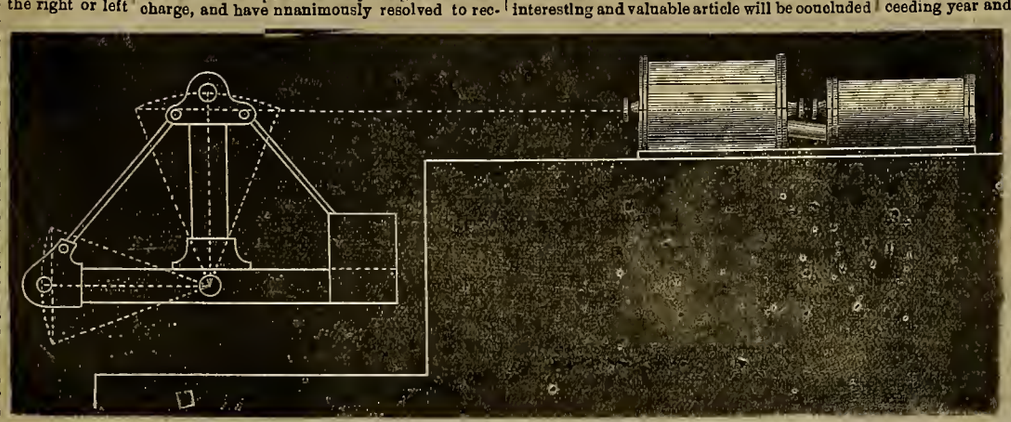

FIG. 19. HORIZONTAL COMPOUND ENGINE. Proportion, 7 to 8.

LAID OVER.—Owing to the crowded state of our columns incident to the publication of the engravings in connection with the article on "Drainage of the Comstock," considerable matter has had to be laid over this week. This interesting and valuable article will be concluded next week, the interest felt in the subject being an excuse for devoting so much space to it to the exclusion of the usual variety of matter.

A TERRIBLE colliery explosion occurred on the 18th, in the South Wales company's pit, near Newport. Seventeen bodies have been recovered, and many of the miners taken out alive are seriously, and some fatally injured.

Christmas.

The queen of holidays is just at hand. The day which all Christendom greets with rejoicing, which brings to all, both young and old, joys which are as old as memory and yet as new as each succeeding year, will soon fill our homes with the joyful cries of happy children and the quiet rejoicing of those who love them.

Christmas is the childrens' day, and thus it has been during all these centuries since the star shone on Bethlehem, and hailed the advent of the Christ-child. What matters it though the doubter try to prove the day we observe is not indeed the exact day of the Saviour's birth? It is the event and not the day which calls for the world's rejoicing. What matters it though labored treatises be written to show that the star which shone on Bethlehem was only the periodic visit of a comet instead of a star called fresh from God's workshop to mark the time? It matters little. No modern theorizing can shake the deep significance of the events. No acute argument can wrest from the believer the consolation of his faith. No ingenious reasoning can rob the world of the sublime influence of the simple story which happy mothers tell to listening children; how a little child, such indeed as they, came into the world, sent from God the father, to teach little children, by his loving precept and example, how they should live and act to gain the crown at last.

No; Christmas is too firmly woven into the fabric of the world's thought and faith to yield to arguments of date or incident. It is a day for the world's good. Let it be the occasion for the rejoicing and thanksgiving of the devout, let it be for the rest and recreation of the tired toiler, or let it be the brightest day in all youth's bright calendar; in all of these, its characteristics, it is a day which the world in losing would be poor indeed.

Time honors Christmas. The observation of the day by religious ceremonies dates back nearly 1,700 years, and ever since, the holiday has held its place in the pomp of Roman ceremonial and in the quiet of Protestant worship. Other marks of the day have been recorded as the years have advanced. From the gay, fantastic spectacles and dramas of the middle ages, it progressed to the gentler care of the minstrels from the mountains, and later still, its music went forth upon the chimes of bells. As the centuries passed new customs marked the Christmas festival. The Germans gave it the charms which fill the hearts of children, and called Santa Claus to its service. Then it was that the Christmas tree took root and spread its branches laden with the fruit of love. Ever since the growth has advanced with each succeeding year and with the spread of Christianity over the world, until now the Christmas moon in all her round may shine on happy homes where youth's delights are full.

Beautiful indeed is the coming of Christmas upon the sanctuary and the home. Bright are the decorations of nature's living green. Honored are the holly, ivy, rosemary, bay, laurel, and mistletoe, which have become historic across the waters; and fragrant are the pine, hemlock, fir and cypress, which turn our homes into bowers of beauty.

Though some of our friends in the mining regions are very far from the home of their childhood, and Christmas at home is only a recollection with them, the season which brings it should turn their thoughts to the old roof tree and those whom it sheltered. The rough, hard lives which many miners live in their toil for gold, is apt to cause them to be careless of the holidays, except that they bring them temporary rest from labor. The Christmas holidays should be welcome to all and should be a time for merry-making and pleasure for both old and young. In the hope that they will prove so to all our readers, we close our remarks by wishing them all a merry Christmas and a happy New Year.

CORRESPONDENCE.

The Lixiviation Process.

Mr. Smith's Answer to Mr. Hoffmann's Article.

EDITORS PRESS:—My attention has been called to a communication in your issue of October 28th, written by Mr. O. Hoffmann, calling in question the truth of certain statements made by myself in a letter to the San Francisco *Bulletin* in August last.

Mr. H. invites a reply, which with your permission I propose to make. I will first answer his enquiry, why, when I found I could not extract the silver by amalgamation or smelting, I did not, with the aid of my "amateur chemist" introduce the "Patera" or "Kiss" process? Simply because I had never heard of it; and the reason I went to the expense of employing Mr. Hoffmann was, first, to introduce his, viz: the Kustel & Hoffman patent process, and next, because he was a young man highly recommended, fresh from schools of Freiberg, and in those days of our ignorance and credulity, we thought that a graduate of Freiberg was the concentration of all scientific and metallurgical knowledge. We know better now.

As stated in my letter to the *Bulletin*, I went to San Francisco expressly to see the Kustel & Hoffmann process, taking some of my ores with me and had them tested at Messrs. K. & H.'s works in San Francisco. The result was so satisfactory that I determined to adopt the process at my hacienda, and employed Mr. H. to superintend the introduction, and the apparatus taken from San Francisco was gotten up under his direction, even to the wooden gas generator, Mr. Kustel giving it as his opinion that such a generator coated with asphaltum cement would answer the same purpose as one made of lead.

In all this there was no mention made of any other mode of treatment of my ores than by the Kustel & Hoffmann process, and the use of the "cold chlorination" was, so far as I was informed, the essential feature of the process and the only process introduced or used at my works until after Mr. Hoffmann left and went to La Trinidad, and he did not at any time work any ore at my place without the use of "cold chlorine gas."

Of this I could furnish proof in abundance if the point was a matter worth the trouble. His statement that they advised me that the cold chlorine gas was not necessary for my ores, but that I insisted on having the "whole process, so as to demonstrate it to other parties for the sake of my interest in the to-be-granted patent," is simply untrue, as was the statement that they were induced to apply for letters patent from the government of Mexico.

They stated to me that they intended to apply for letters patent from Mexico, but it was finally proposed that in consideration of my introducing the process into that country, that I should obtain the patent in the name of Kustel & Hoffmann and myself, paying all the expenses myself and owning one-third interest in said patent, my own hacienda being exempt from the payment of royalty. This proposition was agreed to and I made application for the patent through Mr. Godey, Mexican Consul at San Francisco.

Mr. H. is equally incorrect when he states that he designed the three-hearth reverberatory furnace.

As stated, the flood had destroyed our Bruckner furnaces, and also a reverberatory furnace, (which Mr. H. says neither myself or my "amateur chemist" were familiar with,) and it became necessary to build a new furnace. After examining several designs found in some metallurgical work, I decided on a three-hearth furnace, and Mr. Hoffmann being an excellent draftsman, fresh from Freiberg, was employed to make the working plan, and the work was well done and an exact copy of the design found in the book. After the furnace was built it was found that the arch was too low over the last or chloridizing floor. It worked well while we were doing only a partial roasting preparatory to "cold chlorination," but when we desired heat enough to desulphurize or oxidize the ore on the first and second hearths, the ore was being burned and fused, and formed into balls on the hearth nearest the fire. The arch was consequently raised from 16 to 28 inches at the bridge. By a typographical error in the *Bulletin* article before referred to, I was made to say "we commenced to improve our mechanical appliances, altering our doors so as to effect great economy of fuel, etc." which should have read "altering our ovens so as to effect greater economy of fuel and more thorough chlorinization of the ore." The cast iron frames Mr. H speaks of were put in when the furnace was built and are there still.

Mr. H. is equally in error in regard to the substitution of sulphide of calcium in place of the sulphide of sodium; as stated in my article in the *Bulletin*, the extreme difficulty of the manufacture of the sulphide of sodium, or its importation from San Francisco, owing to its liability to spontaneous combustion, suggested to Mr. T. C. Mills, who had for a long time been in charge of my beneficiating works, (whom Mr. Hoffmann sneeringly speaks of as our "bricklayer,") the idea of the use of the sulphides of calcium or potassium, and Mr. H. was asked if they would not answer as well, to which he replied that he supposed they would. The formula for making these sulphides was found in some medical work, I think the U. S. Dispensatory, and Mr. Hoffmann proceeded to experiment with calcium and Mr. Mills with potassium, which resulted in the adoption of the sulphide of calcium, as it was the most easily made and the materials more easily obtained.

I do not recollect whether the idea of obtaining hyposulphite of lime by precipitating base metals dissolved by water, originated by the powerful use of Mr. Hoffman's reasoning faculties, as he claims. My impression is that it did not; I only know that one of his statements relative to the loss of our hyposulphite solution is incorrect, viz: that it was occasioned by the mistake of Mr. Mills, as it was another employee entirely; and I know the further fact that shortly after Mr. H. left La Trinidad the superintendent in charge sent to me for some hyposulphite of soda or for information how he could strengthen the dissolving solution, which had become weakened by a similar accident that befel us.

Mr. H. errs again when he says he left La Dura to obey a call from Mr. Alsua of La Trinidad. Mr. H. left La Dura because our gas generator gave out, and it was expected we would have to suspend operations until I could send to San Francisco and get a lead generator, as recommended by Mr. H. That he might not be out of employment in the meantime, I furnished him with a horse and guide and a letter of introduction and recommendation, and sent him to Mr. Alsua at La Trinidad, and upon that recommendation he was employed and introduced his "Kustel & Hoffman process," and all the necessary apparatus and materials were ordered from San Francisco; but before they all arrived Mr. H and Mr. Alsua had a disagreement and Mr. H. left. Mr. Alsua has always claimed that he was out several thousand in his experiments in that process. Those who know Mr. Alsua will not question his statement.

I believe I have answered all the points at issue between Mr. Hoffman and myself. I am aware that it is mainly a question of veracity, and in that matter I am willing the public should judge between us. If it was a matter of much importance I could bring abundant proof to substantiate what I have stated, but as I have no patent to defend or anything to sell, it is not worth the trouble. I do not claim any originality in the invention of the process, I only claim that I made the experiments which resulted in a process now in universal use in Sonora and in many parts of Sinaloa and Lower California, without any previous knowledge of the process of Kiss and Patera, and against the advice and emphatic protest of Mr. Hoffman, as I can show from his letter to me, written from Trinidad.

All that the public are interested to know is that the process is a success; that it has been in constant operation for more than seven years since it was first introduced and that all processes of amalgamation in that country have been abandoned, and this process adopted in their place, and that no one who has tried it has even thought of using any other in its stead.

I am now engaged in introducing this mode of treatment in the works of the Consolidated Poe mining company, in the Peavine district, Washoe county, Nevada. These ores are known as exceedingly rebellious and have baffled the skill of some of the best experts on the coast. I have found no difficulty in working these ores and the results have been highly satisfactory to the owners of the mine. E. B. SMITH.

Poeville, Nev., Dec. 11th, 1876.

Miners' Wages.

In answer to the following communication, says the Virginia *Enterprise*, we would say that all miners who descend into the mines receive $4 per day, but the day is not always fixed at eight hours. Some of the outside mines run but one shift and fix the day's work at 10 hours. Some run two 10-hour shifts. But whether six, eight or 10-hour shifts are worked, the wages, as regulated by the miners, are not less than $4 per day. As to car-men, they do not fall within the protection of the unions, and the length of the day and compensation is fixed per agreement with the company. Generally shifts and wages correspond with those of the miners. Watchmen are generally on duty 12 hours, but not always. Their wages, like those of carpenters, etc., are fixed by agreement. The rule is established only as to wages of miners underground, which are not less than $4 per day.

Editor Enterprise—Sir: Will you please state, through the columns of your paper, the regular or standard wages paid to men directly connected with mining on the Comatock, as your correspondent contended last evening that all men working in or connected with the mines received $4 per day for eight hours' work, including car-men, some of whom have to work 12 hours a day; also watchmen, who have to be on duty from 12 to 13 hours, receive $4 per day. I admit there are some who handle wood and only work 10 hours, and day-shift all the time, who receive $3.50 per day, which is the lowest wages paid to my knowledge. You will please explain and oblige yours, etc.,

GOLD HILL.

The St. Lawrence Mine.

The editor of the *Mountain Democrat* has been inspecting the St. Lawrence mine, El Dorado county. He says:

Arrived at the mine, Superintendent Harry Rosswarn took charge of our party and spared no pains in making our visit pleasant and instructive. Everything in the vicinity of the St. Lawrence wears an air of bustle, activity and improvement. A neat building has been erected near the hoisting works, designed for an office, superintendent's bed room and a dressing-room. A large stock—700 cords—of wood has been hauled in and stacked in the vicinity of the mill. There is a sawmill under the same roof with the hoisting works, in which the company saw all their own timbers, lagging and lumber. The yard is well stocked with saw-logs. In the quartz mill active improvements are in progress. The concentrators and plates are in course of re-adjustment, the large rock-breaker is being re-set, a full complement of new stamps is at hand, the large engine is being overhauled and the whole concern is being put in perfect order for the effective operation of 20 stamps by the time that a sufficient supply of ore has been extracted.

After a hasty inspection of these surface improvements, five of us mounted a truck and made the descent to the 850-foot level, occasionally, as we caught our breath during the quick downward movement, seizing one and another opportunity for admiring the neat, substantial, nicely mechanical and yet massive manner in which the grand shaft has been retimbered. The size of the timbers and the workmanlike manner in which they have been adjusted convey to the underground explorer a most comforting sense of absolute security.

At the 200 foot level, on the way down, we caught a glimpse of a number of delvers at work, who are engaged in drifting and stoping a body of low grade ore until the lower levels are put in shape for their employment on the richer bonanza rock. Of this low grade ore, which will mill from $12 to $15 per ton, about 250 tons have been taken out and deposited on the dump, and it is calculated that from 400 to 600 tons more will be extracted from this source by the middle of January, when it is supposed the lower level will be in shape to accommodate the whole force.

Arrived at the 800-foot level we beheld a sight such as has seldom, if ever, greeted our bewildered and delighted gaze. It would be difficult to imagine a handsomer ledge than is here revealed to view. From the point where the bonanza was first tapped, above and just west of the tunnel, to the bottom of the drift, below and east of the tunnel, a distance of over 40 feet, a beautifully ribboned, fine, strong ledge, varying from 20 inches to three feet in width, everywhere seamed and flecked with free gold and rich sulphurets, is plainly exposed to view and presents a most exhilarating aspect. Our party mined out and brought to the surface several slabs of ore, from a foot to 18 inches long, eight to ten inches wide and four to six inches thick, which, on being washed and inspected in the sunlight, revealed a dazzling display of the precious metal. It is estimated by experienced and cautious miners that the ore thus far taken from and exposed at this level will average fully $100 per ton. We are confident that this is by no means an exaggerated estimate. Ore from this level and of this quality to the amount of 150 tons or more has been already extracted and dumped into the ore-house. But the superintendent and managing directors of this mine don't intend to butcher it for the purpose of creating a furore. All of their operations are of the thoroughly systematic and permanent order. They will sink on their pay shute to a depth of 100 feet. Then they will sink the main shaft to an equal depth, with every assurance that in this main shaft they will intersect the ledge after sinking but a few feet. At the 900-foot level they will follow the ledge and connect these two shafts, at the same time drifting northward from the northern shaft. Then look out for such clean ups as have never been realized from an El Dorado county quartz mine! On this point we have no doubts or misgivings whatever. The smoothness of the foot-wall, the uniformity and definiteness of the gouge, the lively character of the country rock, all give assurance of the permanency and reliability of this ledge. And the company is to be congratulated on the volume of pure air which has been secured by sinking the new air-shaft, at the bottom of which the draft was so strong as nearly to extinguish our candles. In every respect the mine and its surroundings are rapidly assuming a shape for vigorous and successful operations.

A MINERS' SUGGESTION.—A miner of Gold Hill, in a communication to the *News*, in reference to injuries from the sudden lowering of cages upon men working in the shaft, says: "Such an accident need never occur in a shaft which is being sunk by means of cages. Place a bell on the fifth set of timbers from the bottom of the shaft, and move it downward as the shaft progresses deeper and additional sets of timbers are put in. Have it so arranged that the cage shall ring it in passing, whether going down or coming up. This will give good warning and allow the men in the shaft an opportunity to look out for themselves." The suggestion is doubtless a good one, provided the bell can be so placed and fixed as to be sure of giving the alarm, and not liable to get out of order; for, in the latter case, the remedy would be worse than the present method of stopping the cage before lowering clear to the bottom.—*Virginia Enterprise.*

The Richmond Company.

We extract from the London *Mining Journal*, of November 18th, the subjoined, with reference to the Richmond mining company:

Richmond Consolidated, 9 to 9¼, ex. div. The usual weekly telegram gives the week's run as $55,000. It appears that the manager's report has again been delayed in transmission for about the sixth time in the last six months. The directors have issued their statement of accounts for the year ending August 31st, with a report. An additional document is sent to the shareholders on this occasion in the shape of condensed abstracts of all previous accounts, showing at a glance the receipts on capital account, and how the money has been expended, the profits made from year to year, and how distributed or appropriated. It is shown in this abstract that the mine has made a net profit of £272,297, of which £180,768 8s. has been paid in dividends, £78,170 13s. 8d. used on capital account, and the balance carried forward. The mine is thus proved to have earned £2,297 16s. 2d. more than its whole capital up to August 31st; and as the profits for September and October are estimated at £20,000, the net earnings at present amount to £22 297 16s. 2d. over the capital of £270,000. As the accounts prove that the advances made by the bullion agent are much more than covered by bullion in his hands, the company is virtually clear of debt; and the last paragraph in the "report," thus sums up the present position of the company: "In conclusion, the directors congratulate the shareholders on the fact that the accounts now submitted show, that whilst the debentures are fully represented by bullion and other revenue assets, there are undivided profits on hand amounting to about £28,000 over and above the largely increased value of the mining properties, the machinery, steam-engines, plant, refinery, furnaces and other buildings, together with the valuable reserves of ore already developed, and which are increasing daily beyond the present smelting power of the company." The result of the whole year is disappointing as to immediate results, referable no doubt to the great difficulties and disappointments connected with the having for the last six months to deal with the immense mass of ferruginous ore that unexpectedly presented itself, and had to be used before the more richly leaded ores at its back could be obtained. The profits made since this difficulty has been overcome, and the vast mass of good smelting ores now laid open, point to a return of former rates of profit, to which the recent rise in silver will materially contribute.

The Baker Gravel Claim.

The Dutch Flat *Forum* (Placer county) says of the Baker claim: Next to the commencement of the Yankee tunnel, the opening of this claim is one of the most important eras in the history of Dutch Flat. To the former can be traced the nucleus which gave the impetus to the various large enterprises with which we are now surrounded, and the latter is opening the envelope containing our future destiny. This claim is now being opened through a perpendicular shaft, dumping into Yankee tunnel. Above this point, on the ancient channel, there is neither the immense rock and clay slide or drifted ground to contend with, which impairs the claims situated at the lower end of the ridge, and as the claims below have been fabulously rich, and the gravel that has been drifted out of this claim sustains the same reputation, it is believed that the Cedar Creek company is just reaching a treasure which cannot be exhausted in 40 years to come. There intervenes between the point of attack and the shaft quite an area of tunnel ground, which must be removed before the solid ground can be reached. This work is being done in a systematic and effective manner. An incline was raised along the surface of the bedrock, extending from the shaft to where the rim was exposed. The giants are placed so as to command the opening thereto. The gravel is being blasted and broken down from the face toward the shaft, and as the material is removed the bedrock is being swept clean, so that by the time the face over the incline is extended back to the shaft, the north end of the pit will have reached the solid banks, and the claim will be in a splendid condition for working, with a clear space of bedrock in the rear sufficient to hold the boulders raised out by the derrick. From some old drift tunnels below six powder drifts are being run, so as to be in readiness when wanted, and everything that foresight and precaution can suggest is being forced to contribute toward continuous washing.

BALD MOUNTAIN MINE.—This mine is situated at Forest City, Sierra county. It is perhaps the richest gravel mine in the State. The mine is worked by drifting, and the drift is taken from the breast to the place of washing in cars through the tunnel. These cars run on a track of 20 inches gauge, laid with T rail, and are drawn by a steam locomotive. The tunnel is between 3,000 and 4,000 feet long and the grade in it is from 160 feet to 216 feet to the mile. The average yield of the mine per year is about $400,000, of which about $18,000 are paid over in dividends. Just now there is a scarcity of water at Bald mountain, but soon there will be plenty. The mine and works are under the superintendence of Mr. H. W. Wallace.

MECHANICAL PROGRESS.

How to Sharpen a Screw-Driver.

The screw-drfver, says the *Builder*, is fonnd not only in the tool-chest of every mechanic, but in most honses and offices. It ranks with tha hammer, the saw and the exe in generel utility, end yet few persons know anything abont how it shonld be sharpened so as to do its work most effie ently—that is, with the least expenditure of power, and the least lnjury to the heads of the screws.

In driving a screw ioto wood, the force nsed to press tbe acrew-driver against the head of a screw, tends to aid the letter in penetrating the wood, bnt when we attempt to extract a screw, every pound of pressure that we apply tends to render it more difficult to get the screw out. It therefore becomes very important that tha screw-driver shonld be so formed that it may be kept in the nick of the screw by the exertion of the very least degree of force, for if it has any te deocy to slip out we can keep it in place only by applyiog pressure, in which case we rnn great risk of injnring the nick and rendering it impossible to draw the screw.

If we examine a screw driver in the condition in which it is so ordinarily found, we shall fiod tbat it presents a section in which the sides of the wedge, in which all screw-drivers terminate, are curves with the convex sides outwards. Now, the effect of thns curving the sides of thie wedge is to render it greatly more obtose. Moreover, when we turn the screw-driver, the tendency to slip out of the nick is just in proportion to the obtuseness or bluntness of the wedge, and therefore this form is the very worst that can be chosen. In the hands of good workmen, therefore, we find that the screw-driver ends in a wedge of which the sides are perfectly straight. Tbis is a very good form, bnt it is not equal to that in which the aides of the wedge are curves, bnt the concave sides outwards. In this way we lessen the obtuseness of the wedge at the extreme point aod produce a turn-screw which may be kept in the nick by the least possible pressure endwise.

To grind a screw-driver iuto this form, it is necessary to use a very small grindstone, aod many of the artificial stooes loiind io market answer admirably. Many mechsnics wonld find it to their advantage to keep one of these small griudstones for the porpose, as it conld be run in the lathe with very little trouble.

Impaovement in Telegaaphy.—An English engineer has inventad a new telegraph joint, which, it is claimed, presents a simple, cheap and efficient means of dealing with one of the practical difficulties of subterranean telegraphy —one, in fact, that seems almost insuperable. This new joint is formed by removing the coatings from the two ends to be nnited and joining the cleaned wires hy what is technically known as the "bell-banger's twist," no solder being necessary. The twist is then warmed slightly and covered with a rongh coating of insulating compounds, somewhat thicker than the original diameter of the wire. The joint, while warm, is placed in the lower half of a small wooden block abont three inches long, one inch wide, fitted internally with a groove for the wire, widening in the middle into a niche abont one and one-half inches in length for the reception of the compound covered joint. While the compound is yet warm the upper half of the mold—in shape corresponding exactly with the lower one—is placed on the top, and, by means of a clamp, screwed down until the two wooden surfaces are pressed firmly together. While in this position they are permanently fixed by half a dozen ordinary brass screws, and the compound having hardened the clamp is removed and the joint complete. The cavity in the interior of the block in which the copper ends meet being completely filled with the compound, the insulation is all that could be desired, numerous experimenta having satisfactorily tested the electrical qualities of the arrangement, the wooden covering obviating all danger of "leakage" or separation of the wires through bending.

Casting a Statue.—The lower half of Conrad's statue of a soldier, to be erected in Hartford, Conn., has been cast in bronze in a foundry in New York. The upper half had been finished. The figure is heroic in size and represents a young Union infantry soldier in uniform, including overcoat, and carrying a musket. A large "flask," containing the mold, clamped firmly with iron, was let down with a crane into a cavity and floored over so that only a funnel protruded; this was close to a great brick furnace, in which the bronze was heating over a great roaring fire. Some of the brooze slopped over and set fire to the foundry building, and the water that quenched the blaze made so much steam that nothing else could be seen for five minutes. The casting was perfect. Several Hartford officials were present and witnessed the casting.

Iron Steamships.—The enterprising undertaking of Mr. John Roach, of Chester, of building two new iron steamships in advance of orders is one of the hopeful signs of the times. It shows that there are fair business reasons for believing that the importance of energetic efforts to reassert national supremacy in the matter of ocean tonnage will soon command general recognition.

The Dish on Wagon Wheels.

A writer in the *Hub* gives the following points for blacksmiths: Many smiths put on their tires too loose, being afraid of getting too much dish, and are satisfied if only the boss and customers are pleased when they look at the wheel. But they do not look to see the broad daylight all around the wheel between rim and tire. How can such a wheel answer the purpose, when the tire does not hug the rim? Allowing mud and water to settle between them, is sure to spoil rim and tenon of spoke, or crowd the tire off. The wheel, after a few months, comes back to the shop for resetting; the smith sees his mistake, and in most cases the tire then gets put on too tight. Let a wheel be thoroughly seasoned, have the proper thickness of tire, and snug fitting on the rim; never mind the dish, a little more or less, if only the spokes do not spring; and you find in the end a more creditable job than having the tire too loose, but less dish.

Such wheels will sometimes run years without setting tire, or will wear it out, if properly taken care of in the dry season. What I mean by care, is to have the rims painted when bare spots begin to show, and to be often washed.

The talk about so much dish for a certain size of wheel, and no more, is all bosh. I have handled wheels, and so have many others, I suppose, where one set dished much more than the other, with the same amount of draft on both. It is impossible to establish a rule for dish on wheels, but have the tire so set on the wheel as to become what it should be, a protector.

Experiments in Lubrication Desired.

A committee of the master mechanics' association is resolved to elicit the best experience of locomotive engineers upon the subject of lubrication, and they issue a circular asking all mechanics to aid them with information on the following points:

The most desirable lubricant for general use must, of course, be that always obtainable, as well as the cheapest, or that which will give the best results at the lowest rate, and something easily carried and handled at all seasons of the year, unless you should consider a change of lubricants at different seasons of the year advisable.

Your committee therefore earnestly request you, and they certainly think it worth your while, to make a careful test of sufficient length of time to demonstrate the actual cost per mile, or per 100 miles run, with the different varieties of oil in use, taking perhaps No. 1 lava oil as the starting point. Will every member take the trouble to do this carefully and thoroughly, and give us a statement, showing in detail the exact result?

Your committee further solicit the results shown by oil-testing devices, and a description and drawing of the best apparatus for such purposes you have used.

Your committee also desire you to test, if possible, the different kinds of lubricants used for valve seats and cylinders, and give results, with your preference, and reason thereof.

Also what method is the best for oiling valves, the self-feeders, or the old plan of oiling from a can at intervals.

A Snow Melting Machine.—A snow melting machine for cities has been invented by Mr. John Mullaly, one of the New York commissioners of assessments, and Mr. John T. Hawkins, formerly professor of engineering at the naval school of Annapolis, and late one of the superintendents of the Centennial exhibition. The last patent was obtained about two weeks ago, and the inventors claim that the machine has been brought to a state of perfection that leaves nothing more to be desired. By their process one snow melter is capable of cleaning off from one to 50 miles of streets in 24 hours, the amount of work performed depending upon the size and capacity of the machine. The steam which is employed in melting the snow and ice is not only superheated but by an admirable and at the same time simple contrivance it is all used in creating a draft in the furnace. By this means the consumption of fuel and consequent production of heat are greatly increased. In addition to the important result thus obtained, the heated gases of the furnace are also used in the work of dissolving the snow. The inventors, who have made a proposition to the street cleaning department of New York, estimate the cost of removing the snow by their process at from one-fifth to one-tenth the expense of the present inefficient and unsatisfactory system of carting it away. They claim that one of their smaller sized machines is capable of doing as much work as 400 carts with the requisite number of men and horses.

Danger of Portable Steam Boilers.—*Iron* says: The chief engineer of the Manchester steam users' association, Mr. L. E. Fletcher, who has done yeoman service to the public by his unceasing efforts to reduce the number of deadly accidents from imperfect steam boilers, at the last meeting of the association brought forward the subject of portable boilers and their special dangers. Portable boilers are often placed under the charge of agricultural laborers and other persons who are below the average in mechanical skill; and it is important to know that in addition to this source of peril there is a great neglect prevalent among their constructors with respect to their proper fitting with safety valves. It is obviously essential that in ignorant hands the safety valve should be placed beyond the danger of being tampered with; but these valves are, Mr. Fletcher tells us, so arranged that an extra turn of the thumb screw on the spindle of the screw balance with which it is loaded, frequently suffices to lock the valve fast and render it perfectly useless, thus bottling up the pressure and leading to the bursting of the boiler. Many cases of fatal accident from the bursting of portable boilers are on record. By seven which were quoted twenty persons were killed; in one of them eight persons perished. Mr. Fletcher's conclusion is one in which most sufficiently informed and competent judges will agree—namely, that the safety of the public from the risk of boiler explosions can only be secured by legislative enactment.

The longest railway in South America is the Tucumun, in the Argentine Republic, recently completed. It is 366 miles long, and has cost only $23,800 per mile, which is much less than the cost of any other railway in that republic, and indeed is cheap for any country, as the cost of railway building has been.

SCIENTIFIC PROGRESS.

The Great Pyramid.

Prof. Smith, says *Nature*, devoted many months of work with the best instruments in order to fix the dimensions and angles of all accessible parts of the great pyramid of Egypt; and he has carefully determined these by a comparison of his own and all previous measures, the best of which agree pretty closely with each other. The results arrived at are as follows:

1. That the pyramid is truly square, the sides being equal and the ranges right angles.

2. That the four sockets on which the four first stones of the corners rest are truly on the same level.

3. That the directions of the sides are accurately to the cardinal points.

4. That the vertical height of the pyramid bears the same proportion to its circumference as the base as the radius of a circle does to its circumference.

Now all these measures, angles, and levels are accurate, not as an ordinary surveyor or builder could make them, but to such a degree as requires the very best modern instruments and all the refinements of geometrical science to discover any error at all. In addition to this we have the wonderful perfection of the workmanship in the interior of the pyramid, the passages and the chambers being lined with huge blocks of stone fitted with the utmost accuracy, while every part of the building exhibits the highest structural science.

In all these respects this largest pyramid surpasses every other in Egypt. Yet it is universally admitted to be the oldest, and also the most ancient historical building in the world.

Albertite.—A very curious mineral, known as albertite, is found in New Brunswick. The *Iron Age* says: It occurs in connection with calcareo-bituminous shales, and has been by some regarded as true coal, by others as a variety of jet, and by others again as more nearly related to asphaltum. The true nature of the mineral was made the basis of a lawsuit in Scotland a few years ago, in which the amount involved was something more than £1,000,000 sterling; as the decision settled the question of the liability to pay a royalty. It resembles asphaltum very closely, being very black, brittle and lustrous, and like asphaltum, is destitute of structure, but differs from it in fusibility and in its relation to various solvents. It differs from true coal in being of one quality throughout, in containing no traces of vegetable tissues, and in its mode of occurrence as a vein and not as a bed. The vein occupies an irregular and nearly vertical fissure, and varies from one inch to 17 feet in thickness. It has been mined to the depth of 1,162 feet. The accompanying shales are abundantly filled with remains of fossil fishes, and it is not improbable that from these, in part at least, the mineral was derived, existing at first in a fluid or semi-fluid state. Vegetable remains are almost entirely wanting in the shales. During twelve years since the discovery, there have been shipped 154,800 tons of albertite, chiefly to the United States, where it has been used for the manufacture of oil, and for admixture with bituminous coal in the manufacture of illuminating gas. It is admirably adapted for either of these purposes, yielding 100 gallons of crude oil, or 14,500 cubic feet of gas of superior illuminating power per ton. The price varies from $15 to $30, gold, per ton.

The Satellite of Neptune.—Since the erection of the great refractor at Washington, observations have been made of Neptune's satellite, with the view of determining the mass of the planet in terms of the sun's mass, which can be done with great accuracy by comparing the time of revolution and the distance of the satellite from its primary, with the corresponding quantities in the case of a planet revolving around the sun. Prof. Holden discusses, in the *Astronomische Nachrichten*, the results thus obtained, finding the mass of Neptune to be 1 18,500th part of that of the sun, or nearly double that of the earth, a value which is somewhat smaller than that found by Prof. Newcomb from his observations in 1873 and 1874, and much nearer the mean of the results obtained by previous observers.

Insecticides.—The *Chemist* gives the following abstract of a paper by Mr. Massie, in the *Repertoire de Pharmacie*: "For three years the author has made use of bers of forged iron, weighing about one and a half kilograms, for the preservetion of barley, rice, bran, wheat, etc., in whitewood boxes, holding 150 liters. Though it is difficult to explain the action of the metal, it is none the less an excellent preservative. Metallic mercury produces similar results, and in certain cases is more efficacious than iron. That he might be in possession of certain data on the efficacy of two metals, the author experimented by placing in glass vessels, holding one liter, the following substances—viz: barley, rice, bran, meel, ergot of rye, cantharides, and white biscuit. Three flasks were filled with each. In one a piece of iron (80 grams) was placed; in the second mercury (5 grams); to the third no addition was made. With one exception the vessels were not closed, and were allowed to stand in an ordinary well-lighted room from May 7th, 1875, till December 2d in the same year. On the latter date they were examined, when it was found that the sound specimens, without addition, in almost every instance had suffered deterioration to a greater or less extent, and in two or three weevils had made their appearance. The same specimens with iron or mercury were unaltered, save the biscuit with iron, in which a few holes could be counted. The specimens containing weevils originally did not seem to be affected by iron; but mercory seems to have had a decided effect in checking the multiplication of the insects, if it did not destroy them altogether."

Hen's Eggs and Cold.—The degree of cold which a hen's egg can bear without losing its power of development has lately been investigated by M. Colasanti. Having first observed that salt water at ordinary temperature did not affect the development of eggs, he buried some eggs in a freezing mixture of ice and ordinary salt. Of any three or four treated thus, one or other always breaks its shell, and the contents both of these and of the unbroken ones were found solidly frozen. After remaining one or two hours in the mixture (the temperature of which quickly went down to from —7 degrees to —10 degrees C. for 30 to 40 minutes, rising again to —4 degrees or —5 degrees C. by the end of the second hour), the unbroken eggs were taken out, washed and dried, and placed in the hatching oven, having a temperature between 36 degrees and 40 degrees C., and after 10 days they were examined. In every case a normal embryo was found to be developed, without the least trace of anomaly. They were in all respects like the normal embryos of eggs that had been placed in the hatching oven without previous exposure to cold.

Ruined by Rivers.—The *Journal of Chemistry* notes the fact that the French shore of the Mediterranean divides into two distinct parts, which offer a strange contrast to each other. From Genoa to Marseilles all is life and beauty; "all the world" goes thither for pleasure or health. From Marseilles to the coast of Spain, one finds everywhere solitude and desolation. The latter region was at one time highly prosperous, but it has been entirely changed by the immense quantities of sand and mud brought down by the rivers. Narbonne, in the time of the Romans, communicated directly with the sea. It had its lagoon, like Venice, and a deep canal afforded passage to heavy merchant ships and the triremes of the imperial fleet. The lagoon is now blocked up, and the commerce, wealth and activity are all gone. Arles was another very important city; it had two ports, like Alexandria, and was so rich and powerful that a poet of the fourth century spoke of it as the "Rome of the Gauls." The Rhone, with its annual seventeen million cubic meters of sediment, has been its ruin. So with other cities; but while they have become separated from the sea, agriculture is gradually taking possession of the land won from the water, and the vine and olive may yet restore a part of the ancient prosperity.

The Temperature of the Soil.—In the bulletin of the Scientific Association of France, MM. Becquerel gave a report of the observations of temperature made at the Museum of Natural History, during 1875, with electrical thermometers placed in the air, and in soils covered with grass and soils cleared of vegetation. From the results of the last four years it is shown that the mean annual temperature of the two soils, at a depth of 39 inches, and that of the air, is nearly alike; that at depths of 4 to 24 inches the influence of vegetation is to raise the annual mean 0.7° C. above that of soils clear of vegetation; and that during these four years the temperature of soils covered with grass or any other vegetation has not fallen to the freezing point, a fact of no little importance to horticulture.

Cold in its Relation to Hight.—According to some remarks of M. Martins, of Montpellier, cited in the *Belgique Horticole*, the intensity of cold at night diminishes up to a certain hight. This phenomenon was tested by M. Martins by placing thermometers in the Botanic garden and at various hights on the cathedral tower. In clear nights the increased warmth at a higher elevation is the most perceptible; in dull nights there is little or no difference. The reason of the greater injury inflicted on the lower branches of shrubs, etc., is thus accounted for.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 Wk to Nov. 30.		1 Wk to Dec. 7.		1 Wk to Dec. 14.		1 Wk to Dec. 21.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill	....	....	....	....	....	....	....	....
Advance	....	....	....	....	....	....	....	....
Alpha	36⅜	35	37	31	33½	32⅝	34⅜	30½
Alta	2⅝	2½	3⅝	2	3¼	2½	3	2¼
Amer'n Flag	....	....	....	....	....	....	....	....
Amer'n Flat	....	....	....	....	....	....	....	....
Andes	2	1.80	2	1½	2¼	2¼	2¾	2½
Alpa	....	....	....	....	....	....	....	....
Amazon	....	....	....	....	....	....	....	....
Balt'm'e Con	3¾	3½	3⅝	3	3	2¾	2½	2⅛
Belcher	14¾	13⅝	14¾	13½	14¼	13	12⅝	10
Belmont	2¾	2¾	2¾	2½	2½	2⅜	2¼	2⅛
Best & Bel	47⅝	42⅜	46	43	44⅜	42	51⅝	44¾
Buckeye	2¼	2⅜	2	1	....	....	....	....
Bullion	33¾	30	32	31	30	27	30	27
Celedonia	11	10	14	11¾	13¾	12	12½	10¼
California	54⅜	47⅜	51	47⅜	50⅝	48¾	50	47¼
Challenge	....	....	2¾	....	3	....	2	....
Chollar-P'tsi	76	70	84½	70½	83	77	86	81¼
Confidence	13⅜	11½	12⅝	12	12½	12	13	11
Con Imperial	3.10	2.75	2⅞	2.65	2.70	2.55	2.60	2¾
Con Virginia	45¾	43	49	46½	47⅝	43¾	46	44
Crown Point	9¼	8⅝	9¼	8¾	9	8	9	7½
Coeo Con	....	....	....	40c	25c	....	20c	....
Daney	....	....	....	....	....	....	....	....
Dayton	2¾	....	3½	2¾	3¼	2⅝	3	....
Eclipse	....	....	....	....	....	....	....	....
Empire (Id)	....	....	....	....	....	....	....	....
Eureka(G V)	....	....	....	....	....	....	....	....
Eureke Con	11	10½	11	10¾	11¼	11	11½	10⅞
Exchequer	16	12⅝	14	12¾	13½	12	13	11¾
Knox Pa	....	....	....	....	....	....	....	....
Gila	1¼	1	1⅛	95c	90c	70c	62½c	45c
Globe Con	....	....	35c	20c	20c	....	....	....
Golden Char	1⅜	1¼	1⅜	1¼	2	1¼	2	1¼
Gould & Curry	14	11⅜	13⅝	12¾	13⅜	11⅞	15⅜	12¼
Hale & Nor	1¾	6¾	1⅝	7	1⅞	7	8	7⅛
Ide Ellmore	....	....	....	....	....	....	....	....
Jefferson	....	....	....	....	....	....	60c	6
Julia	6¼	5¼	6¼	5⅜	6¼	5⅜	6	5
Justice	26⅜	23½	26¾	25⅜	26¾	24⅝	25⅝	23⅜
Jackson	3¼	3	3	2⅝	....	....	4	3¼
K K Con	2½	....	2½	....	....	....	3	2⅝
Kentuck	10¾	9	10	9¼	9¾	9	10	9½
Knickerb'k'r	90c	....	50c	30c	75c	50c	75c	....
Kossuth	1¾	....	1¾	1¾	2	1¾	1¾	1¾
Lady Bryan	25c	22½c	35c	27½c	25c	....	2·0	25c
Lady Wash	2	1½	4¼	2¼	3¾	2¾	3¾	3½
Leo	....	....	....	....	....	....	....	....
Leopard	6¾	....	6¾	5¾	6¾	5¾	5¾	....
Leviathan	1½	1¼	1½	1	1¼	1¼	1⅞	1½
Mahogany	....	....	....	....	....	....	....	....
Mansfield	....	....	10c	....	....	....	....	....
Meadow V'y	....	....	90c	70c	80c	35c	40c	30c
Mexican	23	22	24¼	22¾	23½	19¾	21⅝	19
Mides	....	....	....	....	....	....	....	....
Mint	....	....	....	....	....	....	....	....
Monitor-Bel	....	....	....	....	....	....	....	....
Newark	....	....	....	....	....	....	....	....
New York	87½c	75c	1¾	87½c	1¼	1	1.10	87½c
Niagara	37½c	....	1·0	....	1·½c	....	....	....
Northn Belle	33⅜	30	34¾	34	34⅜	33	32¾	30
New Coeo	3⅛	3	3½	2¾	3¼	3	3⅜	3¼
Occidental	....	....	3	2	2¼	....	....	....
Ophir	45⅝	42¾	46	43¼	44	35½	36¾	30
Or Gold Hill	....	....	....	....	....	....	....	....
Overman	91	81	122	96	113½	110	113½	104½
Pacific	....	....	....	25c	....	....	....	....
Phil Sheridn	....	....	....	....	....	....	2¾	87½c
Phoche	....	....	....	....	....	....	....	....
Poorman	30c	....	20c	15c	20c	....	30c	....
Prospect	1⅛	1	1¼	1	1	87½c	87½c	....
Prussian	....	....	....	....	....	....	....	....
Ray & Ely	3¼	2¾	4½	....	4¼	3¼	3¾	3
Rock Island	1	....	87½c	62½c	87½c	75c	87½c	80c
Rye Patch	....	....	....	....	....	....	....	....
Savage	12	9¾	12	10¾	11¾	10	11⅞	10¾
Seg Belcher	75	65	95	85	89½	80	86½	80
Sierra Nev	11⅞	11¾	13	11⅞	12¾	11	12	11
Silver Hill	10¼	9	11½	9	10½	9½	10	9
Sth Chariot	....	....	62½c	60c	50c	....	75c	62½c
Snoocr	50c	40c	60c	....	52c	....	75c	62½c
Union Con	12⅞	11½	12¾	11¾	12	10⅞	11¾	10¼
Utah	16	16	15	....	14½	15	14¾	16	14¾
Welle-Fargo	8c	....	5c	....	20c	....	....	....
Woodville	1⅜	1	1⅜	1¼	1¾	1	1¼	1
Yel'w Jacket	17½	15	17	15½	17½	16½	18	16¾

Sales at S. F. Stock Exchange.

FRIDAY, A. M., Dec. 15.

500 Andes 2¼@2⅜
500 Alta @2¾
120 Alpha 3¼@3¼
310 Belcher 44½@44¾
290 Belcher 13½
100 Baltimore Con 2½
60 Bullion 30
1400 Caledonia 12¾
100 Crown Point @9c
450 Con Imperial 2 6/@2.65
1130 California 48¾@48⅝
195 Chollar 84½@83¾
2390 Con Virginia 45¾@45⅝
30 Confidence @
150 Dayton @
50 Exchequer 12½
385 Gould & Curry 12¾@1⅜
1030 Hale & Nor @
220 Justice 25@25¾
195 Julia @3⅜
120 Kentuck 9¾@10
1375 Kniokerbocker 15c
400 Lady Wash 3⅜@3½
200 Lady B 2c
195 Mexican 20⅝@20⅝
75 New York 1.05
535 Ophir 36⅝@36⅝
560 Overman 111@111
300 Phil Sheridan 1@1⅜
25 Rock Island 86c
50 Silver Hill 12
2040 Savage 11½@11⅝
175 Sierra Nevada 12
10 Seg Belcher 86c
305 Union 11¾@11⅝
80 Utah 16
185 Woodville 1⅛
120 Yellow Jacket 17⅞@18

AFTERNOON SESSION.

475 Belmont 2⅝@3
310 Best & Belcher 44¾@44⅝
610 Caledonia 12
500 California 48@47⅞
1750 Con Virginia 44¾@45
20 Chollar @
190 Crown Point 8¼
445 Eureka Con 11½@11¾
100 Grand Prize 4
60 Gila 62½c
250 Gen Thomas 1
50 Gould & Curry 12¼
150 Hale & Nor 7⅜
305 Justice 24⅜
300 Leviathan 1¼@1⅜
945 Leopard 53½@55⅞
380 Leeds 2¼@2⅜
95 Manhattan 15
180 Mexican 20@20⅜
145 Meadow Valley 30c
400 Modoc 6¾@6½
545 Northern Belle 32¾@32½
500 New Coeo 3¼@3.30
540 Ophir 36@36⅜
35 Overman 119@112½
150 Ray & Ely 3
225 Savage 11¾@11⅞
620 Trojan 28c
60 Yellow Jaoket 17¾@17¾

SATURDAY, A. M., Dec. 16.

150 Andes 2⅜@2¼
50 Alta 2⅝
360 Best & Belcher 44¾@44⅝
75 Belcher 13½
60 Bullion 30
26 Baltimore Con 2⅜
670 Caledonia 11¾@11⅝
625 California 47⅝@47⅞
10 Chollar 62
2220 Con Virginia 44¾@44
110 Crown Point 8¾
1760 Con Imperial 2.57½@2.55
185 Eureka Con 11¾
40 Exchequer 12½
100 Golden Chariot 2
160 Gould & Curry 12⅞@13

1385 Ophir 31@30¾
170 Overmen 110@110¾
200 Poorman 30c
200 Panther 35c
20 Raymond & Ely 3
450 South Chariot 62½c
130 Yellow Jacket 16¾@16⅝

TUESDAY, A. M., Dec. 19.

325 Alpha 30½@30⅞
120 Alta 2¾@2⅞
835 Best & Belcher 45@44¾
70 Belcher 13¾
80 Bullion 27¾@28½
295 California 47¾@47⅝
1195 Caledonia 10¾@10½
1340 Con Virginia 44@44¾
400 Crown Point 8⅞
1350 Con Imperial 2.40@2.50
110 Chollar 81@83¾
175 Confidence 11
100 Chellenge 2
185 Exchequer 11⅞@12
215 Gould & Curry 13½@13⅝
730 Hale & Nor 7⅛@7.
1865 Justice 23⅝@23⅝
220 Julia 5½@5⅝
10 Kentuck 9½
200 Knickerbocker 75c
50 Kossuth 1¾
100 Lady Wash 3⅜
865 Mexicon 19@19¾
50 New York 1.05
695 Overman 106@104½
2030 Ophir 30@31
25 Phil Sheridan 2½
240 Sierra Nevada 11@11½
675 Savage 10⅞@10⅝
100 Soocer 62½c
25 S Hill 9⅝
430 Union 10¼@10¼
10 Utah 15½
100 Woodville 1½
75 Yellow Jacket 16¾@16¾

AFTERNOON SESSION.

15 Alpha 31½
600 Andes 2¾@2⅞
180 Belmont 2⅝@2⅝
590 Best & Belcher 46¼@45⅝
65 Belcher 12¾@12⅝
20 Bullion 27½
715 California 48¼@48⅛
2970 Con Virginia 45@44⅞
405 Caledonia 10¾@10⅝
200 Coeo Con 20c
15 Chollar 82@83½
400 Con Imperial 2.30@2.32½
10 Eureka Con 10⅝
660 Gould & Curry 13¾@13⅝
600 Gila 50@48c
500 Gould & Curia 1
100 Grand Prize 4
125 Hale & Nor 7⅛
225 Hussey 31⅜
200 Jackson 4
500 Justice 23⅝@23¾
250 Kossuth 1¾
165 K K Con 2¾
100 Loyel 2¼
840 Leopard 54½@5
245 Leviathan 1¼
100 Menhattan 14½@14¾
266 Modoc 7¾@7⅛
258 Mexican 19⅜@19⅝
80 Meadow Valley 10c
270 Northern Belle 32½@30¾
775 New Coeo 33⅜@3¼
258 North Con Vir 50c
1735 Ophir 31@31¼

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY, A. M., Dec. 14.

415 Alpha 34@33¾
389 Alta 3@2⅞
975 Andes 2¾@2⅞
150 Best & Belcher 43¾@43
430 Baltimore 2½
70 Bullion 30
250 Belmont 3
100 Crown Point 8¼@8
1050 Con Imperial 2.57½@2.63
1090 Con Virginia 44¾@43¾
1095 California 48¾@49
1675 Caledonia 12@12
10 Chollar 81
150 Dayton 3
50 Exchequer 12⅝
275 Gould & Curry 13¾@13⅝
120 Hale & Nor 7¼@7½
455 Jnetice 24¾@24⅝
120 Julia 5⅝@6
30 Kennck 9⅝
30 Knoker 75c
250 Kosnth 1¾
200 Lady Bryan 25c
100 Lady Wash 3¾
500 Leviathan 1¼@1⅜
455 Mexican 20¾@20⅝
160 Niagara 1¾
50 North Con Vir 80c
690 Ophir 36@36⅜
245 Overman 112@113
10 Occidental 2½
120 Prospect 87½c
100 Rock Island 95@87½c
300 Savage 10⅝@10⅝
215 Sierra Nevada 11⅝
100 Silver Hill 9⅞
500 Trojan 34@35c
90 Utah 14¾
490 Union 11¼@11
60 Woodville 1⅞
300 Yellow Jacket 17@17½

AFTERNOON SESSION.

810 Belmont 2¾
230 Best & Bel 43½@43⅝
1205 Con Virginia 43⅞@44
385 California 49¼@49½
30 Caledonia 12½
150 Eureka Con 11½
25 Gila 15c
20 Gen Thomae 1
520 Gold Cnar.ot 2
115 Hale & Norcross 7⅛
10 Jackson 4
140 Jnstice 24½@24¾
200 K K Con 2½
1280 Leopard 56¼@
75 Manhattan 15
460 Modoc 7¼@7⅜
810 Northern Belle 33⅜
500 New Coeo 3¼
620 Ophir 36@36¾
30 Poorman 30
220 St Patrick 30
490 Savage 10⅞@10¼
30 Union Con 11⅛
225 Yellow Jacket 17½@17⅝

THURSDAY A.M., Dec. 21.

590 Alpha 29¼@31
2186 Bullion 60½@59¾
400 Belcher 10@10¾
110 Bullion 27@27½
3085 Celedonia 11¾@11⅞
245 Chollar 81½@85
495 California 48½@48¾
235 Crown Point 8⅜@8⅞
2750 Con Virginia 45⅝@46
692 Con Imperial 2¼@2.30
230 Exchequer 11¾@11¾
1010 Gould & Curry 13½@13⅝
655 Hale & Nor 7¼@7⅜
310 Julia 5@5¼
710 Justice 23¾@23⅝
545 Mexican 20¾@20¾
2180 Ophir 30½@31¾
955 Overman 112½@113
285 Savage 10¾@10¾
140 Sierra Nevada 11@11¾
5 Seg Belcher 80
475 Succoor 75c
15 Utah 14½@15
375 Union Con 10¼@10⅜
305 Y Jacket 16½@16¾

AFTERNOON SESSION.

160 Alpa 10c
50 Alta 2½
200 Baltimore Con 2½@2⅝
250 Belmont 2¾
400 California 48¼@48
50 Challenge 2
50 Con Imperial 2.60
355 Golden Chariot 2½@2¾
200 Hussey 40c
120 Jackson 4¼
580 Knioker 87½c
100 Leopard 4¾@4⅝
210 Leede 2@1¾
295 Manhattan 15@15½
1265 Modoc 7¾@7¾
7 Northern Belle 30@30¾
200 New Coeo 3¼
520 New York 95@90c
295 Ophir 29½@29¾
60 Prospect 80c
10 Panther 1
700 Phil Sheridan 1⅞
190 Raymond & Ely 3½
700 S Chariot 75c@
55 S Hill 8¾

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary. Place of Business.
Adame Hill Con Mi Co.	Eureka	8	25	Dec 7	Jan 12	Feb 2	W W Traylor 309 Montgomery st
Amazon Con M Co	Nev	8	20	Nov 28	Jan 4	Jan 25	J A Reichart 330 Pine st
American Flag M & M Co	Ely Disct	9	25	Dec 19	Jan 29	Feb 19	G R Spinney 320 California st
Crown Point Ravine M. Co.	Washoe	4	15	Dec 15	Jan 22	Feb 10	J M Buffington 309 California st
Con Imperial M Co	Weshoe	2	25	Dec 19	Jan 24	Feb 14	W E Dean 419 California st
Baltimore Con M Co.	Washoe	13	50	Dec 7	Jan 10	Jan 30	C A Sankey 331 Montgomery st
Belmont M Co	Nev	10	50	Nov 22	Jan 4	Jan 30	F Swift 419 California st
Boston G & S M Co.	Washoe	1	100	Nov 8	Dec 12	Jan 2	W E Dean 419 California st
Florida M Co	Washoe	7	25	Dec 6	Jan 13	Feb 8	L Hermann 220 Sansome st
Glasgow G & S M Co.	Washoe	4	15	Dec 6	Jan 10	Jan 31	J A Reichart 330 Pine st
Golden Chariot M Co	Idaho	18	50	Oct 26	Nov 13	Dec 26	W P Shaw 406 California st
Gould & Curry S M Co.	Washoe	23	1 00	Nov 15	Dec 29	Jan 16	A K Durbrow 309 Montgomery st
Knickerbocker M Co	Nev	16	*1 25	Nov 14	Dec 16	Jan 4	J H Sayre 330 Pine st
Lady Bryan M Co	Washoe	14	50	Nov 2	Jan 28	Jan 18	W H McClintock 419 California st
Lady Washington M Co	Washoe	9	50	Nov 11	Dec 14	Jan 2	D L Thomas 419 California st
Lemoille M & M Co.	Cal	2	20	Dec 1	Jan 8	Jan 29	L Hermann 220 Sansome st
Mansfield M Co	Cal	6	60	Nov 28	Jan 4	Jan 23	M Snithgton 311 California st
Niagara G S M Co	Nev	4	25	Dec 4	Jan 5	Jan 29	W R Townsend Nevada Block
North Con Virginia M Co.	Washoe	6	50	Nov 21	Dec 22	Jan 16	J Maguire 419 California st
Raymond & Ely M Co	Ploche	8	1 00	Dec 5	Jan 15	Feb 8	T W Colburn 419 California st
Rye Patch Con M & M Co.	Nev	5	6	Nov 11	Dec 19	Jan 9	D F Verdenal 409 California st
Savage M Co	Washoe	25	1 00	Nov 25	Dec 28	Jan 17	E B Holmes 308 Montgomery st
Superior G & S M Co.	Washoe	4	10	Dec 15	Jan 17	Feb 6	T Tyson 411½ California st
Trojan M Co	Washoe	4	25	Dec 14	Jan 15	Feb 5	D Wilder 328 Montgomery st
Wells-Fargo M Co.	Weehoe	6	15	Nov 6	Dec 9	Dec 29	O H Bogart 402 Montgomery st.
Yellow Jacket M Co	Washoe	24	1 00	Oct 28	Dec 4	Jan 3	G W Hopkins Gold Hill

*$1.25 old stock; 30c new.

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Alpine G & S M Co	Washoe	1	3	Dec 5	Jan 6	Jan 23	C A Gould 419 California st
Atlantic Con M Co	Nev	1	25	Oct 20	Dec 23	Jan 22	P Robinson 330 Pine st
Black Hawk Coal M Co	Cal		5	Nov 16	Jan 17	Feb 17	H A Powell 520 Montgomery st
Dine Basket M Co	Nev	3	2 25	Nov 2	Dec 9	Dec 30	C J Eaton 724½ Market st
Cabinet M Co	Washne	2	5	Dec 11	Jan 16	Feb 15	J F Sterling 330 Ploe st
Coemopolitan M Co	Washoe	4	25	Dec 8	Jan 12	Jan 31	M Landere 309 Montgomery st
East Branch M Co	Cal	6	16	Dec 9	Jan 10	Jan 30	J H Page 429 California st
Eclipse & Lee M Co	Cal	2	25	Nov 11	Dec 12	Jan 5	D Buck 309 Montgomery st
Eminent M Co	Cal	1	50	Nov 10	Dec 12	Jan 3	W H Chickering 220 Sansome st
Gold Run M Co	Cal	14	50	Nov 14	Dec 21	Jan 10	C C Palmer 41 Market st
Josephine Grevel M Co	Cal		10	Dec 6	Jan 8	Jan 25	Wm Small 531 Californie st
Lexington M Co	Nev	1	5	Nov 10	Jan 12	Jan 30	H B Congdon 330 Pine st
Lone Tree M Co	Cal	1	10	Oct 28	Nov 29	Dec 16	C A Gould 419 California st
Montezuma M Co	Nev	1	½	Nov 29	Jan 2	Jan 19	H B Wheston 402 Montgomery st
Monumental Quicksilver M Co.	Cal	2	6	Nov 17	Dec 26	Jan 18	W H Manlove 6 Market st
Newhall Petrolenm Co	Cal	1	1	Dec 4	Jan 20	Feb 13	G S Riggs 515 California st
North Fork M Co	Cal	11	10	Nov 8	Dec 11	Dec 29	E F Oetman Sacramento City
Peyton G & S M Co	Nev		50	Nov 21	Dec 23	Jan 8	T J Owens 215 Sexsome st
Plymouth Rock M Co	Utah	3	1	Dec 2	Jan 8	Jan 27	E Chattin 442 California st
Rising Star M Co	Cal	2	10	Nov 8	Dec 9	Dec 30	J W Coppage 330 Pine st
San Francisco Petrolenm Co	Cal	2	5	Nov 22	Dec 26	Jan 14	W Easton 32 Montgomery st
San Francisco Sulphur M Co.	Nev	2	10	Nov 15	Dec 20	Jan 10	J Roberts 328 Montgomery st
Silver City M Co	Nev	1	25	Nov 16	Dec 22	Jan 11	A K Durbrow 309 Montgomery st
Vnican Coal M Co.	Cal	2	10	Dec 18	Feb 6	Mar 1	J Greif 636 Washington st
Weaverville Hydraulic Co.	Cal	8	1 00	Nov 10	Dec 18	Jan 15	F H Rogers 334 Pine et

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
California M Co	Washoe	C P Gordon	309 Montgomery st	Annnel	Jan 17
Con Virginia M Co	Washoe	J W Stevens	309 Montgomery st	Aonsl	Jan 11
Dos Bay Coal Co	Oregon	T C Beach	84 Montgomery st	Aonnal	Jan 10
Leopard M Co	Nev	R H Brown	426 California st	Annual	Dec 26
Santa Rosa G M Co	Cal	W H Reycolds	115 Davis st	Annnl	Dec 26
Sniphur Bank Quicksilver M Co	Cal	I Hermann	220 Sansome st	Annnl	Jan 2
Sonth Silver Hill M Co	Nev	B F Dehl	121 Montgomery st	Annnal	Jan 2
Warrington M Co	Cal	P D Moore	330 Pine st	Annual	Dec 26

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Alps S M Co	Ely District	O D Squire	Stevenson's Bldg	50	Apr 15
Belcher M Co	Washoe	H C Kibbe	419 California st	1 00	April 10
Black Bear Quartz	Cal	W L Oliver	316 California st	40	Oct 11
Califorula M Co	Washoe	C P Gordon	Nevada Block	2 00	Dec 16
Conesolidated Amedor	Cal	F B Leathem	426 California st	25	Oct 9
Con Gold Hill Quartz M Co	Nev	R Wegener	414 California st	25	April 17
Cons Virginia M Co	Washoe	A W Havens	Nevada Block	2 00	Dec 11
Comanche M & M Co	Nev	W W Traylor	Nevada Block	2o	Oct 25
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	2 00	April 11
Empire M Co	Sierra Co Cal	Chas Collichonn		50	Sept 28
Empire M & M Co	Washoe	W E Dean	414 California st	25	April 17
Imperial S M Co	Washoe	W E Dean	414 California st	25	Amril 17
Leopard M Co	Nev	R H Brown	426 California st	60	Dec 15
Manhatian S M Co	Nev	J Crockett	419 California st	1 10	Dec 9
Northern Belle M & M Co	Nev	Wm Wilke	309 Montgomery st	1 00	Dec 16
St Patrick M Co	Cal	D F Verdenal	409 California st	30	Mar 19
West Comstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Feb 24

California Board—Latest Sales.

WEDN'SDAY, A. M., Dec. 20.

10 Alpha 32
50 Andes 2¼
105 Belcher 13@13½
151 Baltimore 2½
85 Best & Bel 47¼@47½
200 Caledonia 10¾@10¾
1240 Coeo Con 21@17c
100 Cosmopolitan c
40 Oshrnia 49¾@49
10 Con Virginia 46¼
800 Con Imperial 2¾@2.30
40 Dayton 3¼
10 Exchequer 12½
24 San Thomas 1
125 Gonld & Curry 13¾@14¼
1930 Globe 2c@2.1c
185 Hale & Nor 7¼@7⅜
45 Julia 5¼@5½
100 Jenny Glynn 25c
150 Knickerbocker 80c
300 Lady Bryan 15@13c
150 Leviathan 1¼@1.15
1500 Monnmental 28½c
400 Mansfield 2½@2c
185 Mexican 20¾@20½
100 Niagara 10c
100 Nevada 25c
100 New York 1.05
55 Overman 111@110
355 Ophir 32¾@31½
300 Phil Sheridan 2¼@2¾
100 Prospect 85c
150 Rock Island 80c@
250 Southern Star 1½
270 Savage 10¾@11
50 Trenton 8¾
800 Trojan 51@52½c
20 Union 11@10¾
40 Woodville 1½
10 Yellow Jacket 17
75 Andes 2¾
225 Baltimore Con 2½@2¼
5 Belcher 12¾
155 Best & Bel 47¾@47¼
265 Caledonia 11¾@11⅞
200 Coeo Con 17c
30 Con Virginia 44¾
859 Con Imperial 2½@2¾
45 California 48¼
65 Exchequer 12½
900 Ely 2c
185 Gen Thomae 80c@1
130 Gonld & Curry 14½@14¾
100 Jenny Glynn 25c
150 Justice 24¼@24¼
850 Leviathan 1¼@1.2 ½
150 Lady Bryan 4@10c
20 Mexican 21
100 New York 1.05
130 Ophir 31½@32¼
100 Oscie 1½
800 Oregon 1½
100 Panther 35c
100 Phil Sheridan 2
25 Rock Island 80c
200 South Chariot 62½c
4633 Trojan 60@75c
275 Union 10¾@11
300 Woodville 1.08@1.06
95 Yellow Jacket 17

Pacific Board—Latest Sales.

WEDN'SDAY, A. M., Dec. 20.

25 Alpha 32
150 Atlantic 2¾@2½
50 Andes 2½
300 Alta 2⅝
270 Best & Bel 47¼@47
95 Belcher 12½@12⅛
95 Baltimore 2½
20 Bullion 28
620 Con Imperial 2¾@2.32½
600 Con Virginia 45½@45
150 California 48⅜
200 Crown Point 7⅞
85 Chollar 83
300 Chollar 11¾
500 City of Hot 18c
300 Cosmon 6c
100 Exchequer 12@11¾
180 Gonld & Curry 14½@14¾
210 Gould & Nor 7¼
400 Julia 5¾
160 Justice 24
250 Leviathan 1.10@
1300 Mexican 20¾@20¾
726 Ophir 31⅞@32
50 Overman 113½
100 Prospect 62½c
120 Phil Sheridan 2¾@2¾
150 Rock Island 78c
30 Sierra Nevada 11¾
80 Savage 10¾
1050 Trojan 60@49c
60 Utah 16½
30 Union 10¾
150 Yellow Jacket 16¾

AFTERNOON SESSION.

75 Andes 2¼@2.15
50 Alpha 32c
475 Best & Bel 48¾@51
30 Chollar 84¾@85¾
110 California 49½@48⅞
190 Caledonia 12½
100 Con Virginia 45¾@45⅞
710 Con Imperial 2.40@2.42½
100 Gila 59c
300 Gould & Curry 14¼@15⅛
200 Golden Chariot 2¾
330 Gen Thomae 1@1⅛
200 Hussey 30c
90 Julia 5¾
100 Jefferson 57½c
120 Justice 24¾
180 Leopard 56
5 Manhattan 15
50 Modoc 7¾
180 Mexican 21¼@21
110 Northern Belle 30@30¾
60 N Coso 3¼
305 Ophir 32¾@32¾
300 Phil Sheridan 2¾
30 R & Ely 3
10 Savage 10¾
20 Sierra Nev 11¼
1050 Succor 75@81½c
400 Trojan 78@62½c

generl market and do not at all sympatbize with its improvement, while every sign of weakness in the remsinder of the Comstocks bas been seized upon by tbe bears as an opportunity for further bammering. The story now is tbat tbe grest ore body being worked in Opbir is at lsst showing signs of exhsustion, and tbat new levels will bsve to be opened and new developments msde before tbe montbly returns can be beld up to their recent strength. A quasi strnggle for the control of Ophir and Mericsn has also been thongbt to be responsible for their eccentric course, but as tbe old managements still firmly hold the reins tbere csn be bnt little in this. Probably the principal csnse of tbe decline in Opbir is simply the fact that a prominent operator bss been unloading the stock at a rate wbiob tbe market could not stand. The two bonanza mines do not show sny important obanges. Their yield tbus far dnring tbe month is fully up to the msrk, and refutes the predictions of the bears. It will be remembered tbat for over a year these mines bave been said to be giving out and that their fnture dividends have been sold at a large discount. Yet when esob epoch of dissster is rescbed, tbe mining situation remains tbe same, and tbe propbecies of tbe shorts are sbown to be something like those of the Millerites, wbo are forever postponing the wratb to come until a more favorable sesson.

Business bas been fairly active and shows sn improvement upon tbe aversge transsctions of the preceding week. In spite of tbe low ebb, of qnctations, brokers' orders are plentiful enough to insnre full commissions, and tbe prevailing tone on the street is consequently satisfactory to at least one class. The present condition of the market is sucb as to preclude sny general rise sncb as used to occur in the days before tbe various stocks were watered to exireme dilntion. Wbatever upward moves are put on foot by tbe powers are necessarily confined to one stock or group of stocks at a time, to tbe exclusion of the general market. In the long run, however, tbis amounts to tbe ssme tbing, and is conducive of grester vsrlety by keeping at least one favorite before the people all tbe time.

Mining Share Market.

The unsatisfactory state of affairs still continnes in stock circles. Dnring the psst week tbe ups and downs bave been numerous and freqnent, and on the whole tbe downs have had the best of it, the general market sagging to nnexpected deptbs. The bright exceptions to tbe prevailing depression have been Overman at the soutb end and the gronp led by Best & Belcher, consisting of that stock and its immediate neighbors, Gould & Curry, Savage and Hale & Norcross. Overman is still so closely held tbat its price is easily maintained by tbe management, while late developments in Consolidated Virginia are accepted as giving color to the belief of the extension of the great bonanza ore-body into the territory of Best & Belcher. On the other hand, Opbir has somewbat stsrtled tbe stock-dealing commnnity by tbs snddenness of its last downward plnnge, the priee baving receded from $35 at the beginning of tbe week to $29 on Tbursday afternoon, with many vibrations between these limits in the interim. This stock aud Mexican are at present traveling in a distinct groove from tbe

Ir is rumored tbst tbe New York Central railroad company are abont to extend their freight business to include ocean transportation, snd tbat a contract hss been made witb Jcbn Rosch & Scn for tbe construction of eight iron steamships, of 4,000 tons burden.

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR.

Opening a Mine.—Amador *Dispatch*, Dec. 16: We understand that a gentleman by the name of Beck, who has been looking around among our mines for some days, in the interest of capitalists of San Francisco, has procured a lead on Spanish gulch, between this place and Mokelumne river, and will immediately put six or eight men at work to prospect and open the mine. There is no doubt but that rich mines exist between Jackson and the river, if capitalists will only open and work them.

Montierhaan.—Amador *Ledger*, Dec. 10: This mine continues to give evidence as to its permanent character. Toward the end of last week a very rich vein of quartz was struck in the drift 180 feet from the surface. It is about eight inches wide, and fairly studded with gold. The owners are very sanguine over the prospects of the mine, as they have every reason to be. It has more than paid expenses from the start. After every crushing a dividend has been declared. The ore body increases in size and richness as depth is attained. They are now working from six to eight men, and take out from 15 to 16 tons per day.

Volcano Gravel Company are pushing their tunnel through the hill, to tap the Volcano basin, with vigor. The head of the tunnel is now in 200 feet. Twenty-five men are now at work on the undertaking, which makes quite a difference to the business of Volcano. The rival company have ceased running their tunnel, leaving the field in the hands of their more active competitor.

Crown Point is now down 120 feet. The new 10-stamp mill is to be in running order by the first of January.

The Govey holds on its way rejoicing, yielding the richest kind of rock and plenty of it. It is said that no rock has been crushed for many months that did not yield $22 per ton. One year ago the stock went begging at $1.50 per share; to-day it cannot be bought for less than $30. The new 20-stamp mill is about finished, and will be started about the first of next month.

Sylvester Tunnel, on Huat's gulch, is in 180 feet. A contract has recently been let to run 200 feet more. It is not expected to strike the ledge until they get much further into the hill.

Spanish Gulch.—Captain Book reports everything favorable in connection with the mining property purchased by him in this gulch. He has been getting timber to put in the shaft, and also for the erection of a dwelling house. The company which he represents has secured 3,000 feet on the ledge. The croppings may be traced for 1,600 feet, and averages, it is said, 15 or 20 feet in width. The site for a mill is to be surveyed forthwith.

CALAVERAS.

Emerson Claim.—Calaveras *Chronicle*, Dec. 10: The extension of the bedrock tunnel in the Emerson hydraulic, Happy valley, to permit the laying of the flume in closer proximity to the gravel bank, is completed with the exception of a few finishing touches. As soon as the tunnel is fully completed and the flume laid, piping will be recommenced with energy.

New Shaft.—The mill at the Duryea claim, Chile gulch, is temporarily lying idle to permit of the putting in of a new and heavier cam shaft. The mine is now in splendid shape for working, and when the mill is again in readiness no difficulty will be experienced in keeping the stamps constantly employed.

Mount Tmolus.—We hear favorable reports from the Mount Tmolus mine, Jesus Maria district. The mill, a five stamp battery, is kept constantly running, the appearance of the plates indicating a fair quality of ors. Operations in the mine are continued vigorously, the developments made being of a favorable and encouraging nature.

Pipino has been resumed in Valth'e hydraulic, Tunnel ridge, the blast lately put into the upper claim having been exploded. Everything is progressing favorably, and Mr. Velth is well along the road towards another big clean-up.

Upper Country Items.—Mr. Hall, of Ione City, has bought the well known Zacatero mine, at West Point, and is erecting a 10-stamp mill. We also understand that Mr. Hall has obtained the Carey mine, near the Zacetero, and will work rock from both in his mill. A lot of rock from the Japan mine, owned by Williams & Co., yielded an average of $35 per ton. Champion still crushing. Josephine, keeping the water out while waiting for advices from below. Operations are progressing steadily at the Mina Rica, and good ore is being extracted. Splendid rock is being taken from the old Holmas mine, near Mosquito, now owned by Griswold & Co. Ledge four feet thick. Times are very lively in West Point.

INYO.

Local Notes.—Coso *Mining News*, Dec. 16: Work in different parts of the Defiance has been pushed ahead, particularly in the main tunnel and the north raise, developing increased bodies of ores in both. For the furnaces coal and wood is being daily delivered, and it is the intention of Mr. Reddy to start them by the 20th inst. There will be no let up or hindrance to their continuous and successful operation during the entire winter.

Monoo.—Inyo *Independent*, Dec. 29: The Modoo company, Lookout district, are doing a far more extensive business than most people are aware of. Not less than 500 mules, and quite an army of packers, teamsters, coal burners, wood choppers, etc., are constantly employed in furnishing coal and other local supplies. This and the freighting interests combined has built up a little town in Darwin Wash, which is said to be by odds the liveliest in the county. The furnaces are receiving no less than 3,000 bushels of coal per day. The average out-put of one furnace since Oct. 9th, when it was first started up, is close on to 160 bars every 24 hours; a second furnace of the same capacity will soon be in constant operation, and then the daily yield will be over 300 bars, or about 13 tons of bullion, which heretofore has been worth $490 per ton; in round numbers, $6,500 worth every day. The molten metal at the Modoo furnaces is subjected to a skimming process before pouring, by which the copper slag and other valueless bulk is removed, giving the unusual high grade to the bullion. Nearly everything in the shape of ore found in the mine is put through the furnace, reducing the apparent value of the high grade ore, which averages $190 per ton. It is said that this ore taken in the mass is unequaled for the facility with which it smelts; save in one recent instance, caused by an accident, the furnace has never been threatened with a "bank" since it was started.

NEVADA.

Mining on the Ridge.—San Juan *Times*, Dec. 16: John McCarthy, who is mining ground belonging to the Eureka Lake company, between Cherokee and North Columbia, has been making some excellent clean-ups recently. Mr. McCarthy has been working under great difficulties, having a great deal of pipe clay to contend with, and for the want of a tunnel of sufficient depth not being able to reach bedrock. Still, he manages to realize from top gravel a handsome dividend, after paying all expenses. In the neighborhood of Columbia Hill, the Eureka Lake company own claims that, for the want of a tunnel to carry off the debris, cannot be worked properly. The top ground has been washed off and the bottom ground still remains. It has a depth of from 40 to 100 feet and is richer in precious metals than any ground on the Ridge. It is said that a tunnel of 3,000 feet in length will reach said mines and open up that entire section of the country for mining operations. The Eureka company own the key to the position, the ontlet, and with an expenditure of $100,000, or there about, can open up the richest mines on the Pacific coast.

Mills.—Grass Valley *Union*, Dec. 14: We hear it reported that a number of mills for stamping out gold will soon be put up in the neighborhood of Grass Valley. Capt. Godfrey, of the Godfrey mine, on Alta hill, is making arrangements for a mill which will be used for working the gravel which is being taken out. It pays well to mill that gravel. There is a talk that the Central mine, near Granhorn creek, will soon have a mill of its own, to be run by water power. The Kentucky Ridge mine is inclined very strongly toward putting up a mill. The Homeward Bound, as things now are working, will be obliged to have stamps of its own at work as early as May. We expect to hear of more pounding in Grass Valley next year than has ever been here in any previous time. Every indication is in that direction.

Alaska Mine.—Is about two miles south east from Grass Valley, near the Colfax road. The shaft is now down about 200 feet, and 150 feet below the water level. The drift has only been run about 12 feet, but the drift and shaft have in them a ledge which is from 20 inches to two feet thick. The rock shows well, indeed we may say big, la free gold and heavy sulphurets. The owners are very much pleased at their prospects, and Thomas McFate, who is bossing the works, says the ore is certainly "way up."

Foothill Tidings, Dec. 16: Is the name of the new mine discovered out beyond New York hill by the Mullen Bros. and McDonald, reports of rich rock in which we have several times noted. The Pacific is still turning out gold in abundance, as witness ten loads recently crushed which turned out $385 to the load. This strike is said by those best posted to be one of the richest ever made in the district.

PLACER.

Gravel Mines.—Dutch Flat *Forum*, Dec. 14: The weather continues clear and dry, and the supply of water in our various ditches is gradually diminishing. We note that the Summersett claim has started up and is washing nights, using part of the head which runs to the Southern Cross by day. The Franklin claim exploded a blast a few days since, which did splendid execution, crushing and crumbling the face of the bank so that the gravel can now be washed with ease. The new derrick in this claim is a splendid piece of machinery. The mast stands one hundred feet in hight, with a boom 90 feet in length. It is intended to raise out with ease rocks that weigh 20,000 pounds. The actual cost is not made known, but it is estimated at about $1,600. The Baker is being worked with vigor, using water four hours each day. The powder that was in the Indian Hill claim, belonging to the Gold Run D. & M. Co., was a perfect success. It consisted of 900 kegs of powder, distributed in various drifts under the gravel. The pit was funnel-shaped, arched down in every direction, and the powder was forced to lift the mass perpendicularly, which it did with crushing effect. Blasts of this character do not make as many cracks or leave as much loosened gravel on the surface as when they have a face to break, but we predict the bottom is well crushed and will wash off with ease.

Yon Bet Mines.—The Nevada hydraulic mining company are still washing from three different points. The Neece & West company, having completed the necessary improvements in fitting up their claim, have turned on water and are now washing. A bedrock tunnel, 600 feet long, was completed to the Hussey mine last week. This will give the necessary grade to work the mine to advantage.

Remington Hill Mines.—The Rhode Island company having completed a successful season's work in ground sluicing, are now busy cleaning bedrock, undercurrents and ground sluices, which will take one week more to complete, when work will be commenced in their drift diggings and continued during the winter. The Wide West company tapped the channel in their mine last week, by means of a bedrock tunnel 400 feet in length, and are quite jubilant over their success in finding the gravel to be very rich. In opening the drift to commence breasting out, which took two men five days to complete, the gravel taken out by them during that time was washed and yielded $83, thus showing it to be one of the richest drift mines yet opened in this vicinity. This claim is also extensive, having a length along the channel of 2,100 feet, by a width of 1,200 feet.

Quartz Mining Items.—Placer *Herald*, Dec. 16: The Julian, on Jenny Lind flat, below Newcastle, is being worked energetically. The 20 stamp mill is running steadily, and the rock is yielding flatteringly. Close on to 100 ounces a week, we understand, has been the average clean-up since the mill started, several weeks ago. The St. Patrick company's new mill, as fine a mill of its size as there is in the State, is running steadily on good ore from the company's Crater mine. The machinery of this mill, consisting of a rock crusher, 16 stamps, 6 Hendy concentrators and 4 pans, 1 Wheeler and 3 Knox, is run by a hurdy-gurdy wheel only 6 feet in diameter, which wheel is driven by 120 inches of water under 140 feet pressure. The water costs but about $14 per day, whereas wood to run the engine of the old mill cost at least $25 per day. This mill with its modern appliances is run by one-half the number of men that was required to run the old mill. Besides doing its work so much more satisfactory, the difference in the expense of the new mill as compared with the old one will be a big item in the company's favor each month. At the mine a sufficient force is employed to take out ore as fast as the mill can crush it. The Eclipse mill and mine, under the direction of their owners, who are mostly residents of Dutch Flat and Gold Run, are being put in a condition to be operated. C. A. Cooper is putting up a water wheel for the purpose of running a new style quartz crusher. It is the intention, we believe, to devote it mostly to custom work. Mr. Shurtliff, who has been engaged in mining and prospecting in Ophir district for some time, went to work in an old shaft on Duncan hill a month or two ago, and up to this date has succeeded in taking out some $6,000 or $7,000.

SIERRA.

Slope.—*Mountain Messenger*, Dec. 16: The owners of the "Slope," at Port Wine, have found a body of gravel that pays well in the old mine. How extensive it is no one can tell, but the prospects are favorable for quite a large amount of gravel.

Pioneer.—The Pioneer company, of Gress Flat, have completed their tunnel of some 1,700 feet and raised a shaft. They contemplate pushing the tunnel further ahead, but are so fixed that they can work when water comes in sufficient quantities.

Iowa Shaft.—The Iowa shaft only lacked about eight sets of timbers from the bottom, a week ago, and must be nearly down by this time, unless they have met with obstructions in the shape of boulders. They found one some time since that took the workmen 24 hours to blast through.

Forest City.—It really does one good to visit this lively burg and witness the mining operations most everywhere in progress. Plenty of work for all and sure pay is much better than is the case with the suffering millions in the bleak and desolate Eastern regions of the Union. Only last Sunday, the regular monthly pay day of the Bald Mountain company, $6,000 was distributed in gold coin amongst the employes of this single company, most of which ultimately finds its way into the pockets of every business man in town. Your correspondent was shown by Treasurer McNaughton a pailful of coarse gold, worth the nice little sum of $3,000, taken out in driblets with the small amount of water available. This winter's clean-up promises to beat any of its predecessors. Fifty thousand dollars' worth of improvements have been put on the Bald Mountain mine this year, and it is now one of the best fitted gravel digginge on the Pacific coast. Their main tunnel will soon be in 4,000 feet. The most recent added addition and greatest institution amongst the novelties of this city is the engine of the Bald Mountain company. We took a seat in one of the cars, and soon we were rattling over the rails at break neck speed into the lengthy, dark tunnel—as good average time as is generally made on the Central Pacific. In less than three minutes we reached the present terminus, a distance of 3,000 feet. The track is well laid and will soon be firmly settled. The future can only determine what will be all the results of this new era in mining. That far the engine has been a complete success, and under its competent managers it cannot deteriorate in value. South Fork company are laying in timbers for working this winter. No new developments here. North Fork company have thus far expended $70,000. Pay roll last month, $3,200. They are blasting out the creek, alongside the Bald Mountain flume, and are rapidly putting in one of their own. Watson Bayles keeps the boys vigorously at work, but will not be able to reach pay gravel, working nights, days and Sundays, until next June, most probably two lots for water.

TUOLUMNE.

Riverside.—Tuolumne *Independent*, Dec. 16: Work on the Riverside tunnel has been suspended until March, when new machinery will be ready to drive on the work with increased speed. At that time the new Burleigh drill will be ready for operation, and the tunnel driven day and night. The distance to run to reach the shaft is about 600 feet, where the new tunnel will be some 500 or 600 feet below the old workings.

Nevada.

WASHOE DISTRICT.

Con. Virginia.—Gold Hill *News*, Dec. 20: Daily yield, 350 tons of ore. The ore bressts show no difference in the quality of the ore extracted. The ore bodies on the 1400, 1500 and 1550-ft levels show but one important feature or change. That feature is the steady widening of the ore body on the 1550-ft level. The ore at that point has been opened a distance of 60 feet further to the eastward than on any of the levels above, and the east wall of the ledge has not been found. The immense width of the ore vein at that point taken in connection with the ore development in the winze, 147 feet below that point, promises a mine, when the 1650 and 1700 ft levels are opened, of a proportion so magnificent that the most familiar with ore values could hardly estimate its worth. The decrease in the amount of ore extracted has been owing to a loss of the Gould & Curry hoisting facilities. The west drift on the 1650-ft level is in a distance of 461 feet, and will, without doubt, reach the ore vein within the next two weeks. The 1650-ft station at the C. & C. shaft has been so arranged as to permit of the loading and unloading of the ore cars from double-decked cages without having to move the cage after it has once stopped, which is a valuable improvement, saving as it does a great loss of time in the loading and unloading.

California.—Daily yield, 550 tons of ore, keeping the mills crushing to their fullest capacities. The ore bresste end stopes on the 1500 and 1600-ft levels show little or no change, and continue their uninterrupted and splendid yield of rich ore. The ore in the face of the south drift on the 1600-ft level continues of an excellent quality. A splendid air engine of 20-horse power is being placed in position at the deep winze near the south line for the purpose of draining the water. This air engine is the largest of the kind that has yet been put in use in any of our mines below the surface. The flow of water is handled readily by the pumps. The tank station below the 1650-ft level is completed. The main west drift on the 1650-ft level is in a distance of 461 feet, the face in pretty hard rock. It is confidently expected that this drift will cut the ore vein by the 1st of January next.

Gould & Curry.—The erection of the new pumping machinery is being pushed to completion with all the vigor possible. The two hoisting compartments of the shaft have been retimbered from the surface down, and are now in the best of working condition. The pump compartment of the shaft is now undergoing a complete retimbering.

Justice.—Daily yield, 330 tons of ore. This is a little in excess of the number of tons crushed, 30 to 40 tons per day being taken out and delivered at the mills as a reserve in case of a blockade of the roads by storms during the winter. The ore stopes on the 500-ft level continue to yield good ore and are looking well as usual. The winze below this level is also developing a fine body of good pay ore. There is little or no doubt now but this body of ore is the same as that already being worked further to the southward on the 500-ft level.

Julia.—The main south drift on the 1600-ft level is steadily advancing, the quartz in the face showing better with every foot attained. The west cross-cut from the main south drift on the 1500-ft level has penetrated a body of fine quartz a distance of 40 feet. This quartz gives assays ranging from $6 to $20 per ton. The appearances are that it is both widening and improving.

Hale & Norcross.—The pumps have averaged during the past week seven and three-quarter strokes per minute, not a moment of time having been lost in any way whatever. A general gain on the water is evident, although a sudden giving way of some obstruction on some of the lower levels will cause an occasional rise of a few feet. This is the case in both the Savage and Hale & Norcross, and proves beyond a doubt that the head of the flow has been overcome, and all that remains to do now is to extract the water that now fills the lower levels.

North Con. Virginia.—Everything in and about the mine is in the best working condition, and the developments are being pushed with great energy at all points. Sinking the shaft is going ahead at the usual rapid rate.

North Caregon.—Drifting east at the 500-ft level is well started and making excellent progress. It will not take long to run into the main ore vein.

Sierra Nevada.—The south drifts on the 1600 and 1250-ft levels are each steadily advancing in very favorable ground. The flow of water at bottom of main shaft is kept well under control.

Ophir.—Daily yield, 200 tons of ore, keeping the Nevada and Santiago mills steadily running. Sinking the main incline is being pushed ahead with all the dispatch possible.

Bullion.—The face of the cross-cuts on the 1600-ft level are steadily advancing without change. The face of the south drift on the 1500-ft level is in quartz of a lively character.

Overman.—The completion of the new pumping machinery is being pushed as rapidly as the work will permit. The 1300-ft station is nearly completed, and a drift has been started to cut the ore vein at that point.

Belcher.—The south drift on the 1600-ft level is steadily advancing, the face in very favorable ledge material.

Chollar-Potosi.—Daily yield, 100 tons of ore, assaying $30 per ton. This is from the old upper workings of the mine, and there is no change in either the quality or quantity of the ore in the breasts. Sinking the main incline is going ahead two and a half feet per day.

Imperial Con.—The north drift from the bottom of the south winze on the 2135-ft level is still advancing, the face in very favorable ledge material.

Crown Point.—Sinking the main incline below the 1900-ft level is going forward at the rate of three feet per day. There is no water to trouble, and should any be encountered it can be easily lifted with small pumps to the 1700-ft level, from whence it will flow to the drain shaft and be taken to the surface by the big pumps.

Savage.—The large lift pump at the 1900-ft level is in place, ready to start into operation. This pump will save a lift of 250 feet by the small pumps, and will greatly expedite the drainage of the lower levels. The pumps are making slow though steady gain on the flow of water.

Caledonia.—Sinking the main shaft is making good progress. The flow of water is still very strong. The north drift on the 1100-ft level to connect with the Overman south drift is making the best of headway, the face in soft ledge material of a very favorable description.

Florida.—The pump station is completed and sinking the shaft was resumed during the first part of the week.

Yellow Jacket.—Sinking the new shaft is making splendid progress, the bottom is good working ground. The flow of water is light. The connection between the bottom of the south winze and the south drift on the 2040-ft level has been completed, and the drift is now being enlarged preparatory to starting cross-cuts east, and a drift south toward the Crown Point mine.

Leviathan.—Cross-cutting has commenced on the 600-ft level, 380 feet from the working shaft. It is now passing through the black clay foot-wall. Indications are good and ore will soon be expected. Ore has been discovered in the north drift assaying from $10 to $45 per ton.

Lady Washington.—The drift north from the main east drift or cross-cut is now in 27 feet. The ore streak it is following has increased in size, until it now takes one-half of the face of the drift. The quartz is of the regular white Comstock character, and gives fine assays.

Sutro Tunnel.—Total length of tunnel to-day, 14,445 feet. Face of header in soft porphyry with oley seams, which make it rather treacherous and liable to fall when least expected. An accident from this cause, resulting in the death of one miner, and serious injuries to another, occurred on Saturday last. Very good progress has been and still is being made, however, in this material.

Best and Belcher.—A large force of men are employed on the 1500 and 1700-ft levels in enlarging, repairing and putting all the drifts and winzes in the best working condition and at the same time increasing the circulation of air all that it is possible to do by such means.

Ward.—The flow of water at the bottom of shaft is strong, and preparations are being completed for putting in pumping machinery that will master the situation at once.

Darton.—The north and south drifts on the 700 and 800-ft levels are being advanced daily with the most favorable prospects of ore when cross-cutting the vein shall have been commenced.

Kossuth.—The north end south drifts on the 600-ft level are pushing vigorously ahead. The flow of water on that level is still strong, but is gradually lessening.

Mexican.—The north drift on the 1700-ft level of the Ophirites nearly reached the south line, at which it is the intention to start a cross-cut to explore the ore vein.

Imperial.—The tunnel from the ravine is being pushed toward the shaft rapidly, in good working ground composed of clay and quartz, with plenty of water coming in at the face.

Silver City.—The machinery at the head of the incline is about ready to start up, and the incline itself is being got into pretty good working shape once more.

South Comstock.—Main drift east now in 145 feet, and face shows an increase of quartz and other regular vein matter.

Alta.—Sinking the shaft is making splendid progress, the rock in the bottom blasting out finely. Water gives no trouble.

Sncoon.—A trial has been made of the new machinery and everything works finely.

Silver Hill.—The repairs to the machinery were completed three or four days ago. The water has been drained from the main incline and the sinking resumed.

Cosmopolitan.—The various stopes and breasts at the upper and lower levels continue their gratifying ore yield.

Taosan.—The ore in the upraise from the north drift on the 300-ft level is showing a steady improvement.

HIGHLAND DISTRICT.

Furnaces.—Pioche *Record*, Dec. 10: The small furnace at Highland having made a test run with good fluxing material and having produced some 70 bars of bullion, valued at $450 per ton, closed operations for the present on Sunday night. During its run only 300 bushels of charcoal were used. This run was considered so satisfactory that Joe. Roeder and some others have engaged a lot of fluxing material, intending to start again and run the small furnace until the efforts of the large furnace are settled so that can be started. Arrangements are now being made with creditors which will enable the large furnace to be started to work on a substantial basis, so there will be no more trouble.

ELY DISTRICT.

Alps Mill.—Pioche *Record*, Dec. 10: The Alps mill will be in thorough order and at work this morning. The Superintendent, A. J. Blair, intends running through the Tocquorville ore first, so as not to detain those parties here any longer than possible. As the entire stamps will work on this ore, and the capacity of working will be 20 tons daily, this ore will be soon got through with. The ore brought by the Barbee and that from the Bonanza belonging to Wiederhold, is of a superior quality. The results will be several large-sized silver bricks of fine quality.

Sold.—The whim belonging to the Havans mine, of this district, was sold on Monday last to Mr. Barbee, of Leeds. It was packed up and shipped to its destination that day,

WHITE PINE DISTRICT.

Bullion Tax.—White Pine *News*, Dec. 16: During the quarter ending September 30th, 1876, the Assessor's books show that 4,773 tons of ore was reduced in this county, on which the bullion tax amounted to $2,652,65. Nearly the whole of this amount was paid by the Eberhardt and Aurora company.

The Tunnel.—Work on the Eberhardt and Aurora company's tunnel is progressing finely, and is now completed a distance of little over 500 feet. The formation which is now being worked is in the hardest kind of limestone, but notwithstanding this, 36 feet of tunnel was completed last week. Considering the hardness of the rock, Captain Drake says he is satisfied with the progress made, but he hopes soon to have a change in formation of the ground. In any event, he says he has the satisfaction of knowing that the drilling cannot get any harder.

Stenoa rr Rich.—There is an old location on Treasenre hill called the American, which is principally owned by Samuel F. Paul, but for the lack of capital he has not been able to develop it. A few days since, remembering that it was time to do the necessary assessment work for this year, he went to work, and soon thereafter came upon a four-foot ledge of high grade ore. We understand that he is highly elated over his new find and thinks he has a dead sure thing on a bonanza. Mr. Paul is also one of the owners of the celebrated Stafford mine on Treasure hill, which, we are informed, is yielding a large amount of high grade ore.

WARD DISTRICT.

Lively.—White Pine *News*, Dec. 16: We learn from passengers traveling through our town, that business of all kinds is quite brisk with our neighbors at Ward. The Martin White company's furnaces are in full blast and turning out large quantities of bullion. The company's new 20-stamp mill is being constructed as speedily as possible, and it is expected to be finished and running by the 15th of January next. It is said that

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Practical Astronomy.

A New and Expeditious Method of Finding a Meridian.

At the last meeting of the California Academy of Sciences, the following paper was read by Mr. T. J. Lowry, of the Coast Survey:

The most approved methods of finding latituds and time are those with the telescope in the plans of the meridian; and hence this plane is the first object of the practical astronomer's search in the observatory. The methods now understood by the astronomer of getting his instruments in the meridian are all trial methods, each of them finding a meridian only by a series of continned approximations, consuming time and effort proportionate to the skill of the observer, the accuracy of the knowledge of his time and latitude and the rapidity of the successives appearance of favorable stars on his meridian.

The method now proposed requires but little practice and less skill to place an instrument in the meridian by one observation only, without any knowledge of the latitude or time except to the nearest five or ten minutes.

The essential idea of this method is to observe two stars of the same, or differing 12 hours in, right ascension, but of different north polar distances, at the instant of their simultaneous passage of our meridian. Now, since our zenith is a point in the plane of our meridian, and since the plane of the declination circle of any two stars of exactly the same, or 12 hours different, right ascensions, is by the diurnal revolution of the earth made to coincide successively from east to west with every terrestrial meridian, it is obvious that we have but to (select and) observe two such stars at the instant that they and our zenith are in the same vertical plane and clamp, and we have our instrument fixed in the plane of its meridian.

To accomplish this

Simultaneous Observation

Of two such stars with a transit, zenith telescope or theodolite, we attach to the tube of the telescope directly in front of its object-glass a plane mirror, half silvered to admit of direct and reflected vision, with its axis of rotation horizontal, parallel to its plane of reflection and perpendicular to the line of collimation of the telescope. Attached to this axis is a small vertical finding circle for setting this mirror at any desired angle with the collimation line. In form this mirror may be either an elliptical ring with only the quicksilver removed (or the glass also cut away) from its center, or that of the ordinary sextant horizon glass with its silvered half uppermost. This mirror should have its front and back faces perfectly parallel and be from one-fourth to one-third of an inch thick, so that by having on its front face two fine lines cut at right angles to each other we can, by making the reflected image of each of these lines coincide with its direct image, adjust its plane of reflection perpendicular to the telescope's collimation line, and thus also find the index error of its finding circle. In this adjustment use the collimating eye-piece.

This method of getting one star of a pair into the telescope field by a single reflection and the other by direct vision will work admirably when the stars differ considerably in north polar distances; but when this difference is small and we point on one of the stars direct it becomes imperative to subject the other to a double reflection, by using an additional mirror as in the sextant, or employing the principle embodied in the Steinheil heliotrope. We may, however, avoid this double reflection of either of the stars of such a pair by pointing the telescope on the artificial horizon image of one of them, and thus get the other into the telescope field by a single reflection.

When the stars of a pair have the same right ascension, we will have them enter the field of the telescope on the same side and move across in the same direction, the faster mover, as it were, chasing the slower and catching up with it at the instant of their simultaneous passage of the meridian. But with a pair of stars differing 12 hours in right ascension, *i.* e., one of them culminating *sub polo*, they will enter the telescope field on opposite sides, move across and meet exactly on the meridian. It is hence obvious that a pair whose stars differ 12 hours in right ascension offers the advantageous feature of the sum of their motions to aid the observer in deciding upon the exact instant of their coincidence in his telescope field, whereas with a pair having the same right ascension he has only the difference of its stars' motions to assist him in fixing upon this instant.

But when the catalogues do not offer star pairs culminating at desirable times, of suitable magnitudes and declinations, and of the same or exactly 12 hours different right ascensions, and thus permitting the application of the method in its greatest perfection, we may yet find our meridian most accurately by selecting and observing suitable pairs, the right ascensions of whose stars differ but a few minutes from being identical, or exactly 12 hours different. Now the zenith of a position is a point common to all its vertical planes, and since the plane passing through the earth's center and any two stars differing more in declination than in right ascension, is, by the diurnal revolution of the earth, made to coincide successively with one of the vertical planes of every point on the earth's surface, we hence have but to observe two such stars at the instant they and our zenith are in the same vertical plane, and clamp, and we have our instrument in a vertical plane whose deviation in azimuth is determined by, and easily derived from, the north polar distances of the two stars, the difference of their right ascensions, and the co-altitude of one of the stars (or our co-latitude), we can observe the co-altitude of one of the stars at the instant of their coincidence in the telescope field. Having selected a list of such star pairs, we can readily compute a table from which an observer at any known latitude can pick out the azimuthal deviation of his instrument in degrees, minutes and seconds, at the instant two such stars coincide in his telescope field. Or instead of using the co-latitude, which must then be known, we can use, in the preparation of such a table, the zenith distance of one of the stars; otherwise we may tabulate the hour angle in time (minutes and seconds) of the hinder of the two stars at the instant of their coincidence in the field of the telescope, either for the different altitudes of this star or for the different latitudes.

The Method of Observing

Such a pair with the aid of the last named table will be as follows: Having taken care in selecting to have one of the pair a star of such magnitude and position as to be readily identified by a stellar chart or alignation, we set the mirror in front of the object glass, at an angle with the collimation line equal to one-half of the supplement of the algebraic difference of the north polar distances of the two stars, and bring the more readily identified one of them into the field of view, and follow it till its mate appears there, either meeting, chasing or fleeing from it. We then "pick the beat" of the watch or chronometer, and beginning to count the beats at the instant the stars coincide in the telescope field, follow the hinder star till the moment its "tabular hour angle" expires, and clamp, and our instrument is in the meridian.

A pair of fast-moving stars will give an accurate meridian, yet practically it will in general be found preferable to have one of the pair a star of slow motion, so that it can be readily bisected and followed till the instant its fast-moving mate strikes the middle wire, thus enabling the observer to clamp his instrument at exactly the right time without a hesitation or doubt.

If the table gives the hour angle in time of the hinder star at the instant the two stars and our zenith are in the same vertical plane, then their relative right ascensions and positions with reference to the zenith must be as follows, viz: 1. If both stars are on the same side of the zenith then the star having the greater zenith distance must have the smaller right ascension, and this rule holds when one is a zenith star. 2. But if one star is south and the other north of the zenith then either may be in advance, but practically it is preferable that the slow mover "bring up the rear." 3. When a star south of or in the zenith is paired with a sub-polar, then the latter should not be quite 12 hours in advance of the former. 4. If a star north of the zenith has a sub-polar mate, then the upper culminating star should transit the meridian first, if it is the lower culminating star that we are following with the cross thread, and *vice versa*.

But if our table gives the azimuthal deviation, in degrees, minutes and seconds, of our instrument at the instant two such stars coincide in the field of its telescope (its plane of motion being, of course, vertical) then it is a matter of indifference which star precedes, since this angular deviation can be turned off either backward or forward on the horizontal limb of the instrument.

Within the latitudes of the United States the following varieties of pairs will offer, viz:

Class A.—Pairs whose stars have the same, or differ but a few minutes, in right ascension. 1. Two circumpolar stars. 2. A circumpolar star and a time star, the latter being either in the zenith or south or north thereof. 3. Two time stars, either one north and one south of the zenith, or both north or both south thereof, or one star in and the other star either north or south of it.

Class B.—Pairs, the stars of which differ exactly 12 hours in right ascension or lack but a few minutes thereof. 1. Two circumpolar stars. 2. A circumpolar star and a time star either in or south or north of the zenith.

With respect to the

Relative Motions

Of the stars of a pair most important to the observer in deciding upon the exact instant of their coincidence, class B is in general more favorable than class A. And the pair in class B which furnishes the maximum amounts of azimuthal motions (in opposite directions) and hence most desirable, is a lower culminating circumpolar star and an equatorial star; while with a pair of circumpolars the sum of these motions is a minimum. And of those in class A, a close circumpolar star and an equatorial star give the greatest difference of motions; while a pair of circumpolars gives the least. When the stars of a pair move in the same direction, and at not very greatly different speeds, they will doubtless be found to cling together in the telescope field a provokingly long time.

As to the frequency of their availability, the pairs of circumpolar stars stand pre-eminent; since they are on our meridian and its visible extension twice in every 24 hours, they are hence doubly more available than the other pairs which transit our meridian but once in that time.

As to the amount of

Computation

Required—an element only in those pairs whose stars are not exactly on the same declination-circle or its visible extension—when a zenith star is paired with either a south or a north star (at upper or lower culmination), following within a few minutes, the computation is a minimum, for then the differences of the times of the stars transiting our meridian equals the differences of their right ascensions; and the zenith star obviously transits the meridian at the exact moment it and its mate are in the same vertical plane. And when its mate is a close circumpolar star their mean right ascensions will prove all-sufficient because from the slowness of its motion in azimuth the error of assuming the difference of their mean, equal to the difference of their apparent, right ascensions will in general be inappreciable. And it may often occur that the error of assuming this of two stars having nearly the same precession in right ascension will enter the resulting azimuth in so diminutive a form as to be quite allowable, except in very close work.

If the stars chosen fall in a part of the celestial sphere illuminated by the sun as they transit our meridian, they will require to be of larger magnitudes than such stars pairs as, being in the opposite part of the heavens, cross our meridian at night. Especial effort should be made to incorporate the double stars into pairs, from the facility and certainty with which they can be identified in the telescope field.

And again, if tables are available giving the exact right ascensions and declinations of Mars and Jupiter, they may be advantageously paired with suitable stars; and their continuous motion among the stars renders them more available, since they cross successively the declination circle of every star in the heavens. But the use of these planets will necessitate a more accurate knowledge of our time.

Experience has proven that, in reconnaissances, rapidity of execution in finding

Latitude, Time and Azimuth

Is all-important and in many cases essential to success; and hence methods and instruments which yield a maximum amount of results in a minimum time are in especial demand. Under the contingency, often arising in reconnaissance and exploration, that the latitude is not known and the time only to the nearest five or ten minutes, and when limited in time and facilities, as the reconnoiterer or explorer *per necessitatem* generally is, then this method will be found most acceptable; for it is obvious that by bisecting one of the stars of a pair (of identical right ascension) with the horizontal thread at the instant the two stars are on the middle vertical thread, and also at this moment noting the face time of the chronometer, that we have the meridian altitude of a star whose declination is known, and hence our latitude, and also the observed time of meridian transit of a star of known right ascension, and hence a chronometer correction, simultaneously with the observation that fixed our instrument in the meridian. Then, with our instrument in its meridian, the error of our chronometer, and our latitude, we can if desirable proceed at once to the observation of additional stars for a closer time and to test our latitude and azimuth.

A reflecting circle or sextant mounted on an alt-azimuth stand is *per se* (*i. e.* without an additional mirror) the instrument most convenient and ready for finding by this method the

Meridian, Latitude and Time

For the reconnoiterer, explorer or land-surveyor; and it may be found especially serviceable in hydrographic and geographical reconnaissances, whether in the course of an exhaustive survey, or only a flying reconnaissance of a coast or continent.

And from the readiness with which this method places "the transit" and "zenith telescope" in the meridian it will be found useful and may prove acceptable to even the most conservative practical astronomer.

Mr. Lowry finds that the B. A. catalogue offers an abundance of star pairs of suitable magnitudes, declinations and right ascensions. With the mean places of stars brought up to Jan. 0. 1877, between the sidereal times 0h. 07m. and 0h. 57m. he finds 6 pair stars differing less than 3 seconds in right ascension, 4 pairs less than 7 seconds, 7 less than 16 seconds, and 5 less than 29 seconds.

A yet neater method of getting a meridional plane is to select 3 stars so that stars A and B are of same declination and differ 10 or 15 minutes in right ascension, and star C differing several degrees from them in declination, but with a right ascension equal to one-half of the sum of those of stars A and B. Now observe the coincidence of stars A and C in telescope field and read horizontal circle, and then the coincidence of stars B and C in the field of view and read the horizontal circle, then set the vernier at the point midway between these horizontal circle readings and our telescope is in its meridian.

Work on the Eberhardt & Aurora company's tunnel, through Treasure hill, is being vigorously prosecuted.

Pacific Coast Railroad Items.

The second division of the Northern Pacific Coast railway is completed, and this line is now open to Moscow, on the Russian river, 85 miles from San Francisco. Work was begun on the road in the fall of 1873, and Tomales, the terminus of the first division, was reached in June, 1875. The whole cost of the road, including depot buildings, ferry slips, fencing and ballasting, which items were not part of the contract work, and also including the rolling stock now on hand, amounts to, in round numbers, $2,000,000, or about $25,000 per mile. In the construction of the new division, iron of superior quality, of greater weight, larger ties, and the latest appliances for fastening, etc., have been used, although the material used in building the first division has so far proven satisfactory in every particular. Since the first day of its operation, the receipts of the road have uniformly exceeded its expenses. The rolling stock now on hand consists of 11 locomotives, 13 passenger cars, and 300 freight cars. Additional and superior passenger equipment will be ready by the opening of next spring, and the company are now building at Saucelito some 200 more flat freight cars for the wood and lumber trade. As an illustration of the perfect safety of this road, it may be stated that last year, when only the first division was in operation, a freight train was ascending the grade 22 miles from Saucelito. On this grade occurs the sharpest curve on the whole line—24 degrees. A flat-car, partially loaded with grain, became detached from the train in switching at the summit of the grade, and dashed down the hill, around the curve and on for about eight miles until a steep counter grade was reached, in the vicinity of Ross valley. The speed of this runaway car was so great that sacks of grain were flung hundreds of feet from the track, not one remaining throughout the trip, yet neither car nor track were injured in the slightest degree. Engineer Wade says that 24 miles of the road, the upper end, is as well built as any road on this coast, being laid with 50 pound iron, and 3,000 ties to the mile. And 10 miles of it is as heavy work as is to be found in the country. There is one tunnel 1,700 feet long and one 400 feet long. The trestle over Tomales creek is 640 feet long and 76 feet high; the trestle over the Estero Americano is 750 feet long and 25 feet high; the bridge over Brown canyon, near Freestone, has two spans of Howe truss, 150 feet long each, and at the giddy height of 137 feet above the bottom of the canyon. The track runs over the top of the bridge. The central pier of the bridge is 110 feet high, of the kind called a cluster pier, and is a splendid piece of mechanism.

On Saturday last the surveys for a new line for the narrow-gauge from San Rafael to Saucelito were completed. Three routes have been surveyed, all being the same from Saucelito to the north end of the Reed tunnel.

William Hood, chief assistant engineer of the Southern Pacific railroad, arrived in Fort Yuma on the 8th with a surveying party, having left the end of the railroad 10 days before. They came to complete surveys commenced last summer in and about Fort Yuma and vicinity; also to take the soundings, etc., of the Colorado river, preparatory to locating, crossing and building a bridge for the Southern Pacific railroad.

Referring to the Ione railroad, the Amador *Dispatch* says: The cars on the Galt & Ione railroad have commenced making regular trips between those two places, and the stages from Jackson and Mokelumne Hill now connect with the trains at Ione. By this arrangement we are now enabled to get our evening mail about two hours earlier than heretofore, the Ione stage reaching Jackson at six o'clock P. M. instead of eight. There has also been a slight reduction in the rate of fare; the fare between here and San Francisco being now $8.25, instead of $9, the price formerly charged. Another convenience that will be experienced by passengers, aside from avoiding the long and tedious staging over the plains, is the fact that they will not be compelled to start at such an early hour in the winter time. The stage now leaves Jackson about seven o'clock in the morning, and passengers can now make the through trip to San Francisco by daylight. A time-table will probably be published soon for the convenience of the public.

The New Mines Near Death Valley.—A new road from Mohave to Death valley, the neighborhood of the mines now attracting so much attention, is being surveyed by a party under the direction of Mr. Anson Cross. The freights of that section are now hauled out from San Bernardino, a distance of 250 miles, and it is believed that the distance from the railroad at Mohave to the same place is less than 100 miles. The road lies across the desert through sage brush and has no obstacles save scarcity of water. In a direct line it is said to be no more than 70 miles, but the want of water will require a change in direction till some steps are taken for sinking wells.

The Resting Springs mines are now turning out ten tons of bullion per day, all of which should come this way, and the teams for hauling the product should be supplied from the valley. Colville is attracting a great deal of attention. The excitement occasioned by new and valuable discoveries is spreading over the coast counties, and especially among the mining population of Inyo. At no time in the history of the county has there been such a general movement towards the mineral districts on its borders.—*Courier-Californian.*

The Lincoln Pottery.

We enjoyed the other day, says the Placer *Argus*, the privi'sge of a brief visit to the Lincoln pottery, or rather sewer-pipe works, and were shown through the building by Mr. Gladding, the resident proprietor and manager. These works were located at Lincoln only e few months ago, the inducement being the exhaustless beds of superior clay, and the supposed plentiful supplies of cheap fuel to be had from the coal mines at that place. The clay-beds have turned out, both in quality and accessibility, all they were represented to be; but the coal mine bes ceased operations, and the pottery has had to look elsewhere for fuel. Happily the adjacent foothills furnish plenty of good wood, and some 600 cords of this are now stacked up in the yards, while 2,000 cords more have been contracted for. The building, which has been twice enlarged, is now 260 feet long, and about 70 feet wide. It is supplied with all the most approved machinery for the making of sewer-pipe of all sizes, the whole being driven by an engine of ample power. The clay press has a 40 inch steam cylinder, being one of the very largest used for that purpose. At present there are three large kilns for burning the pipe, but another will be built early in the spring, and as the business is growing rapidly more will have to be built soon The present capacity of the works is 15 tons of clay per day, and it is found impossible to keep up with the orders. The pipe manufactured is exclusively for sewer purposes and for connecting house drains. Its superiority over the cement pipe, still largely used in San Francisco, is so manifest that it will not take long to supersede that article entirely. In the Eastern cities the vitrified earthen pipe is used altogether, and the demand for it is large and steady. Here it cannot help becoming so large as to require an indefinite extension of the works at Lincoln, and the establishing of a manufacturing industry that will greatly benefit our county. In addition to the sewer-pipe, fire brick of excellent quality are made, though at present, owing to the low price at which they are sold in San Francisco, the establishment does not attempt to supply more than its own wants. Vessels coming from England to load with wheat bring fire brick as a ballast, and this enables them to be sold at less than we, with higher-priced labor, can produce them for, but this will regulate itself in time, when the manufacture of fire-brick will become an important branch of the business. During the summer just ended, the pottery has given employment to 45 hands, but since the rains have set in the green pipe dries more slowly, and now but 35 are required to keep up with the rate of production. As the works are extended, the number of employees will increase, and in a few years they will out-number those required by all the other industries of the place.

MERCURIAL SALIVATION.—So much quicksilver is used about our mills that it is a wonder more cases of salivation do not occur. Men generally handle quicksilver carefully, knowing that it is harmful, but they are not sufficiently acquainted with it in all conditions to guard against inhaling it to an injurious extent occasionally. A case wherein carelessness or ignorance was displayed in the use of mercury is reported from the Woodruff mill. A man but little used to milling business made a fire, a short while ago, with some wooden shoes that had been used in the amalgamating pans and which were full of mercury. Himself and another man sat about the fire until they began to feel the effects of the inhalation. Soon after they were both taken down, and the salivary glands of one now abnormally excited, and his mouth and gums are now so sore that he can scarcely eat or speak. The other man is differently affected, and has no trouble with his salivary glands. Mercurial salivation operates differently on different persons. Some it effects most about the mouth and face, while others feel it through the whole system. Men who handle mercury should remember one point, and that is, that it evaporates at a moderate temperature, and volatilizes completely at a high temperature. Mercury is constantly evaporating from heated amalgamating pans, but so slowly that with the least caution one never need inhale enough of it to make him sick.—*Lyon County Times.*

ANTIMONY ORE.—Three teams belonging to E. Reinhart & Co., which left here some time since loaded with flour for Austin, returned today loaded with antimony ore. This ore is from the extensive mines recently discovered in the southern part of the county, near the Austin road. The three teams brought in some 20 tons of ore, and W. H. Howard, who accompanied them and examined the mines, informs us that they are very extensive. The ore contains about 70 per cent. antimony and 25 per cent. sulphur. The mines are owned by Messrs. Graves, Goodall and Healy.—*Silver State.*

CENTENNIAL MACHINERY.—The cage and car and other mining machinery, which were sent to the Centennial from Gold Hill, returned by this morning's train. The cage and car were manufactured here under orders from Captain T. G. Taylor, superintendent of the Yellow Jacket mine, and are of first-class make and material. They were used in Philadelphia to illustrate the practical workings of our mines. It is understood that the cage is to be purchased by the Yellow Jacket company, and will be henceforth used in that mine.—*Gold Hill News.*

USEFUL INFORMATION.

How to Make Filters.

Prof. E. W. Hilgard writes to the Nepe *Reporter* as follows: In view of the continued complaints of bad water in your city and in other places where malarious, or rather, perhaps, "malaqueous" diseases are or have been prevalent this season, it seems worth while to suggest that the small amount of water necessary for drinking purposes even in the most temperate household is so readily purified by the simplest means, that there is scarcely an excuse for not so purifying it whenever there is reason to suspect that its impurities are likely to affect injuriously the health of the inmates. The boiling to which the water used in making soup, tea, coffee, etc. is subjected, will in most cases so far remedy its injurious qualities that its purification is not a matter of so much moment as is that of the portion which we drink "straight."

A common water bucket provided with a layer of clean gravel, say pea size, an inch thick, then an inch of sand, coarse below, growing finer above; then the rest of the bucket filled with charcoal pulverized to the size of blasting powder, but the dust sifted out—constitutes a filter that will effectually purify all the drinking water of a family for a week or two.

Of course it is better to have a larger and more permanent arrangement, in the shape of a tall barrel or tank fitted with a double bottom, on top of which the gravel, sand and charcoal are successively placed. It is conveniently covered with a tin pan fitting the top, into which the water may be poured, and from which it seeps slowly through a sponge closing a strainer in the middle of the pan, into the charcoal below. A filter of this kind is very generally used in the Northern States, and a 30-gallon one will serve a family for six months before it needs replenishing, unless indeed the water put in the top be too foul to be fit for human use in any case.

The charcoal not only frees the water from impurities of a vegetable or animal origin, but it also diminishes materially the amount of mineral matter which sometimes renders waters unfit for daily use.

The omission of so simple a precaution where there is even a chance of contamination of water, is scarcely excusable after we have been taught by the labors of the English sanitary commission that fully 90 per cent. of all cases of typhoid fever are referable to preventable contaminations of air, water or food. Diphtheria is in the same category; and it will hardly do to talk about "providential" dispensations when we are only reaping the direct consequences of our own improvidence. Ventilate and disinfect by all means; but above all don't go on drinking liquid poison in every glass of water.

Sawing Granite.

Among the interesting things that were shown to the architects in Philadelphia, during their convention, says the *Building News*, was the patented process of Messrs. Struthers & Sons for sawing granite. Hitherto it has been found impracticable to cut granite with a saw, since the ordinary sand process would cut only an inch and a half or two inches per day. The inventor of the Messrs. Struthers' process hit upon the idea of using chilled iron, finely divided, instead of sand. A jet of steam is directed upon a fine stream of melted iron, and blows it into spray, just as in the common atomizer a jet of air pulverizes, so to speak, the stream of liquid upon which it is turned. The iron, divided into fine globules of, say, a fortieth or a fiftieth of an inch in diameter, falls into cold water and is chilled into excessive hardness. It is used under a saw of soft iron, and with a stream of water, as sand is used in sawing marble. Most persons would have supposed that the scratching of angular grains of sand would be more efficient than the rolling friction of globules of iron; but it would seem that the sand is speedily crushed into dust, while the tough iron, simply wearing down into smaller and smaller globules, crushes its way through the felspathic and other crystals of the granite (which with us is usually syenite, by the way, and not granite). The rolling of the globules is curiously shown by fine channelings or flutings, which score the under edge of the saw from end to end. By this device granite can be sawn at the rate of three or four inches per hour, and at small expense, the waste of the iron being about three pounds for every square foot of kerf, or two square feet of sawn surface. For small blocks, where a saw can be used that is short enough and therefore stiff enough to bear a heavy pressure without buckling, it is found possible to cut at the rate of 12 or 14 inches per hour. The surface obtained by sawing is vastly better prepared for polishing than a hammered surface, not only because it is smoother, but because by hammering the surface of the stone is "stunned," as it is termed; that is, the crystals are so bruised and shattered below the surface that it is necessary, before the polishing can begin, to grind away an eighth of an inch or more, which is unnecessary with a sawn surface.

VANILLIN FROM PINE TREES.—M. Bouquet de la Grye, on presenting to the Agricultural Society of France two samples of vanillin derived from the sap of the pine, made the following remarks: One of the samples is vanillin in a pure state, whilst the other is prepared for the use of the confectioner. Vanillin exists in the sap of the pine (*Pinus sylvestris*) and of the larch. The first attempts at its extraction were made by Hofmann, but on a small scale. The price of vanillin, though high, in consequence of the operations necessary for its extraction and purification, is still lower than that of natural vanilla. The difficulty lies in procuring the sap. For this purpose the trees are felled during the period when vegetation is most active—in May and June—and stripped of their bark. They are then immediately scraped. The product of this operation, collected in vessels of tinned iron, is immediately heated on the spot to prevent fermentation, filtered, concentrated and allowed to cool and settle. A substance is thus obtained which resembles powdered sugar, and which is known as coniferin. This is a stable compound, and is sent in barrels to Paris, where the vanillin is extracted.

Nickel Plating.

The *Manufacturer and Builder* gives the following recipe for cheap and practical nickel pleting: The necessary apparatus is by no means expensive: a small battery of two cells, an oblong wooden tank of a size to suit the article to be plated, coated inside with asphalt, and then filled with a nickel solution, nickel plates for anodes, and brass rods to suspend your plates and goods from, polishing and buffing lathes, with rouge and crocus, as well as vessels for an acid, an alkali, and a soft water bath for cleaning the work before putting it into the solution, which is required the same as in silver-plating, and you are fitted up to commence work. In order to obtain the best results, it is necessary that the solution should be as nearly neutral as possible, and the double sulphate of nickel and ammonia is more generally preferred as being the most reliable and practical, giving a softer metallic deposit and a smoother surface, which can be polished more readily than that obtained from other solutions. Dissolve three-fourths of a pound of the double sulphate of nickel and ammonia to each gallon of pure water, and the solution is ready for use. The specific gravity of the solution should be kept up to about 6 deg. of Beam. hydrometer. When using a solution prepared with the double sulphate of nickel and ammonia, a solid, coherent, tenacious and flexible nickel can be deposited to any desired amount, thus rendering the electro-deposition of nickel practically valuable. The metal deposited from the double sulphate of nickel and ammonia gives the full equivalent of metal for the electricity employed. If with this solution a battery power is used of an intensity of two groove cells, or thereabouts, a white deposit is obtained. The use of a battery of too high an intensity should be avoided; it is important that the depositing shall not be forced by the use of too strong a current. The anode of the depositing cell should present a surface to the action of the solution somewhat larger than the surface upon which the deposit is being made, particularly in the double sulphate solution. The reason is, that nickel dissolves so slowly, that if the exposed surface is not larger than the surface on which the deposit is made, the solution will not keep saturated. With pure solutions and sufficient anode surface, the deposition of nickel can be carried on continuously, and as surely and certainly as the deposition of copper from the common sulphate solutions.

FIRE-PROOF SHINGLES.—A writer in the *Polytechnic Review* says: A gentleman in Philadelphia has effected arrangements for practically introducing, upon a large scale, an extremely simple and excellent process for impregnating shingles with antiseptic and non-combustible substances, the immediate object of the process being to prevent the destruction of shingles by rot, and to render them proof against fire under ordinary contingencies.

GOOD HEALTH.

Hints On Bathing.

The following is an extract from an interesting paper read by Dr. Thomas Bond at an "education conference" of the society of arts, in London: In taking a cold bath in the morning the surface of the body should be warm and moist; therefore the bath should be taken immediately on rising from the bed, and before the surface of the body has had time to cool, or the capillaries to contract. The shock of the cold water should cause them suddenly to contract, then quick reaction will take place in the same way as after a Turkish bath. Unless this reaction occurs after the bath there is great danger of getting a chill; at any rate the full benefit of the bath is not obtained. Persons with weak circulation, who cannot take an ordinary morning bath, often derive great benefit from the Turkish bath. It opens the pores and improves the circulation of the skin, so that the shock of cold water can afterwards be borne. The same person can generally bear a cold bath if they get for a few minutes into a warm bath first, and then immediately plunge into cold water. By these means an active reaction is brought about. Warm baths should, in my opinion, never be taken on rising except under the above conditions, but warm baths at night are often desirable. They should be taken just before going to bed, when they have the effect of relaxing the muscular system and of promoting sleep by soothing the activity of the brain by the withdrawal of blood from it. I do not think warm baths at night are weakening, as the depression of vital energy which may occur is recovered during sleep. In river and sea bathing, persons should be careful not to remain in the water too long, nor should they exert themselves sufficiently to cause exhaustion, as the power of reaction is much impaired thereby; neither should persons get into cold water when cooling. The old-fashioned idea that persons should wait to cool before plunging into the water is a fallacy. There is no danger in plunging into the coldest water in a state of profuse perspiration, if the heart and arteries are in a healthy state. Of course it would be unwise to do so immediately after a full meal, as the action of the heart might be impeded by the distended stomach.

Cure for Hiccoughs and Colds.

EDITORS PRESS:—Having seen your clipped article, credited to Pottsville *Miners' Journal*, entitled "Hiccoughing to Death," I deem it a boon that price will not measure or gratitude fathom in the breast of the afflicted sufferer, when he is informed that "veratria" powder, when agitated in a vial and the stopper removed, and the dust thus raised smelled up into the nostrils, so acts upon the mucous membrane, as a stimulant, as to stop the hiccough, so that he will not hiccough another single time after so inhaling the powder through the nose.

Nothing can possibly be a more perfect success than the effect of the above remedy. "Veratria" is a salt chemically produced from the medicinal herb, white hellebore. I would say that "veratria," used in the same way, is beneficially employed in colds, where the nostrils are closed or where the eyes are rendered heavy by a stoppage of the lachrymal or tear ducts, and also produces sneezing, which is nature's simplest remedy to clear the organs of the head when oppressed by a sluggish action of the emunctories of the part. We have seen a case of 80 hours' constant distress and many other more ordinary cases of hiccoughs cured as above stated. It can be procured at any drug store. EMORY L. WILLARD, M. D.

S. F., Dec. 9th, 1876.

Do Not Give Opium for a Cold.

Hall's Journal of Health cautions against the use of opiates for colds. It says: Cough, in a cold, is nature's effort to eject from the lungs what does not properly belong there; precisely as when a crumb "goes the wrong way," that is, into the windpipe instead of the stomach. In each case opium diminishes the sensibility of the parts so that they do not feel the presence of the offending particles, and nature is cheated. Any one can see that because a dose of morphine quiets the cough from a crumb in the windpipe, it does not "cure," it does not bring it away. Most precisely so is it with phlegm in the lungs; it has the effect to keep it there to accumulate, just as water does in the spout of a pump, when little boys close the mouth of it with their hands, pumping on all the time. Here the comparison ends. However long the water is kept in, it is water still. Not so with phlegm in the lungs; every instant it is kept there, the heat of the parts being 100 degs. Fah., it evaporates, becomes less watery, and of consequence more tough, harder to dislodge, increasing in bulk by accumulations which also grow thicker by evaporation, until "the pipes" are plugged up with tough phlegm so that the air passes it with increasing difficulty, and the patient wheezes like—an asthmatic; the lungs labor fearfully for breath, they cannot get enough air, hence the blood becomes impure and thick, and in this condition goes to the heart, which labors to send it on through the body, but cannot wholly empty itself at each beat, as is natural; and the blood still pouring into it from the lungs, it gets preternaturally full, hence its fibers are relaxed and then distended: this is "enlargement of the heart." For a while nature struggles to relieve herself of this surplus, until the laboring heart has expended all its strength in the vain effort, until it cannot give another beat, and suffocation is the instantaneous result.

DISINFECTANTS.—*Nature* says: A committee appointed by the Russian government at the St. Petersburg medical academy, to investigate various proposed antiseptics and disinfectants, have arrived at the following conclusions: 1. Carbolic acid is the most efficient means against the development of ammoniacal gas, putrescense, and development of lower organisms in organic matter under decomposition, and is therefore the best antiseptic. 2. Vitriol, salts of zinc, and charcoal, are the best means for deodorizing matter under putrefaction. 3. The powders of Prof. Kittary, besides the properties they share in common with other carbolic disinfectants, deserve attention because of the isolated state of phenol in them and their contents of quicklime, which absorbs moisture—the principal condition of each kind of putrefaction—as also some part of the gases. 6. Chloride of lime and permanganate of potash quickly destroys the lower organisms in putrid liquids. 7. The disinfectants certainly retard the putrid processes in organic bodies, but their influence is only temporary; as a means of purifying air in dwellings their influence is very small, if not totally *nil*, because of the very small degree of concentration of their ingredients that can be used without injuring the health of the inhabitants. 9. For uninhabited buildings the best disinfectants are nitrous acid and chlorine.

MINING AND SCIENTIFIC PRESS

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Our latest forms go to press on Thursday evening.

San Francisco:
Saturday Morning, Dec. 23 1876.

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Bullion Shipments.—Since our last issue shipments from the prominent mines have been as follows: Con. Virginia, Dec. 14th, $14,387.94—total since dividend, $996,388 72, on December account; Chollar, 13th, three bars of bullion, $7,605.93; Manhattan, 12th, 12 bars, value $11,086 26; Leopard, 14th, value $5 600; Modoc, 12th, $45,100; Con. Virginia, 14th, $140,540.79; California, 14th, $57,902.75—total to date, $136,839 32; Northern Belle, 12th, $12,002.03—total to date, $30,006.99; Ophir, 14th, $14,346.28; Hackberry mine (A. T.), 15th, $5 000—total to date, $13,000; Gila, 10th, $4,449.62; Leopard, 14th, $5,600; K. K. Con., 13th, 4,000—total to date, $23,250; Indian Queen, 12th, seven bars, $9,799.61; Con Virginia, 16th, $65,306 89—total for November account, $1,202,236.40; California, 16th, $94,962.49—total to date, on December account, $231,801.82; Tyho Con., 12th, $8 986 65—total to date, $17,546 68; Northern Belle, 14th, $10,025.29; Manhattan, 14th, $11,683 62; Indian Queen, 15th, $2,106.66; K. K. Con., 15th, $4,000—total to date, $27,250; Arizona, 17th, three bars bullion, value $2,871 66; Modoc, 16th, 467 bars—total to date, $6,490; Leopard, 19th, $4,100.

General Crook, in his annual report, says: Miners in the Black hills did not violate the Sioux treaty until the Indians had ceased to regard it. He thinks the government has treated the Sioux with unparalleled liberality, which they repaid by raids along the border of the reservations.

Charles E. Chenery, commercial editor of the San Francisco *Chronicle*, died on Sunday last.

"Mechanical Ore Concentration and Separation" will be continued next week.

Late advices report a threatened revolution in the Sandwich Islands.

The Drainage of the Comstock Lode.

[Written for the Press by P. Aug. Humbert.—No. 3.]

Usual Modes of Applying Steam Power in Surface Engines to do Pit Work.

Having seen that momentum is the principal difficulty in pumping engines working at great depths, we will now examine which design of pumping machinery removes mostly this defect.

In this examination we will make no difference between compound or single-cylinder engines, as this question has already been sufficiently canvassed. Consequently we have only two principal divisions to make, viz.:

I. Geared engines.

II. Direct-acting engines.

In applying the power of direct acting engines three cases present themselves:

1. Pumps and engine have the same stroke.
2. Pumps have a longer stroke than the engine.

Pump Stroke Shorter than Engine Stroke. Proportion, 7 to 8.

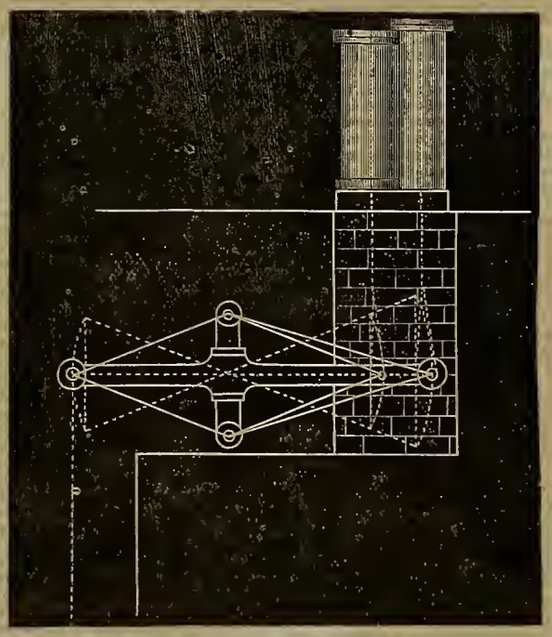

FIG. 18.—VERTICAL COMPOUND ENGINE.

3. Pumps have a shorter stroke than the engine.

I. The Geared Engine.

Up to within two years no other engine was known on the Comstock for pumping.

Figures 12 and 13 represent two geared engines. The horizontal engine is generally used. The Savage mine had a beam vertical engine, the only one on the lode.

Although the question of momentum has till now played but a small part in this system of engines, it, however, exists in the same proportion, and it will be found that on most engines now running it has been totally disregarded.

If a calculation is made of the work performed by the pumps, and this compared with the work the engine ought to do at the steam gauge pressure and the degree of expansion used, it will be found a loss often amounting to 150 per cent. exists. By experiments made on the Savage engine and pumps, the friction in the pumps, compared to the power of the engine as taken by indicator cards, has been found by myself to be not over 25 per cent.; there would therefore be, minus the friction on the gear, 125 per cent. to be accounted for. This will be found to exist in the following circumstance:

Considering the gear to be three to one and that to start the pumps with the mass a steam pressure of say 60 pounds is required, during the second third of the pump stroke a certain momentum having been imparted to the pit-work, not more than 40 pounds is necessary, and during the last part of the pump stroke, say, only 10 pounds are required, so that the average pressure on the steam piston would be 60+40+10 divided by 3, equal to 36⅔ pounds during the whole pump stroke, instead of 60 pounds, which is calculated on in the first instance, accounting consequently for the difference found to exist between the work of the pumps and that of the engine. This decrease of pressure has to be attained by the usage of a centrifugal regulator, so that if the pumps are to make 12 strokes per minute the engine would be set to 36 revolutions. The increase of speed given to the engine by momentum imparted to the mass is followed by a throttling of the steam, and by this means a decrease of the pressure on the engine piston is arrived at.

We know that by this means of decreasing the pressure a loss of power must occur, and that the regulator, striving at every part of the stroke to keep an equal speed on the engine, the momentum spends itself but very little, and that while but a small benefit is derived as far as expansion is concerned, all the defects of strains exist.

II. Direct-Acting Engines.

The figures 14, 15, 16, 17, 18, 19 and 20 represent the different modes of applying the power of the engine to the pit-work in direct-acting engines.

It will be seen from these remarks that the same conclusion is to be arrived at as in the direct-acting engine, to-wit:

Decrease of feet of pump speed as depth increases, requiring to augment the proportion of the gear, equal to a lengthening of the stroke in direct-acting engines, and that with all these difficulties it is impossible to acquire a correct usage of steam.

It may at once here be stated that whilst for small depths, where momentum comes but little in consideration, they are a very good system of engines. For great depths, such as exist on the Comstock, they are totally out of place, and the accidents which occur so often with this system prove practically what theory demonstrates.

It will be found that they are more expensive as far as fuel and running expenses are concerned, when working at great depths.

We have sufficiently examined the difficulties arising from the momentum in direct-acting machinery, and it behooves us simply to state which of the three appliances of steam is most desirable in pumping machinery, as regards reducing the momentum and increasing the delivery of water from the pumps. To demonstrate this we take as example a 14-inch pump, 5-foot stroke, engine 10-foot stroke, and compare it with a 10-inch pump, 10-foot stroke, with equal engine

FIG. 14.—BULL ENGINE.

stroke. It is clear that the 14-inch pump, being double the area of the 10-inch, will throw as much and the speed will be one-half that of the 10-inch pump, which we will consider the mass twice as great. Let w represent the weight of rods and water column for the 14-inch pump and v its speed, while w_1 and v_1 will represent the same quantities for the 10 inch pump, further, we will place:

$w = 2$ $v = x$ feet per second.
$w_1 = 1$ $v_1 = 2$ feet per second.

To find the average speed of the 14-inch pump compared to the 10-inch pump, we must make the energy of both masses equal; consequently, $w\,v^2 \div 2g = w_1\,v_1{}^2 \div 2g$, or $w\,v^2 = w_1\,v_1{}^2$ $2g \div 2g$, or $w\,v^2 = w_1\,v_1{}^2$; consequently, $v^2 = x^2 = w_1\,v_1{}^2 \div w$, or $x =$ sq. root of $w_1\,v_1{}^2 \div w$. By placing in this equation the numbers which the letters represent, in this case we will have: $x = v =$ sq. root of $1 \times 4 \div 2$, or $v =$ sq. root of 2, or $v = 1.4422$ feet per second.

To throw the same amount of water the speed of the 14-inch pump only requires to be one half of the 10-inch pumps, or one foot per sec

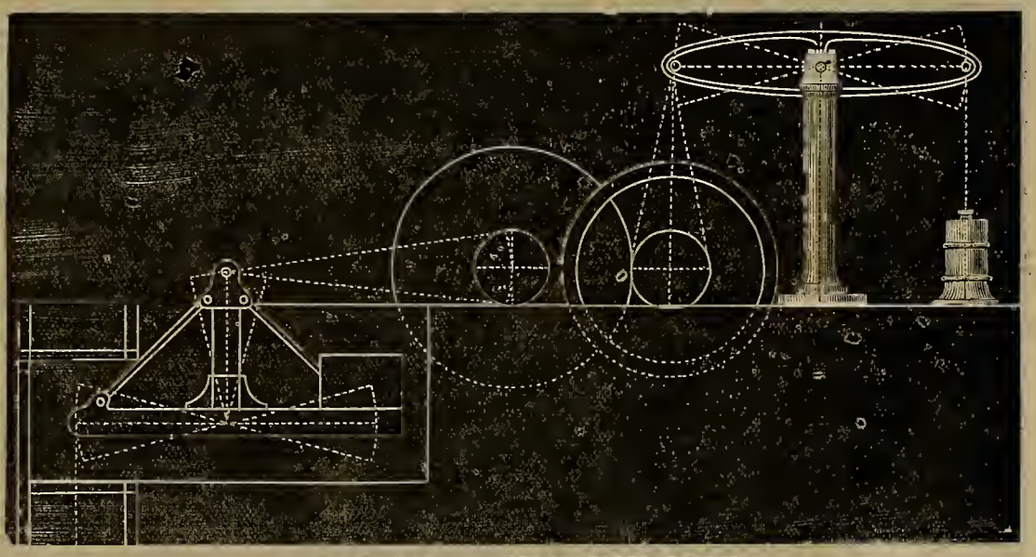

FIG. 12. VERTICAL BEAM GEARED ENGINE.

ond, while we see that to create the same momentum in one case as in the other a velocity of 1.4422 feet per second may be attained.

It is therefore of advantage to make the stroke of the engine greater than that of the pumps, and for the reasons shown above it is never advisable to make the stroke of the pumps greater than that of the engine.

In Upper Silesia the system of direct-acting compound rotary engines has been introduced at several mines and they work with success.

The usage of a fly-wheel is, however, often a practical impossibility, as, for example, in most mines on the Comstock, where the flow of water requires at times a very slow speed of the pumps. With the usage of a fly-wheel, less than two revolutions a minute can hardly be attained. Is, however, the flow constant, they work economically, and their maximal speed can be made greater than that of other direct-acting engines, for whatever part of the momentum is not cancelled by the expansion will be stopped by the crank, while the starting of the mass can be realized quicker by the energy stored in the fly-wheel.

The strain which exists in stopping and starting the mass is naturally injurious, but much less than in geared engines, and it is much easier to construct the parts to resist it.

The valve motion is perfectly sure and the safety on the engine is complete as long as no connection breaks between the beam and fly-wheel.

These engines in Upper Silesia all work with iron pump rods, so as to reduce as much as possible the mass.

When circumstances allow and first cost does not come too much in consideration, they are a class of engines to be strongly recommended.

Generally the pump-stroke is made for these engines one-half the engine stroke.

Before concluding this subject we will examine the system of two rods and two columns of pumps, as compared with the single rod syatem of pit-work. For a double-acting engine the balance required is total weight of the rods and one-half the column of water; with two columns of pumps the rods moving in alternative motion balance themselves, while each pump being one-half the capacity of the water thrown per revolution the engine at each stroke does one-half of its water work and is consequently completely balanced.

Moreover it will be seen that at each stroke the mass moved is the same, being equal to the weight of the rods and one-half the column of water; the mass being the same, an equal momentum will take place, and consequently both strokes can be made in the same length of time. With the single rod system, on the outward stroke the mass is composed of the weight of the rods, the total of the column of water and all the balance weights required, while on the inward stroke the mass moved is the weight of the rods and the balance weights, consequently being smaller by the quantity represented by the whole weight of the column of water, it is clear that an equal speed cannot be attained on both strokes. It will also be remarked that the mass in the double rod is smaller in total than in the single rod system; so that a greater actual speed can be attained under the same circumstances by the engine.

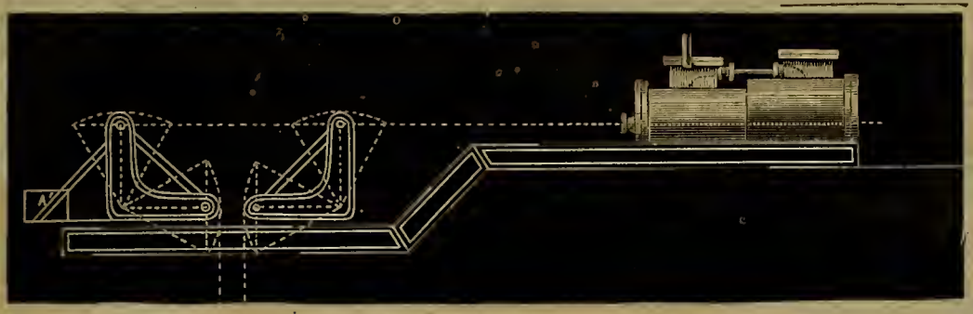

FIG. 16. DAVEY'S DIFFERENTIAL COMPOUND ENGINE.

A is ballast for the Sinking Pump.

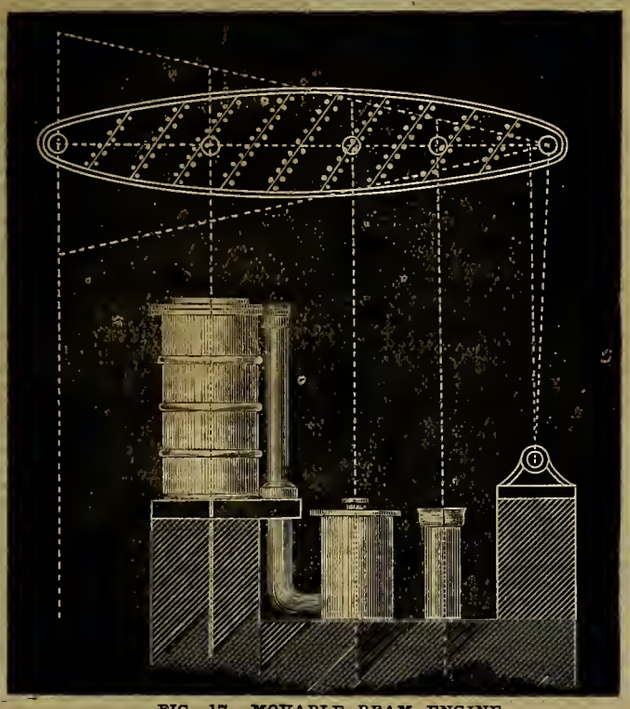

FIG. 17. MOVABLE BEAM ENGINE.

Pumps Longer Stroke than the Engine.

The Alta engine is working on this principle, and it is certainly one to be strongly recommended.

As closing remarks for this chapter, we will recapitulate the defects of surface engine with usual pit-work:

I. The momentum of the pit-work.

II. Moving heavy weights in shaft occasions in many cases caves, when, as in this country, timbering is used.

III. The pumps are required to run all at equal velocity; so that if more water comes at one station than at the others, it cannot be taken up there, without increasing the capacity of the pumps from that station upwards.

IV. The pit-work takes up much room, so that generally a second line of pumps cannot be put in the shaft in case of necessity, and consequently the old ones have to be replaced by a completely new set.

V. If greater depth is attained than that for which the engine is calculated, or more water has to be raised than expected, complete new machinery is in most cases necessary.

VI. Having to take in consideration by the planning of new machinery, the two last named defects, the engines have to be constructed larger than actually required to do the work. The three first named objections are too well understood to necessitate any further remarks.

The three last named objections are serious as regards the outlay of money, and it will be found that while on an engine the interest ought not to exceed 10 per cent., and the depreciation an additional 10 per cent. per annum, the figures will reach nearer 20 per cent. in localities where the sinking of shafts is as rapid as on the Comstock, and where the flow of water is so liable to increase at any moment. This large interest on the money invested in pumping machinery renders the raising of water very expensive; we must, therefore, in any new system, try and reduce these costs as well as put aside the mechanical defects.

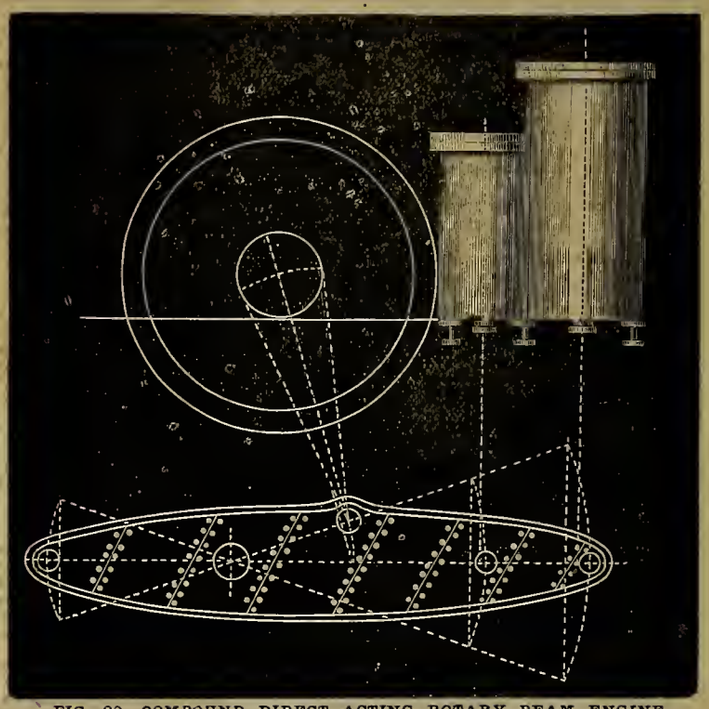

FIG. 20. COMPOUND DIRECT ACTING ROTARY BEAM ENGINE.

Proportion, 1 to 2.

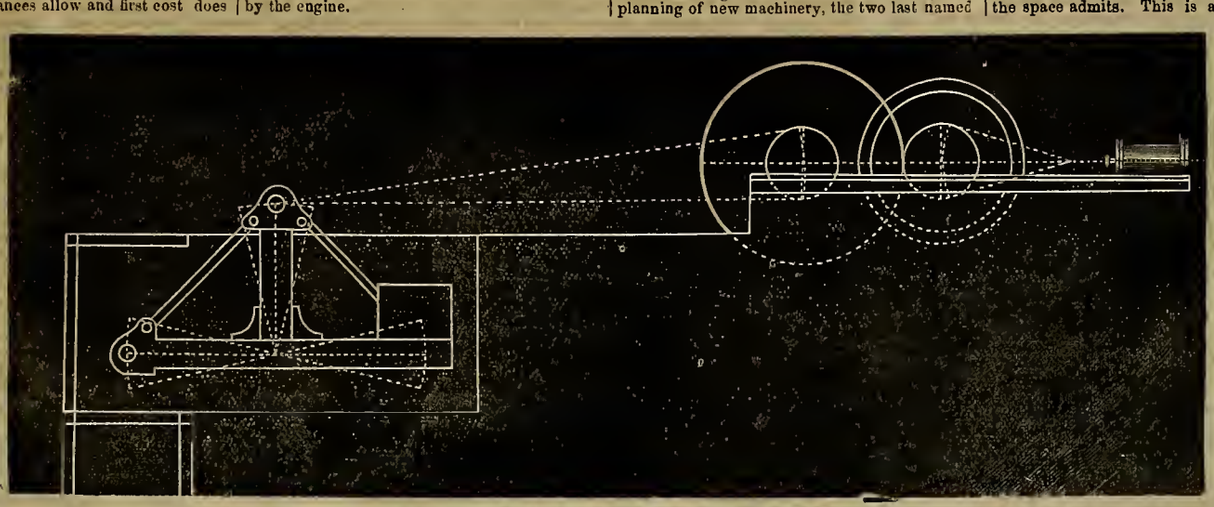

FIG. 13. HORIZONTAL GEARED ENGINE.

Book Notices.

Daire's valuable hand book on the "Preparation and Mounting of Microscopic Objects" is proving of such general value to the student of microscopy that a new edition is issued by the publishers, G. P. Putnam's Sons, of New York, and for sale by Payot, Upham & Co., 204 Sansome street, San Francisco. The new edition is edited by John Matthews, a well known English microscopist, and much new matter is introduced. As the book now stands it is the leading authority on its theme and should be on every microscopist's table.

"Building Construction," by R. Scott Burn, one volume of text, and one of plates, forms No. 3 of Putnam's Advance Science Series (Payot, Upham & Co.). This forms a sequel to the elementary volume on the same subjects named in the series of which both volumes form parts. The letter-press descriptive matter is found as full as the plan of the work and the space admits. This is also characteristic of the illustrations. The diagrams on wood alone, independently altogether of the accompanying volume of plates, are numerous to an extent seldom seen in works of this class. From this point of view, indeed, it may be said to stand alone in this class of literature, which is mainly addressed to students of the practical arts, or to those students who, without intending to carry out practically any of its departments, may have a desire to become acquainted with the subjects in general. A full index is added, so that as a means of reference in a compact scale the books are very convenient.

Silver.

Dr. Lindermann's Views on It.

A *Chronicle* reporter has interviewed Dr. Liudermann, Director of Mints, on the subject of silver. We republish the interview, as it is of valne to oor mining readers:

"I see you ara very much excited ahout tha silver matter," remarked ths Doctor, af er ths usnal preliminsry compliments. "Well, you are a very excitable people. S ill I can hardly blame yon for it, for it is a question of grsat interest hers. Silver is snffering from its demonetization hy ths German empire, ths limitations placed by the Statss of ths Lalin Union on ths coinags of silvsr monsy, and tha exaggsrated reports of ths probahle product of tbs American mines. Ths prics fell in July last lower, as oompared with gold, than it has ever hefors fallen within

The Period of Aulhentic History.

It went so low thet it took only one ounce of purs gold to purchasa twsnty and one-fifth ouncsa of pure si ver. Since that time it has recovered very considerably in price, the rate heing at present 56 pence per ounce, Britiah standard, which corrs-pouds with ons doller ten and a half csnts per ounca, or makes a dollar in subsidiary coin of gold value nearly 89 cents. Ths principal psrt of this advance has taken place during the laet 60 or 90 days. This advance is paitly due to the action of the Uuited Stat s government, which, in view of ths possibilities of war in the E.st, and the financial disturhances which would he likely to result therefrom, deemed it important to provids a reasonahle stock for its coinage oprations. The purchases mads during ths month of October in London amounted to about $2,000,000, ths purchasing rats heing 54 pence, and ths purchass of nearly $1,000,000 was mads at ths same time in San Francisco and New York. Ths totsl purchases since ths beginning of October have amountsd to ahout $5,000,000. The highest rate paid was about 54 psnce, and part of it below tbat rats. The goverinment is not now purchasing, its wauls having heen fully supplied. Another cause of the advance ie the demaud in China.

The Future of Ihe Silver Market

Depends, for one thing, on the action of the German government—that is, what Germany will do with the balance of her surplus silver. Germany hae a surplus snbsidiary coinage on the same principle as that of tbe United States and Eoglaud, the issue of whioh by existing law is not to exceed $2.50 per capita, or ahout 10 marks. A proclamation has recently heen made hy the Germau parliament to increase the issoe to 15 marks per capita, it heing thought that the first limit fixed would not afford a sufficient amoont of change money in that empire There is no purpose to restore the douhle standard in Germany; in fact, the measure to provide for an additional issue of subsidiary coinage points in quite a different direction, this coinage heing subordinate to the gold money, which is the monay of unlim ted ten der. The next reason to be cousid-red is the probable action of France and Belgium as to the coinage of ths year 1877. If the exieting restriction of the coinage in France to the full legal te der silver money—that ie, the five-franc piece—should he removed, there would hs a large market for silver coinage. If, on the contrary, the restriction should he continued for another year, as has heen proposed, or it the coinage of five-franc pieces shonld be intermiited eatirely, the price of silver would he lower. The futore legislation of the United States will elso heve an important heering on this question. Existing laws authorize a total issue of $50,000,000 of subsidiary coin. Should an additional iesue he authorized or a douhle standard be adopted, the effect would be to enhance the value of silver. The demand in India has greatly helped tbe advance."

Why Purchases Were Made Abroad.

"Wny did the Government go abroad to purchase silver? Could it not get enough on this coast?

"The Government, while preferring to deal witb our own citizens and its own prodncers, feels hound hy the law of purchase to huy where it can buy cueapest."

"Were the hnanza men asking too much for their prodnct?"

"That is a point I do not care to touch upon."

"What did you pey for these sheres?"

"Never more than the market rate. We have heen accustomed to regard Loodon as the arbiter of the prioe of silver until within the last tbree monihs, when the demand of coined silvar for the China trade, together with the existence of two mints on tbis coast and the government executing a part of the coinage for circulation in the East here, resulted in placing San Francisco on an equality with the London market. In determining what ie tha market rete of silver we are now obliged to look to the supply in both these cities. In all the purchases made by the United Statas of the bonanza mioe I consider tbat the purohaeer has made a fair average purohase and the seller a fair average sele. The arrangement between Flood & O'Brien and the Government in regard to the purchese of hullion is simply a verbal agreement, I believe. Thera is now about $1,000,000 worth of bullion at the mint waiting to be converted into trade dollars. The Government will need hereafter about $1,500,000 in silver monthly, and it is probabla that no more purchasas will be made abroad. From $12,000,000 to $15,000,000 is likely to suffice for tha silver demands of China. It the market continues as good in China as for the last four months thers is no donht that much Mexicsn bullion will come to San Francisco and be shippsd hence to Chinese ports."

India's Need of Silver.

"Estimating ronghly, how much silver would you say that India is likely to consume?"

"I would say $35,000,000 yearly, or about half the annnal silver product nf the world. That goes from London."

"Is it your opinion that there will hs a heavy demand from Europe ths coming year?"

"That depends on ths possihilities I have already mentioned. I do not think the demand from Europe is likely to hs heevy. Russia, Austria, Spain and Italy have all a forced paper hasis, and that takes off a good deal."

"Would a war with Turkey increaea the demand for silvsr in Russia?"

"No; it would rather dimioish it."

"Will Germany rstain all hsr silver?"

"She will, on the contrary, have to get rid of thoss legal tender silver coins. Shs will sell the silver which ehs hss in that form in moderats quantitiee, and in a way to secure the hest possihls prics for it."

Probable Price.

"What do you think will prohahly he tha price of silver the coming fiscal year?"

"I do not think thers is likely to bs much change in it. I see no particnlar reason why it should go much higher or fall mnch lower."

"I helieve yon do not favor the douhle standard?"

"I do not think it would be a good thing for this country. I think wa shonld keep the gold hasis, with subsidiary silvsr for common nse, fixing ths amoont for legal tender at $10. That is what I recommend in my report. We bavs now, as I setimate, in this country $150,000,000 in gold and lees thon $40,000,000 in silvsr, exclusive of plate. Of this amount, tbere ie from $25,000,000 to $30,000 000 in snbsidiary coin, and from $6,000,000 to $8,000 000 at the mints. To reise the price of silver as compared with gold above its value in other coontries, would he to flood us with tbe poorer metal and drain the land of the more precious."

Comstock Bonanzas.

In common with all other mineral lodes a portion of tha vein material of the Comstock is poor and a portion rich. When the ore is found concentrated in a large and connected body, this body is called a "bonacza." The word is similar in meaning to the terms "pocket," "shuts," "chimney," "ore body," etc. Because of the great size of these Comstook ore bodies, as compared with any other known ones in the West, the Spenish term wae used as sometbing grander, precisely as "canyon" is used to speak of a deep and narrow gulch.

It is these honanzas, saye the *Mining Review*, that have been the source of both the riches and the reputation of ths Comstock. If the vein were laid down flat and their area measured, it would he found that they measured abont one-fourth of the superficial area of the lode. Measored cubically, they compare with the solid contents of the vein as about one to twenty-five. The general form has been somewhat egg-shaped, thoogh presenting quite irregular boundaries, and their dip has been generally to the south. There appears, however, but little regularity in their formation. It must not be supposed that outside of these great ore hodies the vein is barren. Connecting them, and running through other parts of the vein, are often found smaller veins of good quartz, hut owing to the gigantic scale upon which mining ie carried on at Washoe few of these narrow streaks can be worked to any profit. They are good encouragere, however, and often pay nearly for their own extraction. But the many miles of drifts and shafts in the great vein that have heen driven through harren groond for prospecting, ventilation, and other purposes, are evidences of the cost and labor required to find the pay, while at the same time its enormous production, as compared with the total cost, proves that tha investment has on the whole heen exceedingly profitable.

The following liet of the hocanzas of ths Oomstock will be interesting to all who are watching the marvelous history of that mammoth vein:

1 Ophir and Mexican—Discovered on tha surface, and extended 500 feet in depth. Averaga width of ore, 15 feet; cnbical contents, 112,000 toos; approximate value of ora, $22,000,000.

2. Gould & Curry—Extanded from the surface to the depth of 500 feet. Average width of ore, 15 feet; length along tha vein, 500 feet; cubical contents, 190,000 tons; valua of ore, $37,500,000.

3. Savage—This was a continnation of the Curry bonanza, but not so rioh. The ore continned down in the Savage claim to the very bottom of that mine, which ie now 2,300 feet helow the ontcroppings.

4. Hale & Norcross honanza—This body was strnck at a dapth of 450 feet. It averaged 10 feet in width, was about 200 feet long, and stretched down to tha 1200-foot level. Cubical contents, 75,000 tons; value, $5,500,000.

5. Ohollar-Potosi bonanza—struck at a depth of 500 feet; width of the vein worked, 100 feet; has extended with but faw interruptione down to tha present bottom of the mine, which is over 1,700 feet. Cubical contents, 1,500,000 tons; value, $24 000,000.

6 Gold Hill honanza—This body extended from the enrface to a depth of 500 feet, and for 300 feat on ths vein. Contents, 300,000 tons; value, $10,000,000.

7. Yellow Jacket honanza—Discovered on the enrface and extended downward for over 700 feat. The ors on thie body was quite poor, and never yisided much profit. Ite total prodnction was ebout $5,000,000.

8. Kentnck bonanza—300 feet long, 20 feet wide, and 400 teet deep. This ors was very rich. Contente, 100,000 tone; value, $10,000,000.

9. Orown Point and Belcher honanza—Discovsred on the 1400-foot level and extended downward for 600 fset. Is still prodncing in ths Belcher. Contents, 1,500,000 tons; value, $50,000,000.

10. Coneolidsted Virginia and California honauza—This last and greatest ore body which the lods bas yet developed, was found hy drifting eastward from ths 1500-foot lsvel into what wae supposed to hs the last country rock. The honauza liee abova and bslow this, and is helieved to contain $140,000 000. It extends for ahout 700 fsst along the vein, is 600 feet in hight and nearly 100 feet in width. Up to the present date it has yisided over $30,000,000, thongh discovered lees than two years ego, and ia now producing at ths rate of $120,000 per day.

Ths Comstock now fornishes employment for over 2,000 miners. Its daily output of ors is nearly 2,000 tons, and its yield tbie year will approach $50,000,000. One-balf of this (or, mors correctly, about 42 per cent.) is gold, and the halance silver. When tha amount of ors now in sight ie taksu out, the lode will have prodoced in all eomething over $300,000,000 in precious metals.

Pacific Coast Appropriations.

Detailed estimates of the appropriations reqoired for all branches of the publio servics for the next fiscal year have now heen furnished by the Secretary of the Treasury to Congress. The following ara the appropriations recommended specifically for the Pacific States and Territories:

To complete the Appraiser's huilding, San Francisco, $100,000.

For the completion of the San Francisco snbtreasury, $20,000.

San Francisco Mint—Salaries, $24 900; wages of workmen and adjustsre, $800,000; contingent expensee, $100,000.

Carson Mint—Salaries, $24,300; wages, $100,000; contingent expenses, $50,000.

For collecting mining-statistics of tha United States, $5,000.

For salaries of the San Francisco snb-treasury, $24,370.

Tbe appropriations granted for the San Francisco mint at the last session were $50,000 less than the smoont now asked. The estimates for Carson ars $35,000 more thau tbe last appropria ion.

Mare Island Navy Yard—For the continnation of the stone dry dock, $650,000; quay wall and wharves, $100,000; other improvements, $150,000.

Only $50,000 wera appropriated for Mare Island improvements last session.

Benicia Arsenal—Varione repairs and improvements, $135,000.

Fort fications—Fort Point, $60,000; Alcatraz, $50,000; Mouth of Columhia river, $20,000.

River and Harhor Improvements—Oakland harhor, $250,000; Wilmington breakwater, $100,000; Sacramento and Feether rivers, $20,000; Lower Willamette and Colnmhia, from Portland to sea, $15,000; Upper Willamette, $45,000; Upper Columbia and Snake rivers, $30 000; Canal at Columhia River cascades, $300,000; to establish a dry heacon on Anita rock, San Francisco harhor, $23,000. (An accompanying note nrges this estimate, with the remark that this rock is a serious obstrnction, and should he removed); to build light stations on Point Concepoion, Farallone islands, each $9,000.

For Surveying Public Lands—In California, $50,000; Arizona, $25,000; Oregon, Washington, Nevada and Utah, each $15,000.

For surveying Private Land Claims—In California, $10,000, Arizona, $3,000; New Mexico, $1,500.

Clerks and Contingent Expenees—Surveyor General's officers, California, for clerk hira, $20,000; incidentals, $7,000. These amounts are urgently recommended to enahla the California Surveyor General to copa snccessfully with the diversified offica work called for hy numerons Acts of Congress; they aggregate $8,000 more than the amounts granted last session. Nevada—clarks, $8,300; incidentals, $4,000. Oregon—clerks, $7,200; incidentals, $2,500. Washington—clerke, $7,200; incidentals, $2 000. Utah—clerks, $7,600; incidentals, $2,500. Theee estimates all largely exceed the amounts of the last appropriation, bnt are recommended as absolutely necessary to bring up arrears of work.

Tha estimatee for the salaries of all Federal officials in the Pacific Statas and Territories are as ara usual, for tha precise amonnts heretofore pra-cribed by law.

The estimates furnished for the general expenses of tha Indian servioes are: For California, $60,000; Navada, $35,000; Oregon, $40,000; Washington, $20,000; Utah, $20,000; New Mexico, $40,000; Arizona, $65,000. Tna amounts appropriated for the current fiscal year were only $30,000 for California, $20,000 for Arizona, $15,000 for Oregon and New Mexico, $10,000 for Utah, and $5,000 sach for Nevada and Washington.

Ths appropriations are also recommended of $25,000 for the civilization and subsistenca of the Indians of ths Malheur reservation, Oregon, $45 000 for collecting and sustaining ths Apaches of Arizona and New Mexico. Tha emount appropriated for thsse Apaobss last seseion was $125,000.

Kern County Mines.

From a recent number of ths *Courier-Californian* we taks the following concerning the mines of Kern county:

Gold was discovered as early as 1853 in the tributaries of Kern river, many of which contained rich placere. Those were soon worked out, and attention was then directad to quartz mining, and many valuable leads have heen fonnd and worked with greet profit for many years. The whole mountain rangs ribhing tha county on the east and south, is rich in mineral. The lack of speedy and adequate means of communication, bowever, previons to the advent of ths railroad, which has just hsen completed through ths county, rstarded ths development. But a nsw impetus has been given to the mining interest hy the railroad, and many entsrprises of that chsracter ara now in course of prosecution, that had been abandoned when wages wers high and freight fiva cents per pound. There are probably 5,000 persons now in tha mountains, engaged in mining and kindred pursuits.

Havilah, at one time a very prosperous and populous camp, and ths former county seat, but latterly, for ths reasone cited above, about abandoned, is reviving with encouraging signs of a healthy and permanent growth. There are now three mills running and making good returns. Tbe mines are in the hands of persons who are satisfied to derive legitimate profits from the working of the mines, rather than feverish and uncertain fluctuations of the stock market. With restored confidence and the existing stimulus, it is reasonable to predict within a short time a return of the old times, when there will be employment for hundreds of men and a demand for business facilitaes of all kinds in proportion.

The Warrington gold and silver mining company, at Havilah, under the superintendence of Mr. R H. Stretch, is operating several mines end running a 10-stamp mill on good ore. The other two 10-stamp mills are running on custom work and making good returns. The mills are kept running night and day. Arrangements ara in band which will result in the operation of several other mines of known value. There ara at present something over 50 persons employed in these mines.

Kernville is now, and has been for a number of years, one of the most flouriehing mining towns in the State. The Sumner mine is the principal, in fact the only mine that sustains this populous settlement. It is owned by Senator John P. Jones, the honanza millionaire, and E. R. Burke, and ie under the direct management of the latter. The lead was discovered in 1860, hut was never properly worked till it fell into the hands of the present owners. Many other locations were made originally, but these have been bought up from time to time till the Sumner mining company now owns the entira lead for some four miles—as far as it can be traced, and has a United States patent tor it. It will be seen then that the supply of ore is practically inexhanstihle; at least, for this generation, even though worked on the extensive scala and with the effective force now employed. The mine is situated about a mile from Kernville, on the North fork. The mill is run by water power, of which there is ecoogh to run all the mills of Nevada. The ore ie conducted in cars that run themselves on an inclined plane from the dump of the mine to the mill. Although a great deal of work has been done and a vast quan ity of ora extracted, comparatively little impression has as yet been made on the great lead. The greatest vertical depth attained is lese than 200 feet. The lead varies in width from 10 to 45 feet. Some of it is nearly barren, but, again, thera are chimneys of extraordinary richness. A large sum of money has been expended in placing this mina in good condition, and large sums have been extracted from it. It is but about a year since tha new 80 stamp mill has been completed and in operation. This mill is said to he tha finast piece of work of tha kind in tha State. It is supplied with all tha latest improvements for the reduction of ore. Everything is done in the most complete manner hy machinery, scarcely requiring the oversight or superintendence of man. To so perfect and well menaged a system has tne working of this mine been reduced, that the cost of extraction and reduction bae been brought to the merely nominal snm of between four and fiva dollars per ton. About a hnndred tons of ore are now being excavated and crushed every 24 hours, the mill running night and day, and the men working in three shifts of aight hours each. A large number of Cornish miners, the most skilled in the world, ara employed here, and the entire force, including lumbermen, millmen, and others connected with the mina, does not fall far short of 200.

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Continued from Page 413.

when completed it will he the finest hnilt mill in the State, and that no expense has been spared in making it most complete in every particnlar. The plans and constrnction of the mill have been under the immediate superintendence of mining engineer O. B. Dahlgren, which should be a sufficient guarantee for its being built in a proper manner. In amalgamating, no pens are to be used, but the new system of "leaching" is to be inaugurated, which is highly spoken nf hy those who are familiar with the process. Should the season prove to he an open one, it is thought the company will he able to keep their fnrnaces and mill constantly rnnning the whole winter. There are a number of new hnildings in c nrse of erection in tbe tnwn, and many more would he built if lumber could he obtained.

PALMYRA DISTRICT.

Specimens.—Virginia *Enterprise*, Dec. 16: John Stuart, who has recently been in here from the Palmyra mining district, which lies in Lyon county, and 15 miles from Dayton, has left on our table some beautiful specimens of ore. One piece, weighing psrhaps 20 pounds, came from the Aurora ledge, and only 40 feet below the surface. It is excellent ore, containing gold in abundance and silver in both sulphurets and chlorides, principally, however, in the former. The ore is weather-stained to the appearance of float-rock, but has been lying on the dump all these long years, since work was active in the Palmyra district. Mr. Stuart also showed assays made in this city, of float-rock of the Anrora. The result obtained was a little over $1,000. Of this amount all except a very few dollars was in gold. Mr. Stuart says there is plenty of ore there, and that the sample shown is hut a fair—not a picked—specimen. We gave, a few days since, an account of the relocation of several claims in the district. The affair is creating quite a stir here on the Comstock, and capitalists are beginning to inquire whether there is not something in it.

CENTRAL DISTRICT.

Bonded.—Eureka *Sentinel*, Dec. 16: We understand that General Rosecrans has bonded for 60 days some two or three promising but undeveloped mines in Central district, in Hnmholdt county. We hope the gallant old soldier will succeed in organizing a company to develop them.

RAILROAD DISTRICT.

Trouble.—Elko *Independent*, Dec. 16: There seems to be some tronhle at Railroad district hetween the miners in that camp and the company, which recently commenced nperations thero nnder very favorable auspices. Several of the miners who have been employed in the district arrived here yesterday, and report the mines as looking first-rate, but we are led to infer from some remarks dropped yesterday that they are displeased with the conrse of the company throngh which the business of the camp has lately been revived.

GROOM DISTRICT.

Relocated. — Pioche *Record*, Dec. 10: From Mr. Black, who arrived from Groom district on Sunday last, we learn that work will be commenced very shortly in that district. The Armagosa mine, situated about 16 miles from Resting Springs district, and formerly owned by San Francisco men, has been relocated by some parties from Groom and Resting Springs. This mine at one time produced ao immense amount nf hullion.

Meetings and Elections.

Stepton Cons. M. Co.—Dec. 11th. Myron Angel was elected a director in place of J. H. H. Williams, now absent in New York. The Board now consists of the following officers: J. D. Wheeler (President), S. N. Putnam, George Laws, Robert Briggs and Myron Angel (Secretary).

Emigrant M. Co.—Messrs. Shawhan and Falk have resigned from the directory, and Messrs. H. C. Swain and John Hohart have been elected to fill the vacancies.

De Frees M. & M. Co.—Dec. 15th. Trustees—M. P. Freeman, T. E. Atkinson, C. W. Elliott, C. E. Convis, W. B. Newholt.

Gould & Curry M. Co.—Dec. 18th. The Secretary's report embraced the following details: Receipts—Cash balance November 30th, $11,022.59; five assessments, $390,553.15; mine account, $32,251.21; superintendent's house, $250; F. F. Ashton, $28,412.2; balance, $62,191.24; total, $542,679.43. Disbursements—Mine account, $508,503.79; general expenses, $33,583.04; total, $542,679.43. The report of the superintendent was read and accepted. The balloting for officers resulted in the re-election of the old ticket, as follows: President, Chas. H. Fish; Vice-President, George Congdon, Secretary, A. K. Dnrbrow; Superintendent, James G. Fair; Trustees—Wm. S. Lyle, J. C. Flood, R. H. Follis and Robert Sherwood.

Andes S. M. Co.—Dec. 18th. Trustees—Geo. S. Dodge, R. G. Brown, R. F. Bunker, John Landers and G. W. Britton. Subsequently George S. Dodge was chosen President, M. Landers Secretary, and John F. Egan Superintendent. Report from Supt. Egan was read and approved. Report was accompanied by photographic views of the machinery and hoisting works, also undergronod plan of the workings of the mine during the past year. The Secretary's report shows receipts dnring the year $75,000, heing amount collected on assessments Nos. 6 and 7. Disbursements, $56,619.70. Balace cash on haod, $18 580.30.

The Opbir annual meeiiog was held on Wednesday. The Secretary's report contained the following details: Receipts—Cash on hand December 15th, $21,254; from bullion, $2,340,848; sundry sources, $41,999. Disbursements—General expenses at the mine, $16,815; Buck's shaft construction, $773 374; machinery for same, $258 121; Ophir mine, $41 945; office expenses in San Francisco, $10,294; Buck's shaft building, $49 672; discount on bullion, $228,032; milling, $812,840; cash on band, $379,600; incidentals, $24,468. There is also $13,000 cash in the hands of the superintendent. The election of officers for the ensuing year was then in nrder, and hy a unanimous vote of the stock present the following gentlemen were appointed trustees: C. L. Weller, J. D. Fry, A. K. P. Harmon, J. H. Dohinson, Joseph Sharon, A. P. Wade, J. P. Jackson. The superintendent, Samuel T. Curtis, stated in his report that during the last year 68,011 tons of ore have been extracted from the mine, of which 67,736 tons were worked, yielding bullion smounting to $2,340,848.70. After the meeting adjonrned the trustees met and elected the following officers: President, C. L. Weller; Vice-President, J. D. Fry; Secretary, W. L. McCoy; Superintendent, S. T. Curtis.

New Incorporations.

Tha following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

Ontario S. M. Co.—Dec. 15th. Capital stock, $10,000,000. Trustees—J. B. Haggin, A. E. Davis, W. B. Carr, J. C. Ball, B. B. Minor, C. R. Greathouse and Wm. Willis.

Panamint Valley Water Co.—Dec. 17th. Directors—R. C. Jacobs, J. W. Pearson, D. M. Seaton, P. I. McLaren and C. E. Pearson. Capital stock, $5,000,000.

Midas M. Co.—Dec. 18th. Location: Arizona. Capital stock, $4,000,000. Trustees—John T. Porter, A. D. Scott, Thomas B. Bishop, W. H. Fifield and W. H. Whittaker.

Cardinal Constantine Patrizi, Dean of the Sacred College, is dead.

Comstock Papers.

No. 13.

The Central, Kinney and Sides.

The Central ground was so denominated from its position hetween the Ophir and the California mines, then considered the most important, and in fact, about the only two claims, except the Mexican, worth much on the great lode. The Kinney ground, though not located by, was pnrchased at an early day by the man whose name it bears. After holding it for a long time, during which very little work was done npon it, he finally disposed of it to James C. Flood, for the sum of $1,200. Recently, Kinney has brought suit to recover a portion of this ground, which he alleges was deeded away by him under a misapprehension as to the nnmber of feet he was actually conveying to the purchaser. This fraction of his claim now incorporated in the Consolidated Virginia mine, is worth in the stock market nearly a million dollars. Richard Sides, his brother William and some of their neighbors, mensged, like many of the primitive settlers in Washoe, to possess himself of a section of the great mother lode on terms that involved the payment of very little money. This section, formerly known as the Dick Sides claim, covers five hnndred linear feet, lying hetween the White & Murphy on the north, and the Best & Belcher on the south. It had not been much developed up to the time of its purchase by the owners of the Consolideted Virginia mine, of which it et present forms a part. Sides and his partners disposed of their interests in it many years ago, receiving what was then deemed a fair equivalent for the property. This men, who was living on Cleer creek, Carson valley, before the discovery of the silver mines, still continues to he a resident of Washoe. In 1859, his brother William killed a man named Jessup, at the town of Gold Hill, for which offence he was obliged to flee the country, the circumstances under which the act was committed being too atrocious for even a Washoe community to overlook. Jessup was buried close beside the wagon road at the lower end of the town, his being the first grave in the place. After a year or two his remains had to he taken up, the wagon road having been so changed thet it ran directly over the little mound under which they rested. Jessup was held in good repute, and his death was much deplored by those who knew him. He owned fifty feet in the Ophir at the time he was killed, from the sale of which his mother, who came ont from Missouri soon after, realized a handsome sum.

Abernethy and Baldwin, who also lived on Clear creek, where they carried on ranching and lumbering, owned hetween them 150 feet in the Sides ground. Taking the money received from the sale of this property, and some feet they owned in the Belcher, they came over to California and bought land in Suisun valley, where they have since lived in independent circumstances.

Concerning the Locators of the Best & Belcher

We have not much knowledge. Best seems to have retired from the active scenes of Washoe life at an early period. Belcher, who had been a ranchman in California and went to Washoe in 1859, also disposed of his interest betimes, both in this claim and in some others at Gold Hill, which he had obtained from Comstock. Soon after he returned to this State and betook himself to his former occupation, which he has since successfully pursued. He was a quiet, gentlemanly sort of man, of more than ordinery intelligence and good business hebits.

The Gould & Curry Claim

Passed into the hands of these two men and their associates early in the summer of 1859, having been sold to them hy the original locators. The purchasers themselves sold ont the same fall to other parties, and at low figures, Curry having received not over six or seven thousand dollars, and Gould still less for his interest. They were both men of superior character and first rate business capacities. Abram Curry, or as he was more commonly called, Colonel Curry, had been in early life a steamboat man on the Western lakes and rivers, and was marked hy something of that off-hand, rough energy and frankness characteristic of men trained in that school. He was, nevertheless, a kind-hearted, honest man, and distinguished for his public spirit and enterprise. He was among the first settlers at Carson City, and did more than any other man to build up and improve that place. As early as 1860, he took up the Hot Springs, two miles east of the town and put them in fit condition for public use. At this point he also opened extensive stone quarries, from which he afterwards took ont materiel for the construction of a court house and other public buildings, at Carson, and still later for the Capitol of the State, and the United States mint, all of which were put up under his supervision. He also held the position of Superintendent of the Mint at that place, the duties of which he discharged in a manner to secure the approval of both the Government and the people. He died at Carson City some four or five years since, leaving his family not exactly poor, yet far from being rich. His partner Gould went to Reese river in 1862, and there engaged in the lumber manufacture and trade, which he carried on successfully for a number of years. Later, he was at several of the other pioneer mining camps in central and eastern Nevada, engaged in the same line of business. He is now a resident of California, and it is not too much to say of him that he has always enjoyed the confidence and respect of the several communities in which he has lived and transacted business.

Items of Interest from the Mines.

We give below items of interest from prominent mines, most of which are colleted from letters of the respective superintendents on file at the offices in this city. Considerable of this news is later than that procured from the interior journals:

Ventilation in lower levels of Consolidated Virginia mine is very poor. They have a large force of men enlarging the drift connecting with the 1550-foot level of the Gould & Curry mine, and have already improved the circulation of air, but it will require some 10 days to complete this work. On the 1700-foot level no work has been done the past week, owing to the great heat.

The ore body in the uprsise from the 500-foot level of the Leopard is 18 inches thick and the ore of good quality.

But little progress has been made the past week in lowering the water in the Hale & Norcross mine.

The last letter from the Superintendent of the Manhatten says: The average of ores worked during the past week is $157.59 per ton. The average of the past 24 hours is $197.92. The grade is steadily gaining. 500-foot stope, Frost shaft, shows some improvement on east side and upper part. The 500 east drift continues in a large ledge of good ore. The 500 west drift carries a large solid ledge. Stope above this drift is still being opened ont, and shows good ore throughout the vein. The winze sinking from the 500 east drift is down 40 feet and shows a splendid large ledge of very high grade ore. This winze is proving what we have always thought—that the best part of this chimney is still below us, and will be reached through the 571 cross-cut, which is within 100 feet of the ledge.

The Superintendent of the Julia expects rich developments, at no distant day, in the cross-cut from main south drift.

The work of retimbering the sheft and incline of the Gould & Curry is being pushed repidly ahead.

There is still considerable prospecting being done throughout the old abandoned levels of the Mesdow Valley mine, by chloriders, but so far the ore disclosed is of low grade and limited in extent.

Good looking quartz bringing as high as $41 per ton has been encountered in the Leviethan mine.

Letter of the 17th from the Justice says: shipped 339 tons of ore to-dey to ten different mills of the company. Mine continues to look well throughout. Machinery in fine order. North drift is being vigorously pushed ahead, to effect a connection with No. 2 crosscut. A fine ore body is now making its appearance from west side. At the point where this winze was commenced the vein is 17 feet in width. The winze is sunk on the east portion of the vein. Upraises continue to develop a regular body of high grade ore. Other portions of the mine are looking very well.

The cross-cut on the 1700-foot level of the Best & Belcher is being pushed ahead as fast as the intense heat will permit. A diamond drill is to be put at work on that level. This mode of cross-cutting can be done in most any kind of heat and where work cannot be done with picks and drills. On the 1500-foot level the main drift is being enlarged for the purpose of ventiletion.

In the Raymond & Ely a cross-cut was run south from west drift on the seventh level a distance of 20 feet, at a point 290 feet west of main shaft, which discloses a small streak of good ore lying to the west of the Hermes cross-cut, which they are now engaged in following, but there has been considerable stoping done in the immediate vicinity of this crosshead. This streak may run into some of the old workings and prove to be limited in extent.

Letter of 16th from Eureka (Grass Valley) says: Our clean-up for the last six days was 240 ounces of amalgam. Have driven No. 3 cross-cut nine feet; ground very hard.

The accounts of the famine received from Madras are worse than those from Bombay. Large numbers of starving people are flocking into Madras to escape death from starvation. There is much distress existing in the country districts.

The Colorado steam navigation company's steamer *Montana* was burned in the Gulf of California on December 14th. The passengers and crew were saved, but the ship and cargo are a total loss.

The poultry ring is reported as now pretty thoroughly broken up by the action of the two large firms who are selling to the best bidder whoever he may be.

Four hundred employees in the bureau of printing and engraving at Washington were discharged Saturday, about two-thirds being women.

The Charter Oak life insurance company of Hertford has purchased $3,000,000 of real estate on Broadway, Wall and Broad streets, New York.

Patents & Inventions.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[From Official Reports for the Mining and Scientific Press, Dewey & Co., Publishers and U. S. and Foreign Patent Agents.]

For Week Ending December 12th.

Traveling Satchels.—Elizabeth W. T. Keeney, S. F.

Apparatus for Hydraulic Mining.—Geo. W. Cranston, S. F.

Farm Fences.—Charles Cremer, Red Bluff, Cal.

Machines for Stitching Mattresses.—David Harris, S. F.

Machines for Stuffing Mattresses.—David Harris, S. F.

Section Jointed Nozzles for Hydraulic Machines.—Richard Hoskin, Dutch Flat, Cal.

Feed Racks for Horses.—Joseph Oscar Johnson, Salinas City, Cal.

Oil Can and Faucets.—Alfred H. Marshall and Geo. W. Marshall, Lower Lake, Cal.

Threshing Machines.—Gen. R. H. Miller, Oregon City, Oregon.

Setters.—Hiland A. Moore, S. F.

Oil Cops.—Wm. T. Garratt, S. F.

Manufacture of Solder Wire.—Hilsnd G. Hubbard Placerville, Cal.

Safety Guard or Cock-eyes for Harness.—Fayette, W. Kuapp and Christopher Schalbhorn, Fiddletown, Cal.

Notices of Recent Patents.

Among the petents recently obtained through Dewey & Co.'s Scientific Press Amsrican and Foreign Patent Agency, the following are worthy of mention:

Seat.—H. A. Moore, San Francisco. This invention relates to a novel constrnction for long portable seats or settees, snch as are intended to accommodate a nnmber of persons, and are nsed for pnblic hells. It consists in a novel method of constrncting the frame, legs and seat of the settee, by which ths inventor is enshled to obtsin the most comfortehle shape for the seet and back, with increased strength, lightness, portebility and economy of constrnction, while the meterial, after bsing got ont in proper shepe, may be compactly packed and shipped to any point where comparatively nnskilled lehor will be needed to pnt the parts togsther, and build the settees. In the ordinary method of constrnoting settees, the seat is formed of a plank, thick enongh to allow the nppsr snrface to he worked ont into a slight cnrve, and the turned legs are driven into this plank sest, while an inclined bnt strsight back is formed of ronnds driven into the resr npper snrface of the ssat. This form of settee is heevy, nncomfortable and sxpensive. This settee is compos.d of end pieces which are sawn ont of one-half inch plank, and one or more middle sections of the same shape, these sections being nnited by nerrow longitudinal strips to form the seat. By the pecnliar constrnction patented, the inventor is ensbled to givs his settse the best form for comfort, to constrnct it cheaply of wood in snch a manner as to render it light and easily portable, and the psrts can be closely pecked and shipped to their destinetion before being pnt together, thns saving freight. They are strong and symmetricel, and do not become loose-jointed or noisy, as when ronnds are driven into holes.

Feen Box.—J. O. Johnson, Salinas City, Monterey Connty. This invention is a pecnliar feed box for horses and other animels, its object being to prevent the animals from wasting the food by throwing it ont of the box. This box is set on the side of a menger, and is constrncted in snch a manner thet the animel cen not throw ont his feed. It is alec arranged so as to prevent annoyance from fowls when they are ahont the stsble, as they will be nnable to fly down, or get at the grain while the animel is eating.

Manufacture of Solder Wire.—H. G. Hulburd, Placerville. This is an improvement in the mannfactnre of solder wire for soldering pnrposes, and it consists in rnnning the melted solder throngh a fnnnel-shaped vessel into water, where it is cooled and converted into wire, snch as is nsed for soldering. The improvement consists also in the construction end arrangement of the receiving vessel, which is arranged to have nozzles of different sizes for diff.rent sized wire.

The *Herald's* London special says: "The Indian authorities, it is said, have telegraphed the home governmsnt, that if England withdraws her snpport from Turkey, the Mnssnlmans of Hindoostan will certainly becoms obstreperons. If this shonld prowe true it will be a sonrce of no small embarrassment to the English government in the negotiations at Constantinople, and it may heve more influence in determining its Eastern policy than all the Bulgarian msetings and party conferences on the Eastern qnestion, that have been held in England dnring the last two months."

It is steted on good anthority that the Khedive is dissatisfied with his American military officers, and has notified them thet contracts will not he renewed. The policy of this step is qnestionable, as a renewal of the Abyssinian war is considered imminent.

Woodward's Gardens embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

A New County Bridge.

We take from the *Russian River Flag* the following data concerning the Alexander valley bridge, just completed:

Length of bridge, including tha 40-foot span across tha slough on the west sida..	1,483 feet
Width in tha clear	16 feet
Material used—redwood	200,000 feet
Material used—pine	85,000 feet
Total in bridge	285,000 feat
Total time an tha work	72 days
Taka ont Sundays	10
Dalayed in dalivery of lumber	11¾ 21¾
Number of days worked	50¾
Total cost without tha 40-foot span	$13,330

Contractors, tha Pacific bridge company; Snperintendent and Engineer, R. W. Gorrill; Assistant Engineer, H. B. Alexander; Foraman, Hoffman.

The structnre is second in magnitnde of its kind in the State, and we donbt that better mechanical and engineering skill or better material has been bestowed on any bridge in the State; and certainly 50¼ days is a remarkably short time to be occnpied in its construction, especially when there was a freshet in the midst of it, carrying away the false work for the 125-foct span.

The Snperintendent, Mr. Gorrill, being very ill at the beginning of the work, it devolved on Engineer Alexander and Foreman Hoffman to continne and finish the bridge. If honor is to whom honor is dne, it is to these gentlemen for the rapid and thorongh performance of their dnties; and to them as well as to the company the Alexander valley people are very gratefnl for not being compelled to risk their lives another winter in getting to and from market as in years past.

Mr. Gorrill, on behalf of the company and his assistants, requests us to retnrn his thanks to onr people for all the acts of kindness tendered himself and assistants while among them, and their favorable expression for the company. He had hoped to join them in a general jollification at the completion of the work, bnt was compelled to forego that pleasnre on acconnt of continued illness.

The bridge company having completed its contract, Road Master Jacobs is filling in the approaches, and by the close of this week will have all in readiness for teams of heavy as well as light draft to cross. The floods of winter and deep and soft sands of snmmer will no longer impede the traffio between Alexander valley and adjacent points and Healdsbnrg.

On Tuesday the Board of Snpervisors accompanied R. W. Gorrill to the bridge, viewed it and retnrned to Sants Rosa on the same day. At a Board meeting yesterday, the bridge was duly accepted according to contract.

METALS.

[WHOLESALE.

THURSDAY, M., Dec. 21, 1876.

American Pig Iron, ₱ ton	30 00	@	—
Scotch Pig Iron, ₱ ton	29 00	@	30 00
White Pig, ₱ ton	— —	@	30 00
Oregon Pig, ₱ ton	— —	@	—
Refined Bar	— —	@	4¼
Boiler, No. 1 to 4	6 ½	@	— 9 ½
Plate, No. 5 to 9	8 ¼	@	— 8½
Sheat. No. 10 to 14	— —	@	— —
Sheat, Na. 18 to 20	— 5¼	@	— —
Sheat. No. 22 to 24	— 6	@	— —
Sheet, No. 26 to 28	— 6½	@	— —
Horse Shoes, per keg	— —	@	6 00
Nail Rod	— 9½	@	— —
Norway Iron	— 8¼	@	— 9½
Rolled Iron	— 7½	@	— 9
COPPER.—			
Copper Tin'd	— 37	@	— 40
Sheathing, ₱ ₱	— 37	@	— 40
Sheathing, Yellow	— 21	@	— 22½
Sheathing, Old Yallow	— 19	@	— 11
Camposition Nails	— 21	@	— —
Cemposition Bolts	— 24	@	— —
STEEL.—English Cast, ₱ ₱	— 14	@	— 25
Anderson & Woods' ordinary sizes	— —	@	— 16
Drill	— —	@	— 16
Flat Bar	— 16	@	— 20
Plow Steel	— 8¼	@	— 12½
TIN PLATES.—			
10x14 I C Charcoal	10 50	@	— —
10x14 I X Charcoal	12 50	@	— —
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	— 24	@	— —
Australian	— 18	@	18 ½
ZINC.—By the Cark	— —	@	— 14
Zinc, Sheat 7x3 ft, No 7 to 10 ₱ ₱	— —	@	— 11
da do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 12½
do do 8x4 ft, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	3 50	@	— —
QUICKSILVER, per ₱	— —	@	— 55

LUMBER.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE —Retail Price.	
Rough, ₱ M	$18 00	Rough, ₱ M	22 50
Rough refnse, ₱ M	14 00	Flooring and Step, ₱ M	32 50
Rough clear, ₱ M	30 00	Flooring, narrow, ₱ M	35 00
Rough clear refnse, M	20 00	Flooring, 2d quality, M	25
Bustia, ₱ M	32 50	Laths, ₱ M	3 50
Bustic, refnse, ₱ M	22 50	Spring, ₱ lineal ft	—¾
Surfaced, ₱ M	30 00	REDWOOD—Retail.	
Surfaced refnse, ₱ M	20 00	Rough, ₱ M	22 50
Flooring, ₱ M	28 00	Rough refnse, ₱ M	18 00
Flooring, refnse, ₱ M	18 00	Rough Pickets, ₱ M	18.00
Beaded flooring, ₱ M	30 00	Rough Pickets, p'd, M	20
Beaded floor, refnse, M	20 00	Fancy Pickets, ₱ M	30)
Half-inch Siding, M	20 00	Siding, ₱ M	25 00
Half-inch siding, ref, M	16 00	Surfaced and Long Beaded	57 50
Half-inch, Surfaced, M	25 00	Flooring	35 00
Half-inch Surf. ref., M	20 00	Do do refuse, ₱ M	25 00
Half-inch Battens, M	20 50	Half-inch surfaced, M	32 50
Pickats, rough, ₱ M	1 00	Knotis, No 1, ₱ M	40 00
Pickats, rough, p'nted	13 00	Battens, Mineal floor	—¾
Pickats, fancy, p'nted	28 00	Shingles ₱ M	35 00
Shingles, ₱ M	35 00	Shingles ₱ M	3c

Gold, Legal Tenders, Exchange, Etc.

[Corracted Weakly by SUTRO & Co.]

SAN FRANCISCO, Dec. 20, 3 P. M.

LEGAL TENDERS In S. F., 11 A. M., 93¼ to 93⅝. Silver 6⅝@6¾.

GOLD in N. Y., 107⅜.

GOLD BARS, 880 to 890. SILVER BARS, 8@10 per cant. discount.

EXCHANGE on N.Y., 50@55-100 per cant. preminm for gold; an London bankers, 49½; Commercial, 49¾; Paris, five francs per dollar; Maxican dollars, 1½ per cent. preminm.

LONDON — Consols, 96⅛; Bonds, 101⅛.

QUICKSILVER in S. F., by the flask, par ₱, 50c.

GENERAL MERCHANDISE.

WHOLESALE.

WEDNESDAY, M., Dec. 20, 1876.

BAGS.			
Eag. Stand Wht	9½	@	10
Nawlins Co's	—	@	—
Hand Sawed, 22x36	9¾	@	10
24x36	10¾	@	11½
23x40	11	@	12
Machine do 22x36	9¾	@	10¼
Flour Sacks ¼s	9	@	11
" ½s	8	@	7
" ₱ ½s	4½	@	5
Hessian 60-in	11	@	12
do 45-in	9	@	10
do 40-in	8	@	9
Wool Sacks, 3¼ lbs.	45	@	50
do 4 "	50	@	52½
Stand. Gunnies	11½	@	12
Bean Bags	7	@	8
CANNED GOODS.			
Asst'd Pie Fruits			
In 2¾ ₱ cans	2 75	@	3 00
do Table do	3 75	@	4 25
Jams & Jellies	4 25	@	—
Pickles ¼ gl	—	@	3 50
Sardines, qr hoxi	65	@	1 90
do hf boxes	3 00	@	—
COAL—Jobbing.			
Anstralian, ₱ ton	8 00	@	8 25
Coos Bay	8 00	@	8 00
Sellingham Bay	—	@	8 00
Seattle	—	@	9 00
Cumberl'd	14 00	@	17 00
Mt. Diablo	8 75	@	7 75
Lehigh	—	@	22 00
Liverpool	8 50	@	8 00
West Hartley	—	@	14 00
Scotch	—	@	9 00
Scranton	13 00	@	16 00
Vancouver's Isl	10 50	@	12 00
Charcoal, ₱ sk	75	@	—
Coke, ₱ bbl	—	@	60
COFFEE.			
Sandwich Island	—	@	21½
Costa Rica per ₱	21	@	—
Guatemala	20½	@	21½
Java	—	@	23
Manila	—	@	21
Ground do	25	@	—
Unicory	27	@	—
FISH.			
Sac. Dry Cod, new 5		@	5½
cases	6	@	7
do boneless	8½	@	10
Eastern Cod	8	@	8½
Salmon in hhls	8 50	@	7 25
do ½ hhls	2 75	@	4 00
do 2 lb cans	2 65	@	—
do 1 lb cans	1 80	@	—
do Col. B. ½s	4 25	@	4 50
Pick. Cod, hhls	2 00	@	—
do ½ bbls	1 00	@	—
Mack'l, No. 1 hhls	11 00	@	—
" Extra	—	@	12 00
" in kits	1 25	@	2 50
" Ex mess	3 50	@	4 00
" Ex mess ½bs	1	@	2 00
Pio'd Herr'g, hx	3 00	@	3 50
Bost. Sm'k'd Her'g	40	@	50
LIME, ETC.			
Lime, S'ta Cruz, ₱ bbl	2 00	@	2 25
Cement, Rosendale, do	2 75	@	3 50
do Portland do	4 75	@	5 50
Plester, Goldan Gate bbls	3 00	@	3 25
Land Plaster, ₱ ton	10 00	@	12 50
MISCELLANEOUS.			
Pulp	—	@	7½
NAILS.			
Assorted size, keg	3 25	@	4 00
OILS.			
Pacific Glne Co			
Neat F't No. 1	1 00	@	90
Pure	—	@	—
Castor, Oil No. 1	1 25	@	—
Baker's A A	1 25	@	1 30
Olive Plagniol	5 25	@	5 50
da Poesal	4 45	@	4 50
Palm ₱	9	@	—
Linsed, raw	—	@	75
do boiled	—	@	80
Cocoannt	—	@	80
Ohina nnt in os.	—	@	70
Sperm	1 60	@	1 65
Coast Whaling	50	@	55
Polar, refined	62½	@	65
Lard	1 10	@	1 15
Olaophina	—	@	44
Devoe's Bril't	44	@	45
Kinparaf	50	@	—
Kureka	32½	@	38
Barral kerosena	32½	@	—
Downar Karose's	45	@	—
Elaina	42	@	50
PAINTS.			
Pnre White Lead	9¾	@	10¼
Whiting	—	@	1¾
Putty	4	@	5
Chalk	—	@	1½
Paris White	—	@	2½
Ochre	—	@	3½
Venetian Red	—	@	3½
Averill Chemical Paint, per gal.			
White & tints	2 00	@	2 40
Green, Bina & Ch Yellow	3 00	@	3 50
Light Red	3 00	@	3 50
Metallic Roof	1 30	@	1 60
RICE.			
China No. 1	5¾	@	6
Hawaiian, ₱ ₱	7	@	—
Carolina, ₱ ₱	10	@	—
SALT.			
Cal. Bay, per ton	10 00	@	14 00
do Common	5 00	@	7 00
Carmen Island	12 00	@	15 00
Liverpool	—	@	20 00
SOAP.			
Castile ₱ ₱	10	@	10½
Common hrande	4½	@	6
Fancy do	7	@	8
CANDLES.			
Grent's	16	@	16¾
Mitchell's	18	@	20
SPICES.			
Cloves ₱ ₱	45	@	47½
Cassia	23½	@	25¾
Ginger	21	@	23
Nntmegs	95	@	97½
Whole Papper	14½	@	14½
Pimento	16	@	17½
Gr'nd Allsp'rd'z	—	@	21 12
do Cassia do	—	@	21 50
do Cloves do	—	@	21 50
do Mnstard do	—	@	21 50
do Ginger do	—	@	21 00
do Pepper do	—	@	21 00
do Mace do	—	@	22 00
Sowen's Pnre Grownd ₱ ₱	—	@	50
SUGAR, ETC.			
Cal. Cnbe per ₱	—	@	12¾
Circle A crnened	—	@	12¾
Powdered	—	@	12¾
Fine crnehed	—	@	12¾
Granulated	—	@	12¾
Golden C	—	@	10
Hawaiian	10	@	11
Cal. Syrnp'n kge	—	@	72½
Hawaiian Molassas	25	@	27½
TEA.			
Oolong, Canton, ₱ ₱	18	@	25
do Amoy	28	@	50
do Formosa	40	@	80
Imperial, Canton	25	@	40
do Pingsuay	45	@	80
do Moynna	60	@	1 00
Gnnpo'der, Cant	75	@	1 00
do Pingsuay	50	@	90
do Mcyune	65	@	1 25
Yng Hy., Canton	28	@	40
do Pingsuay	40	@	70
do Moyune	65	@	85
Japan, ½ chests, bnlk	50	@	75
Japan, lacquered bxs, ½ and 5 lbs	45	@	67
Japado, 3 ₱ bxs	45	@	90
do pl'n bx, ½ ₱	35	@	65
do ½ ₱ paper	30	@	55
TURPENTINE.			
Eastern	52½	@	55

LEATHER.

[WHOLESALE.]

WEDNESDAY, M., Dec. 20, 1876.

Sole Leathar, heavy ₱ ₱			25@28
do do light ₱ ₱			20@22
Jodot, 8 Kil., per doz	48 00	@	50 00
Jodot, 11 to 15 Kil., per doz	85 00	@	79 00
Jodot 14 to 18 Kil., per doz	92 00	@	94 00
Jodot, sasond choice, 11 to 16 Kil. ₱ doz	57 00	@	74 00
Cornellian, 12 to 18 Kc	57 00	@	67 00
Cornellian Females, 12 to 13	63 00	@	67 00
Cornellian Females, 14 to 16	71 00	@	76 50
Simon Ulmo Females, 12 to 13, Kil	58 00	@	62 00
Simon Ulmo Females, 14 to 15, Kil	66 00	@	70 00
Simon Ulimo Females, 16 to 17, Kil	72 00	@	74 00
Simon, 18 Kil. ₱ doz	61 00	@	63 00
Slm un, 20 Kil. ₱ doz	65 00	@	67 00
Slmo " 24 Kil. ₱ doz	72 00	@	74 00
Robert Calf, 7 and 9 Kil	35 00	@	40 00
French Kips, ₱ ₱	1 00	@	1 25
California Kip, ₱ doz	40 00	@	50 00
French Sheap, all colors, ₱ doz	8 00	@	13 00
Eastern Calf or Backs, ₱ ₱	1 00	@	1 25
Sheep Roans for Topping, all colors, ₱ doz	9 00	@	13 00
Sheep Roans for Linings, ₱ doz	5 50	@	10 50
California Russett Sheap Linings	1 75	@	4 50
Best Jodot Calf Boot Legs, ₱ pair	5 00	@	5 25
Good French Calf Boot Legs, ₱ pair	4 00	@	4 75
" French Calf Boot Legs, ₱ pair	4 00	@	—
Harness Leather, ₱ ₱	24	@	32½
Fair Bridle Leather, ₱ doz	48 00	@	72 —
Skirting Leather, ₱ ₱	33	@	37½
Welt Leather, ₱ doz	30 00	@	50 00
Buff Leather, ₱ foot	17	@	¾
Wax Sida Leather, ₱ foot	17	@	—

A COMPLIMENT.

PLAINSBURG, MERCED CO., CAL., June 22, 1874.

DEWEY & CO.—*Gentlemen:* I herswith tender my gratefnl acknowledgements for the energy, promptness and efficiency which yon have displayed in procuring my patent.

Although yon were entire strangers to me when I first communicated with you, I was never felt satisfied you were gentlemen of integrity, and shall always be happy to represent yon as snch. Very truly yonrs,

H. W. RUCKER, M. D

HAMILTON, NEV., May 26th, 1876.

To Messrs. Dewey & Co., Patent Agents:

GENTLEMEN—I write to acknowledge the receipt by express of the U. S. letters patent on my invention for breech-loading ordnance, and to tender yon again my very sincere thanks for the carefnl attention yon have bestowed npon my application since I first placed it in yonr hands, for the evident great interest yon have manifested in it, and for the uniform patient and cheerful courtesy which has constantly marked your correspondence in reference to it. I have had some dealings with other agencies in the same line in times past, and I can assure you that my correspondence with yonrs has been more pleasant and satisfactory than with any others, and I shall always take great pleasnre in recommending your agency to any and all my acquaintances without hesitation or reservation, as I shonld certainly prefer to entrust my own business in your hands should I have any to transact in the same line hereafter. Yours, etc., J. R. N. OWEN,

ANY PERSON receiving this paper after giving an order to stop it, may know that snch order has failed to reach us, or that the paper is continued inadvertently, and they are earnestly requested to send written notice diract to ns. We aim to stop the paper promptly when it is ordarad discontinned.

ISSUED OCT. 1st, 1876.

Testing and Working Silver Ores.

The above is tha title of an illnstrated work of 114 pages, for miners and prospactors by Chas. H. Aaron, which has just been isenad hy Dewey & Co. Mr. Aaron has managed to giva many nsefnl hints and snggestions, free from all technicalities, and in such a style as to ha easily comprehended. It is written for tha miner, with no chemical symhols or metallnrgical technicalities to confuse those who are not chemists or matellnrgists. The following summery of the contents of the work will give an idea of its scope:

Under the heading of the first chapter, "Testing Ores for Silver," we find paragraphs on ore formation, test for silver, with heat and water, acid or blow pipe. In speaking of testing for a process, the extent and richness of ora is considered, amelting orss, selecting and working sample, appliances for testing, roasting, etc. Under the head of "Working Ores" the author describes Aaron's process, has something to say of superheated steam, preparation of dichloride of copper and protochlorids of copper, nss of copper and iron, quantity of chemicals, carbonate of lime, chloride ores, amelgam, Patchen's process, etc. He also describes the methods of working roasted ores, treatment of hese metals stirring, heat of furnace, want of snlphnr, etc. Under the head of "Leaching Processes" are the titles, Smelting, Mexican process, Kroencke's process, Chilean process, etc. Under "Pulverizing Meohines" are described the arastra and its constrnction and operation, stamp hatteries, screens, Crocker's trip-hammer hattery, Paul's pulverizing barrel, Kendall's hattery, Nolca's pulverizer, a cheep rock hreaker, etc.

In speaking of smalgamators the author describes a cheep amalgametor, grinding the ore, directions for making a herrel, preventing mechenicel wear, nss of quicksilver, copper in hsrs, Freiherg barrel, cheap her rel, tronph, herrel on rollers, Aaron's amalgemator, separator, etc.

He describes an improved retort, roasting furnace, furnace tools and furnace hnilding. Among the miscellaneous mention may he fonnd Aaron's leaching apparatus, with two or three different arrengements, a small mill, sampling tailings and settling tanks, dichloride of copper, etc. Mr. Aaron is a practical miner, of long working experience on this coast.

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UNITED STATES

Mineral Land Laws, Revised Statutes,

And Instructions and Forms Under the Same.

We have jnst issned a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of Jnly 26th, 1866; Mining Statnte of July 9th, 1870 Forms required nnder Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Begis; ters' Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Puhlication; Affidavit of $500 Improvements; Statement and Charge of Fees. Proof of Ownership and Possession in Csse of Loss or absence of Mining Records; Affidavit of Citizens hip; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will he sold, post-free, for 50 cents. It should be in the hands of every one having any mining intereste. DEWEY & CO.,

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THERE are many persons who do not know how to stop a newspaper. They are more awkward about it than a country hoy stealing his first kiss. The way to do it with satisfaction to both sides is to address the pnhlisher by letter if you do not live near enough to call at his office. It is no way to notify the postmaster or some one else. Fonr postmasters in three will fail to notify the office of publication. They look npon it as your business more than theirs. The right way is as genteel and pleasant as the other is suspicious and shahby. If you owe for a few weeks or months over time, tender the amonnt due. It is a little thing, hut it will he a greet sati faction to your conscience, as every one is presnmed to have one of some kind. Stop yonr newspaper like a man, and your own self-respect and the esteem of the publisher is maintained. Then you can always look him in the eye or take him by the hend, and he will feel proud to think you were once one of his most gentlemenly petrons, and wish you wonld snbscribe again.—*Exchange.*

APPRECIATION ABROAD.—We copy the following from the *Mining and Monetary Gazette*, of London, Eng.: "We deemed it advisable, as affording valuable information to our readers, to publish in recent issues of *The Gazette*, the full text of the "United States Mining Lawe and Instructions, by the Commissioner of General Land Office," taken from our talented contemporary, THE MINING ANN SCIENTIFIO PRESS, of San Francisco. The documents have now been issued in a handsomely-bound volume by Messrs. Dewey & Co., the publishers of our transatlantic contemporary, and it will be found very usefnl to those already interested in American mines, and to others who may be tempted to embark in that enterprisa in the States."

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Much Obliged, Etc.

PORTLAND, CON., Jnne 28th, 1876.

DEWEY & Co., Patent Solicitors, S. F.—*Gents:* I am much obliged to you for courtesy shown me, and am well pleased with the manner in which yon have done my husiness, and assure you, will cheerfully recommend you to my acquaintances needing such services. Hope to have a cese egein before long, of my own. I have heen an inventor all my life, hnt let others reap the henefit, or had work stolen from me. Plesse have the extrs copies of my petent, etc., mailed to me direct, end oblige Yours trnly, J. H. WOONRUM.

SAORAMENTO, May 29th, 1875.

MESSRS. DEWEY & Co.—*Gentlemen:*

Yours of the 27th inst. is received. The petent cema duly to hand yesterday, hy express. Please accept thanks for your promptness in ohtaining the same.

Very respectfully, DUNCAN BEAUMONT.

To Mining Secretaries.

An smendment to Section 338 of the California Coda, taking effect July 1st, 1874, provides that in addition to the regular publication, daily or weekly, of the assessment and sale notices as heretofore,

PERSONAL NOTICE

Must he served as provided in the following qnotation from the law:

"The notice must be personally served upon each stockholder, or in lieu of personal service, must be sent through the mail, addressed to each stockholder at his ploce of residence, if known, and if not known, at the place where the principal office of the Corporation is situated."

The ahove refers to the ASSESSMENT NOTICE only Advertisers in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assessment notices printed on slips suitahle for serving personel notice under this law at short notice.

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Mining and Other Companies.

Cerro Bonito Quicksilver Mining Company.

Location of principal place of business, San Francisco, Cal. Locallon of works, Cerro Bonito mining district, Fresno county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors held on the 13th day of Novemhcr, 1876, an assessment (No. 1) of four dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, 418 California street, San Francisco, Cal.

Any stock npon which this assessment shall remain unpaid on the 18th day of December, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the eighth (8th) day of January, 1877, to pay the delinquent assessment, together with costs of advertising and expanses of sale. By order of the Board of Directors.

J. W. CLARK, Secretary.

Office, Room No. 2, 418 California St., San Francisco, Ca

POSTPONEMENT.—The day for deeming the ahove assessment delinquent is postponed from December 18th, 1876 to January 8th, 1877, and the day of sale from January 8th to February 1st, 1877. By order of the Board of Directors, J. W. CLARK, Secretary.

Josephine Gravel Mining Company.—

Principal place of business, San Francisco, Cal. Location of works, Brushy Canyon, Placer Co., Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the sixth day of December, 1876, an assessment of ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 331 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the eighth day of January, 1877, will be delinquent, and advertised for sale at public anction, and unless payment is made before, will be sold on Thursday, the 25th day of January, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

WM. SMALL, Secretary.

Office Room 1, No. 531 California street, San Francisco, California.

Silver Sprout Mining Company—Principal

pal place of business, San Francisco, State of California. Location of works, Kearsarge Mining District, Inyo County, State of California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the nineteenth day of December, 1876, an assessment of twenty cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the Company in San Francisco.

Any stock upon which this assessment shall remain unpaid on the fifteenth day of February, 1877, will be delinquent, and advertised for sale at public auction, and, unless payment is made before, will be sold on Saturday, the fourteenth day of April, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale. E. B. WINGARD, Secretary.

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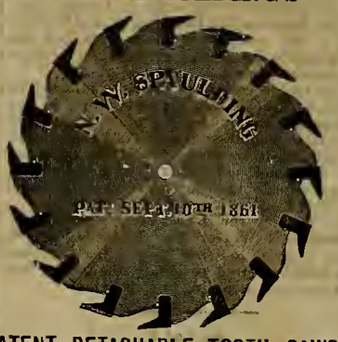

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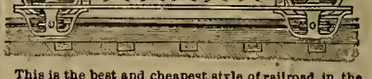

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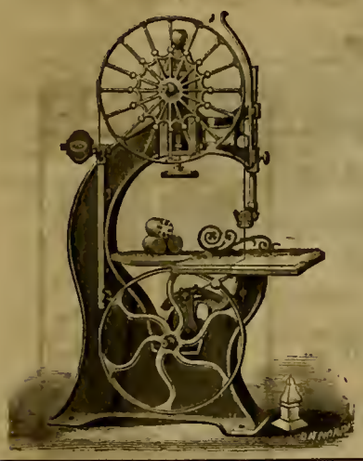

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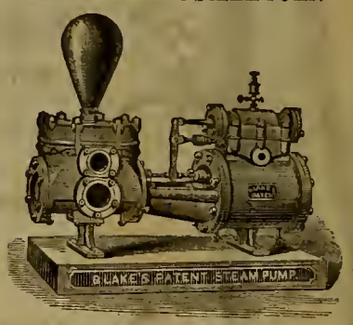

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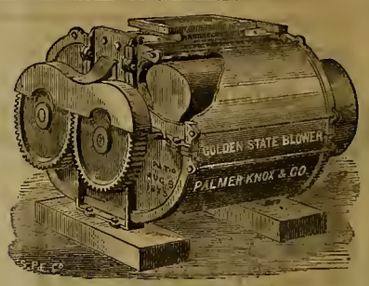

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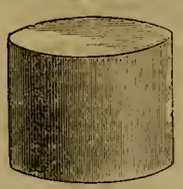

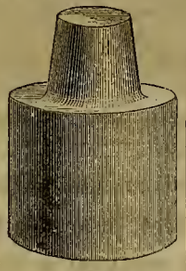

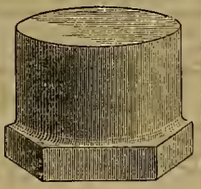

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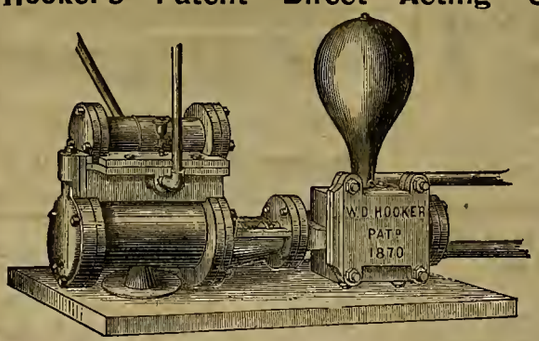

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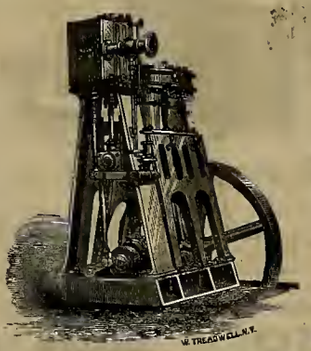

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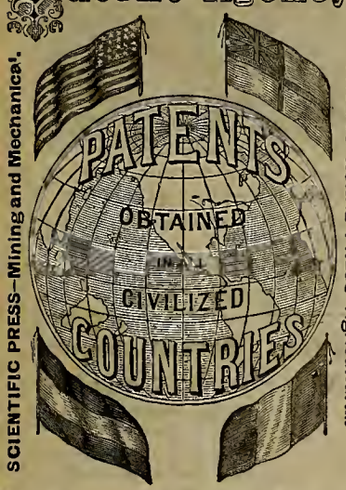

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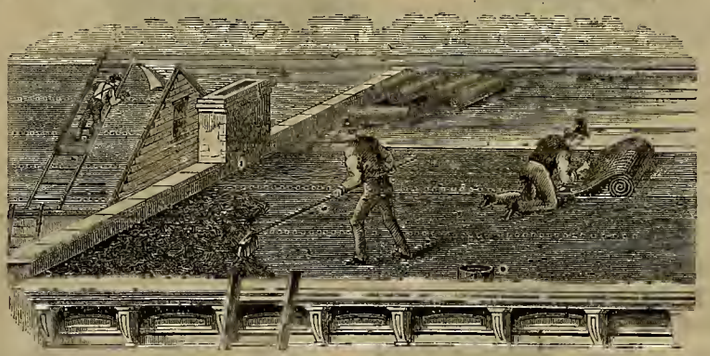

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MESSRS. DEWEY & CO., Patent Solicitors: *Gentlemen*—Yours of the 29th ult. containing my patent to Elevated R. R. duly received, and I hereby return my sincere thanks to the MINING AND SCIENTIFIC PRESS Patent Agency for your promptness and honesty in regard to our busine s connections. I have received a flood of circulars from Eastern firms, desiring to deal with me, but I have declined any communication with them and prefer, as soon as circumstances will permit, to negotiate with and patronize a home institution; one in which I have faith and confidence—DEWEY & Co.

Again thanking you for your promptness in securing my patent, I remain, obediently yours,

WM. H. HARRISON.

GOOD PRINTING INK.—We prefer Ches. Enen Johnson's printing inks, having used them on this paper for the past four years. H. S. Crocker & Co., printers, stationers, blank book and paper dealers, are Johnson's S. F. agents.—DEWEY & Co., Publishers.

Thanks for Prompt Attention.

STOCKTON, June 26, 1875.

Messrs. Dewey & Co., S. F.—

I have received the patent for my invention in wagon brakes, which you prosecuted for me; patented May 11, 1875—No. 163,046. Thanks to you for your prompt attention to the case; you will hereafter be my attorneys in such cases. I recommend all inventors on the Pacific coast to give you a call, which I think they will never have any cause to regret. Very truly yours,

GEO. G. BUCKLAND,
Stockton, Cal.

OCAMPO, SAN DIEGO CO., CAL., July 3d, 1874.

MESSRS. DEWEY & Co.—*Gentlemen:* To-day I received the patent and other papers of my animal trap, that you so successfully worked through the patent office for me, for which please accept my best wishes. The chances are that I will have another application for you to make for me before long. I am well satisfied with your manner of doing business, and I think inventors of this coast stand in their own light when they do not put their business into your hands.

I remain yours truly, A. M. GASS.

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"SPEAKS WELL," ETC.—We would return thanks for an exchange and back numbers of the MINING AND SCIENTIFIC PRESS, published by Dewey & Co., of San Francisco, Cal. It is a well edited, interesting, and valuable journal, and speaks well for our Pacific neighbors.—*U. S. Milling and Manufacturing Journal.*

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, DECEMBER 30, 1876.

VOLUME XXXIII. Number 27.

(Copyrighted.)

Mechanical Ore Concentration and Separation.—No. 15.

[Written for the PRESS by FRANCIS M. F. CAZIN, M. E., Santa Fe, New Mexico.]

During the nine years that I followed the special trade of mechanical mineral concentration on this continent I have endeavored to simplify matters, to reduce cost of plant, and to dispense as much as possible with skilled help. As a result of my work in this direction I present the

Combination One-Plunger Jig

I feel a very natural reluctance to say anything with regard to this machine bearing my name, and would not impeach the good that can be done by this treatise by giving room to the suspicion that selfish motives had inspired some of its statements or influenced my judgment. I therefore only mention the machine, leaving the appreciation of it to what practical chances it may further get. In Vol. XXVIII, No. 21, this machine is described as it was in an earlier stage of its practical development. In addition to the sketches there published the annexed sketch will give a full idea of the machine in its present stage.

I claim for it, that it adopted and maintained all good features of the Hartz jig; that in one machine it is adapted to all sizes and to all kinds of concentratable ore; and that with less outlay the same purpose can be achieved by it as by all four kinds of the Hartz jig. It is made to work two sizes at the same time, having a separate row of sieves for each and a screen, *R*, to receive ore previously sized once, but containing the two sizes to be divided by it between the two rows of sieves.

The following description of the action of a jig applies more or less to all continuously working jigs of whatever make they may be:

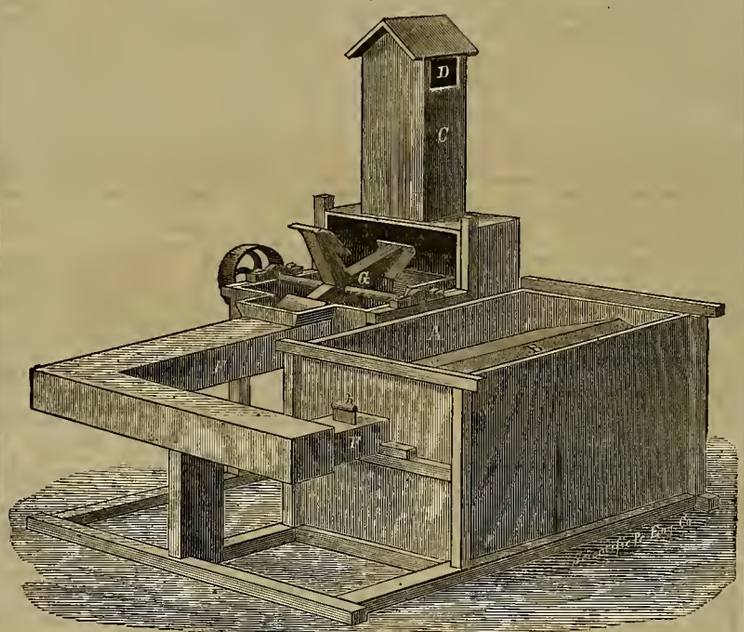
Jigs are intended to produce a vertical upward stream of water, to expose to this stream particles of ore and rock of equal size, in order to distribute locally these particles in the stream according to their specific gravity; further to interrupt the vertical upward stream in order to permit the deposition of particles on a sieve bottom, and allow those of higher specific gravity to deposit closer to the sieve bottom than of less specific gravity, to give a separate outlet to the different materials, to supply the crude ore and discharge the separated and concentrated material automatically and continuously.

The vertical upward stream in this machine is produced in the body *A*, *A*, of the jig filled with water to the line *H*, by pressing down a plunger *H*, lying near the surface in the water in the center of the jig, and thus driving the water around and under the partition *N*, *N*, and up from under and through the sieves *B*, *B*, on which sieves the particles of ore to be separated are lying.

The crude ore is coming to the jig from its upper end, as shown in the formerly published cuts, with a horizontal stream of water in the proper proportion. The upward vertical stream is interrupted by the plunger being allowed to return to its former position. The water would naturally flow back and bring the particles into their intended position on the sieve-bottom, as it is not desirable to expose the particles to the same violent stream downward as they were exposed upward, because the lighter motion of the parts would thereby be proportionally accelerated; the back flow is lessened partly by a mechanical contrivance giving more time to the back lift of the plunger than to its down-pressure, and partly by permitting a supply of water to flow under the plunger from a sufficient head, by which supply the space resulting from the back motion of the plunger is partly filled, resulting in so much less water flowing back through the sieves, and the back stream being so much lessened in speed. The sieves being provided with meshes of the same size as the size of ore flowing to the jig, the particles closest to the bottom being of the highest specific gravity will continually and automatically pass through the sieves and deposit in the funnel-shaped bottom of the jig and discharge through the valves *k*.

Flour Cooling Attachment to Grist Mills.

The invention illustrated on this page is designed to facilitate the bolting of flour and prevent the meshes of the cloth from becoming clogged, thus obtaining better results with less bolting surface and also preventing the bolt chest from sweating. These several advantages are accomplished by the inventors—Hurd & Simpson, of Redwood City—by the simple introduction of one or more currents of fresh air into the flour bolt in which the flour is bolted, so that the flour as it is agitated by the rotation



FLOUR COOLING ATTACHMENT TO GRIST MILLS.

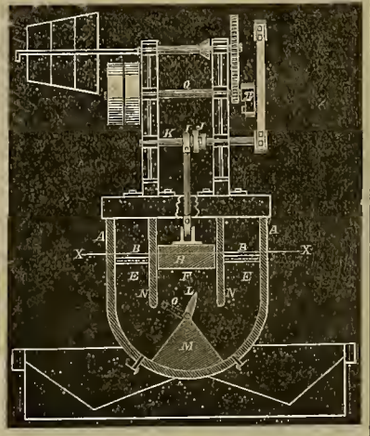
of the bolt will be subject to the cooling effects of the current of air.

In the engraving, *A* represents the bolt chest and *B* the bolt of a grist mill. In order to cool the flour, a current of air is directed either into the bolt itself or into the bolt chest. In this instance a stack or flue, *C*, is represented, which projects upward through the roof of the mill and in which suitable openings, *D*, are made to admit air. This flue is then connected with the bolt or bolt chest by a pipe or tube, *F*. At some suitable point in the length of the pipe is placed a blower, *G*, which will draw air through the openings in the flue and force it in a current through the tube into the bolt or bolt chest. The inventors profess, as represented in the engraving, to force the air into the bolt so that the flour as it is agitated by the rotation of the bolt will be subjected to the cooling effects. This arrangement also gives a better result in keeping the bolt chest and bolt cloth cool, at the same time thoroughly agitating the flour and forcing it through the meshes of the cloth, so that it cannot pack or collect on the cloth. It also prevents the flour from sweating and clogging the interstices of the bolt cloth or sweating in the bolt chest, so that better results are produced with less bolting surface than is ordinarily used.

The blower is driven by a belt connection with the running gear of the mill. One or more dampers, *h*, can be used in the length of the pipe to regulate the supply of air. Branch pipes could also be applied to lead a part of the air to other bolts or bolt chests.

A very material advantage in using this invention is that no additional machinery is required except the blowers and air pipe, which become a stationary part of the mill. This patent was procured through the MINING AND SCIENTIFIC PRESS Patent Agency, and the inventors, having had considerable and extended experience in the practical working of the invention, have confidence in recommending it to the milling public. The invention is really a useful one, as it overcomes a difficulty which millers have long attempted to obviate. Those desiring further information may address "Flour and Bolt Cooler company," 115 Mission street, this city.

THE RESPONSIBILITY OF STOCKHOLDERS.—T. Robinson Bours, a creditor of the Quintero mining company, brought an action in the Fourth District Court to recover the amount of his indebtedness from the stockholders of the company. The complaint contains three counts, viz., for goods, hire of mill, and an account stated. The defendants interposed a demurrer, and in passing upon the demurrer, Judge Morrison said he had held that an action would not lie against a stockholder on a promissory note of the company. An appeal was taken from the decision and the Supreme Court confirmed it. He could see no difference in an action on



COMBINATION ONE-PLUNGER JIG.

a promissory note and an account stated. The liability of a stockholder did not grow out of the statement of an account, but out of the original transaction. The complaint in this case fails to show whether the indebtedness was for goods or for services. The indebtedness ought to be fully stated in the complaint. The demurrer was therefore sustained.

Mining Information Wanted.

The Government, now that the silver question has become so prominent, is taking steps to obtain more detailed information than heretofore in relation to the mines, and the following circular has been issued:

All mining companies located upon the Comstock are respectfully requested by the United States Monetary Commission, authorized by Act of Congress, dated August 15th, 1876, to prepare a statement showing the following items:

1. Amount of capital stock.
2. Annual revenues of company.
3. Annual expenditures, divided into principal heads.
4. Annual product of gold and silver, separately, as ascertained from assay certificates or bullion account.
5. Inventory of property at latest date.

No estimates or conjectural statements are desirable. Send statements to Alexander Delmar, room 76, Palace hotel.

We hope that the companies to whom this is sent will respond heartily and will take pains to make their returns as full as possible. In this connection, however, it is proper to suggest that although the Comstock is the great mining center, there are other districts which produce sufficiently to entitle them to consideration also. Some of the large companies in Nevada which are off the Comstock, are making creditable records, and at this juncture, when a report is coming from the Government, they should be recognized officially. Considerable grumbling is indulged in because on California street they turn up their noses at anything not on the Comstock, and imply in that way that nothing is worth having which is not on that famous lode. But now, when a special commission is ordered by the Government to collect statistics with relation to the silver product, they should not confine their researches to a single lode because that produces more than all the others put together, but should ask the same questions of large *producing* mines in all sections of the country.

Were it not that they suffer by comparison with the Comstock, several other districts would be considered as producing quite respectable sums, but the bonanza mines have turned out such immense amounts that unless production is counted up by the millions a mine is thought to be rather small potatoes. When it is remembered, however, that these mines are remarkably exceptional in their richness, and that the product is about half gold after all, it seems proper that silver mines in other parts of Nevada should be represented in the statistics collected and be credited by the public with the amounts they have produced. Moreover, it would have the effect of drawing out and making public, in a convenient form, figures now difficult or impossible for individuals to obtain, and would disseminate a very valuable kind of information which would in the future be of benefit to the mining interests.

BULLION SHIPMENTS.—Since our last issue shipments from the prominent mines have been as follows: Challar, Dec. 19th, $14,792.86; Manhattan, 19th, $12,000; Northern Belle, 17th, $10,311.95—total to date, $50,034.23; California, 19th, $91,483.66—total to date, $323,285.48; Modoc, 18th, 464 bars—total to date, $71,590; Tyho Con., 16th, $4,731 21—total to date, $22,277.80; Gila, 22d, $5,516; McCracken Con., (A. T.) 21st, $3,500; Leopard, 18th, $4,147.90; Washington, 20th, 302½ oz. bullion; Northern Belle, 19th, six bars bullion, value $9,039.22—total to date, $59,073.45; Modoc, 20th, $5,000—total to date, $76,590; Manhattan, 22d, $12,177; Modoc, 24th, $6,000—total to date, $82,590; Manhattan, 26th, $12,400; Tyho Con., 20th, $15,148.15—total to date, $37,426.10; K. K. Con., 23d, $4,000—total to date on December account, $43,000—total for year 1876, to date, $200,000; Northern Belle, 24th, $16,498 16—to date, $87,225.80; Arizona, 24th, $2,766.93; Justice, $66,052—total for December account, $155,609.

THE compressed air in the Sutro tunnel, for driving the drills, etc., is forced a distance of 9,000 feet, the machinery being situated at shaft No. 2.

CORRESPONDENCE.

Some Facts from the Black Hills.

"Up to the hills on a bright sunny morn,
Voices clear as a bugle horn,
List to the echoes as they flow,
Here we go, we go, we go."

The cry is still heard, away to the Black hills, to Wolf monntein, or to the Big Hern. As an opportnnity has been hed of interviewing several individuals recently from the Black hills, a few facts with reference to the gravel and quertz at Deadwood and some adjscent localities may not be amiss. Tbe extent of the placer mines, nortb and sonth, is about 90 miles, with a width of ebout 40 miles. The slate and granite are not found ontside of this limit, unless at Wolf mountain, abont which many exciting rumors ars afloet. Everywhere else, so far as prospected, the conntry rock is mostly sendstone and limestone, end placer mines and gold quartz have been found. In the mein camp, the principal gulch is Whitewood, in whicb gold has been found in paying quentities the distance of 10 miles. Deedwood gulcb, the richsst in the district, empties into Whitewood, at Deadwood City. From this place to Gayville, a little upwards of two miles, there are 33 claims, fifteen of which heve been exceedingly rich, some of them peying $30 per day to the man, and a few ruuning es high as $400 or upwards—the remeinder probably averaging from $10 to $15. For a mile above Gayville, good pey is believed to exist, but tbe ground is deep and difficult to prospect. Deedwood has two small trihoteries with from 12 to 15 cleims on eech, all of which have paid wages, end a nnmber as mncb as $50 to the men. Gold run, which empties into Whitewood two miles ahove Deedwood City, has been e very rich gulch, peying probebly on en average from $15 to $18 to the man—some cleims considerebly more. Tbe smaller side gulches yield something over wages.

There are some other gulches in the vicinity that cut the hills in a different direction, which will be mede to pey when snfficient weter cen be introdnced. The mejority of the claims are sbellow, and some of the richest are already worked out—this is the cese probebly with one-half of Deedwood gulch, togetber with the lower end of Bobtail, and most of Blecktail, tributaries of the same.

There ere, however, said to be meny acres of bar diggings in the hills adjecent to Deedwood City, that will pay well with a supply of water. Taking these witb tbe fact tbet the gulches will be worked over and over again, as is ususlly the case, there will probably be more or less placer mining there for some years.

At the southern end of the hills, in Rabbit creek and Cnster City districts, there are a good many bars where they are making from $3 to $5 per dey, with better pay expected when bedrock is reached, which had not been done except in one instance, on a tributary of Rabbit oreek, which is reported as giving very promising resnlts.

There is a considerable scope of mining ground both at Custer City, and also at Bear gulch, 25 miles sonthwest of Deadwood, that pays wages for a short time while water lasts.

The Quarlz Ledges of the Black Hills.

In Deadwood district tbere is a belt of quartz lodes from two to three miles wide, crossing the gulch of the same name, on which several hundred locations have been msde, meny of which, as a matter of course, are entirely worthless except as a "sell."

Some of the lodes have been partially developed, showing one or more well defined walls of slate, and trap or porphyry, the former usually on the hanging wall, with a width of 10 or more feet, and in cases thougbt to he not less than from 30 to 40 feet wide.

The quartz is gold bearing, and going in Government assays at Philadelphia as high as $1,000 per ton, with others reported as running high up ioto the thousands.

One thing may now be taken as an established fact, that there are many valuable lodes tbere, with an immense amount of very high grade ore. Mr. J. P. Bernes, a close observer and an experienced miner, to whom I am indebted for most of the statements herein made, and which may be looked upon as in every respect reliable, spent three months in the Black hills the past season. He examined many of the qnartz claims and spoke of some of them in the highest terms, more particularly of tbeir apparent prospective velue.

He also made a location on his own account, sinking a shaft 12 feet, and making a crosscut. Both walls were fonud and a solid vein of quertz six or more feet in width.

From certain tests mede by tbe best facilities at hand, he thought it ought to yield $100 or more to the ton. Judging from the caution manifested in most of the statements made, his estimate wes probably muoh too low. Another rich lode hes been recently strnck right in the heert of the town, and tbe excitement io quartz is running high.

Two towns are being built up, on the strength of tbe belief in the permanent value of the mines. Much prospecting is being done. Several mills are expected to he put up the ensuing season, and if tbe Indians are thoroughly whipped out, as reported or looked for, a lively time may be anticipated.

Heving tnrned eside a little on accnnt of the generel interest in this comparatively new mining region, the

Placer and Gravel Mines of Meagher Co., M. T.

Will now be concluded, my last having olosed with the mines aronnd Diamond City. Some eight miles from this place, across the divide, is Elk creek, where the diggings have been profitably worked for the pest seven years.

Messrs. Kelly, Bull & Co.

Have a good claim of 115 acres, United Stetes patent. Having previously had a speoial survey, they have been enabled to secure eight hars and four miles of gulch, giving them a property not only of greet present value, paying $6 to $7 per day to the man, hut likely to prove remuneretive tbe remainder of their nstural lives.

At White's gulch, five miles below Diamond City, Mr. W. J. Bristol has a velneble hydreulic claim of 2,000 feet in length on tbe ber, with 25 feet in depth of pay gravel—the ohannel said to he 400 feet wide. It peys $15 to the men. His gulch olaim runs from $6 to $8.

The Messrs. Harrington have ground edjoining of the same extent end of like character. Hendricks & Co. have a drift claim in the gulch witb 100 fest of channel, averaging $5 per day to the men. Messrs. Bennett & Lewler have struck good pey on a bar 100 feet above the bed of John's gulch, making into White's, that pays $40 to the six-foot set—that is, six feet front, with four foot back end probably as meny feet deep. In Avalanohe, still lower down on the Missonri river, pay was first struck lest season. Tbis gnlch is now attracting a good deal of attention, and a good time is expected next spring.

In Magpie e drain has been started and fine prospects are believed to be aheed. Near this gnlch, Messrs. Rotwitt, Stagner & Co. have e fine hydraulic claim of 120 ecres, the only drawback being the high water rates. The gravel is from 3 to 15 feet, with about five feet of dirt, that paya es high es $40 per day to tbe men.

Next in order is Cave golcb, within a mile of Cenyon Ferry. Six companies have been et work the past seeson.

Tbe cleims are located on a bar or old river channel, judging from tbe bones of the elephant and also of the mastodon, uneerthed here near the bedrock.

The extent of the gravel is ebout one mile in length, with a depth of from 20 to 60 feet. There is more or less gold in the whole hank, hut richer neer tbe bedrock, and is worked by hydraulic. It is a fact worthy of note that this is the only gulch wbere quicksilver was used to any extent, the particles of gold not being so coarse es those heretofore generally met with. Undercurrents and other appliences for saving fine gold heve heen nowhere seen in the Territory, and they are probably not needed owing to the coarseness of tbe gold.

The Island Co.,

Better known as the claim of Hortop, Pbillips & Co., may he taken as an illustration of what is being done on a somewhat similar scale, by the other companies. This claim is 2,000 feet in length, and in some places a fourth of a mile wide. It averagea $10 per day to the man, some clean-ups returning double the amount.

There are probably upwards of $150,000 extracted annnally from the bar and gulch, as one firm bere, out of three engaged in buying dust, purchased last year to the extent of $80,000.

A. C. K.

Globe District, Arizona.

EDITORS PRESS:—The mill of Morril & Ketchen is doing good work. They worked a few tons of ore and turned all their quicksilver into amalgam. They had over 1,000 pounds of mercury on band for a start. Not having any retort on hand they had to shut down until it arrived. To-day, Dec. 11th, they have started np again, and everytbing is working splendidly. The yield of silver from the amalgam was immense. The ores worked by them averaged 700 onnoes per ton. Considerahle ore that assaya from pulp semples $3,000 to the ton is on hand.

Tbe mill of Fresb & Co. started up last Friday. It is rnnning on ore from the Alice mine and it is doing good work.

The furnace of Messrs Beebe & Kennedy will be reedy to run about the 20th inst. They will handle the refractory ores, using the lead ores of the district as a flux.

The shaft at the Buckeye mine is now down 60 feet, with a 2-foot vein of very rich ore. There is fully $40,000 now in sight.

Sinking the sheft at the Perdez mine is going aheed rapidly. Their ore milled 500 ounces to the ton. They have heen offered $60,000 for the property, but they don't want to sell.

Richmond hasin is turning out plenty of nnggets of silver. They have taken out of the Hoodoo claim over $35,000 in nuggets already. Tbere is some left yet.

The Miami mine is looking splendid. They have got 15 feet of solid ore that ruos up in the thonsands. They are working quite a force of men, and are going ahont the rigbt way to develop their valuable property.

Borns mine is showing native silver. Capt. Barns, the owner, is busily engaged getting out ore to have it milled. The assays mede from ths dnmp sbow the ore to contain 700 to 800 onnces to tbe ton.

The McMillan mine is turning ont 3,000 ounces of ore. They are getting soms of this out to heve milled. Their ledge is 70 fest wide, and traceable for over seven miles. They have got a king mine.

The Blne Bird mine is showing plenty of beeswax, or cl. bromide of silver. They also are having some ore milled.

G.

Old and New Mining Districts.

EDITORS PRESS:—The periodical mining excitements thet nsed to carry everything by storm in this State in previous years, seem to have become things of the pest; and so much the better for mining and its dependent interests. During one of tbose excitements it was no nnnsnal thing for half the population in some of the older mining districts to scrape together a meager ontfit in the way of psok animels or mustang teams, with a little flenr, bacon end otber staple stcsteres, and, regardlsss of time or seeson, go in quest of the new El Dorado, its imaginary resonrces and wealth—at last to find only disappointment, and then returning to their old homes wearied and impoverished of their soenty means, hut, from hard and costly experience, with tbe knowledge that tbey had jnst as good mines at home.

It is neerly always the oese, however, witb mines situeted in districts that have been organized in pest years, end without any attendant excitement, tbet something in the way of exceptionally rich developments must be sbown to attract the attention of those who can afford to pusb such mines into their legitimate place in the market. In this (Nye) county there ere several districts thet were orgenized some ten years ago, that still count amongst tbeir sparse population those who were pioneers, end who still patiently work and wait for a reqnitel of their perseverance and lehor, their current expenses being defrayed, in most cases, by tbe marketing or reduction of smell lots of ore, cerefully selected so as to stend off tbe cost of trensportation for long distences, and leeve a margin for profits.

Amongst the older districts in this category may be mentioned Union distriot (Ione), Mammoth district (Ellsworth), Danville and San Antonio. Tbe two first nemed have lately heen tonched witb the golden wend of capitel, and in a sbort time will send out their treesures. In tbe lest named district, San Antonio, a large amount of work has heen done since its organization in '63, mainly upon the Lee, Liberty and Potomac series, and from the Liberty and Potomac ores to the amount of 200 tons have been hauled an average distence of 75 miles, to the nearest mill then running, that gave a return of more tban $150 per ton, besides some 900 tons that was hauled a distance of 12 miles, to a little four-stamp prospecting mill, that yielded something over $100 per ton. In cases like this just instanced, no one has clearer appreciation of the wastefulness of hauling ore such long distances than the miner or prospector himself. But the means of sobsistence must he had, as well as powder, tools and other appliances for mining, and whetber the distance be long or short, the cost great or small, necessity rules. Tbe condition of the older and partially prospected districts of this county, as above described, is quite commonly met with ell through the central portion of tbe State.

Now, when capitalists choose to invest something in mining, wonld it not he better for them to look over the old ground before taking an extra hazard in some new district where tbe first fever of expectancy mekes everything rose colored, and so often leads to failure? In Columbus district, such mines as the Northern Belle and Gen. Thomas went begging for capital for years without success, during which time newer districts rose into prominence, exploded their pretensions and were forgotten.

ICONOCLAST.

Belmont, Dec. 13th, 1876.

A CHANCE FOR INVENTORS.—Tbe *American Manufacturer* says: Steel and alloys are now manufactured of such density as to necessitate the discovery of new means of working them, especially where positive accuracy is required. Steel cutters may not hold their edge a snfficient time to traverse the full extent of a face on substances so rigidly hard, therefore it is important that a snbstitute be found of such durability as to retein its cutting edge intect, prodncing the same trneness and accuracy of surface at the end of the work as at the commencement. Such a tool, when known to exist, will no doubt prove a valnable ecqnisition end be eagerly sought for. To obtain a tool of this description, the Societe d' Encouregement poor l'Indnstrie Nationale, of Paris, has generously offered one of their largest prizes to he awarded in 1877, for the artificial preparation of compond black diemond—commonly known by the neme of port or carbonate—for obtaining thereby a powerful means of aotion for working hard metal substences, etc.; this prize being open to inventors in all countries.

Comstock Papers.

No. 14.

Savage,

Who had been a miner at Downisvills, went over tbs monntains in tbe snmmer of 1859. Soon after his arrival at Virginia City, he, in conjunction with two or three others, bought the ground that now carries his name from a party of "jumpers," satisfying at the same time the demends of ths contestant claimants. In 1860 he was engeged in packing goods over tbe Sierra, but soon after disposed of his mines and having some money, ceme to Californie, where he pnrchased lend, npon wbich he hes for many years resided, a staid and prosperons farmer.

William Chollar,

Whose name is connected with the Cbollar Potosi, was elso a California miner. He went to Washoe in the fall of 1859, loceted the Cboller gronnd, in which he held the usual two-hundred-foot claim, and undertook to explore it hy means of a tunnel. This, though a costly work, evailed nothing, therefore he sold out and taking the proceeds of the sele retnrned to his home at Grass Valley, and there agein engeged in mining. He was a olear-beaded business man, active and industrions, but being of a convivial disposition, et times spent his money levishly. Some seven or eight yeers ago, at the earnest solicitstion of his brothers living in Connecticut, he went home to tbat State, where he is reported to have since died.

Triglone, Trench and Overman.

John Triglone, once owner of the Triglone cleim at Gold Hill, is now and for some ten or twelve years agone has been a well-to-do quartz miner in Amador county, California. He did tolerably well over in the land of salt, sage-brnsh and silver, heving, besides his mining ground, been a large owner in the Swansea mill, whiob for some time made handsome net eernings. The Trenoh olaim, covering twenty linear feet in the heart of tbe rich sbnte at Gold Hill, was bonght by Joseph Trenob and Erastns Sparrow in the fall of 1859, these parties baving the next year put up a lerge and well appointed mill at the mouth of Amerioen ravine, whioh was run for several years with large profits upon the ore taken from tbeir mine. Sperrow, who wes already an old men at the period we ere speaking of, died severel years ego. His pertner in tbis enterprise still lives, an energetic, stirring man, as notioeable for bis sturdy physique es for his kindly disposition and good natured bonbomie. He ia supposed to he financially well off. Overman, the lest in this category of nemes, (as this cleim is also tbe lest on the universally recognized line of the Comstook lode), helonged to tbe Washoe mining pioneers. This circumstance did not, however, profit him greatly, as he parted with his interest in the ground that hears his name for a trifling consideretion. In the snmmer of 1859, be wes living in a log cahin near this spot, a quiet, elderly man, still eerning small weges in the nearly exhansted diggings along Gold canyon. He died in Washoe several yeara ago, and was buried near the scenes where he had so long lived and labored.

Leeds' District, Utah.

A correspondent of the Salt Lske *Tribune* says: Pioche no longer stands alone in pouring ber population into our midst. Californie. Montana, and Northern Utah are sending representatives to co-operate with us in building up Southern Utah. The emigration is increasing, and daily we notice the arrival of from four to ten wagon loads of miners and business men. Nearly all who select our camp are of the better class; but few of the desperate characters who usually are the first in new mining towns are seen here.

Capital is coming in, bnt slowly, though we are in receipt of letters informing us of the intention of several of San Francisco's heaviest capitalists soon to come.

The Leeds mining company's representativea have returned, and immediately commenced the erection of their mill, only a portion of whioh has as yet arrived. They expect, however, to place it in position as soon as it arrivea, and to be in running order in less time tban most people expect.

Dnpaix's mill is almost completed, and will be in running order within a few weeks.

Many new prospects are being developed. Prospectors are lining the hills, and many report rich discoveries. Before spring this will be the largest miniog town ever on this ocast.

MINUTE SUBDIVISION OF COLORING MATTER. The remarkably minute quantity of dyestuff required to tint an otherwise colorless liquid, such as weter or alcohol, is well shown by Herr Annaheim in a paper presented to the Berlin Cbemical Society. He diesolves .0007 gramme of fnchsine in alcohol, and dilutes the solution to 1,000 cubic centimeters, so tbat each centimeter conteins .0000007 gramme of fuchsine, an amount of color which appears quite strong when backed by white paper. By still further experiments he shows that .00000002 gramme of fucbsine is perceptible as color by the human eye, and by calculation that the absolute weigbt of an atom of hydrogen in a molecule of the dye cannot exceed .000000000059 gramme.

MECHANICAL PROGRESS.

Automatic Nail Feeder.

The Youngstown (O.,) *Register* says: One of the most novel, simple and ingenious pieces of machinery that could possibly be imagined has just been constructed and is now on exhibition at Booth, Miller & Co.'s foundry. It is an automatic nail feeder, invented by Wm. Koplin, of New Castle, Pa. An exhibition of the perfectness of the machine was given on the 10th inst., in the presence of a number of mechanics. The inventor, Mr. Koplin, was present and watched the workings of the feeder with as keen an interest as any one else. The machine was cutting a four penny nail, perfect in workmanship and with a rapidity unparalleled. The principle is a revolving feed barrel, or cylinder, into which the nail plate is inserted and fed to the machine. The barrel is open and is firmly locked at each half revolution. It is resolved by means of a cog-wheel with blind teeth. Below this cylinder is a cam shaft, to which the power is attached and to which the cog-wheel is firmly attached, then by a combination of the feed barrel, cam yoke and spring, the nail plate is raised or lowered and fed into the machine. As the cylinder revolves, the instant the nail is being cut the barrel is locked solid by means of mutilated pinions. The cam shaft above referred to makes the motion positive and regular, there is no gravitating or vibration, but each motion is positive and perfect, never varying no matter what speed the machine attains. At the right of the feeding barrel is a "clearer" attached, which passes under the plate at each revolution and clears away the scrap, thus obviating the great difficulty that has hitherto attended all machines of this sort. It will be observed that the plate is inserted in the barrel and forced down at each half revolution, being cut just as a man feeds a machine in our nail factories, and when the "stub" or scrap reaches the knife the clearer strikes it and throws it aside. The nailers present yesterday all expressed themselves that the machine was the only one of the kind that was perfect. If it is desired to vary the size of the nail, a screw is adjusted and the heads and points are altered at pleasure. In case it is desired to make a nail of heavier weight, the feed barrel is made large enough to admit of a wider plate, and the change is made. Mr. Koplin states that he has designed an attachment, which, when placed at the mouth of the feed barrel, will enable the machine to supply itself with the nail plates, by which arrangement one boy could attend to a dozen machines. The machine can be built at an average cost of less than $20.

Strength of Cast Iron Fitting-Blocks for Boilers.

Cast iron fitting blocks are used freely by boiler-makers, under the impression that such blocks, while of small diameter, compensate for the weakness caused by the hole which the block goes over. There is, however, reason to believe that this impression is erroneous, and Mr. Fletcher, of the Manchester steam users' association, deprecates the use of such blocks very strongly. The *Engineer* gives an engraving from a photograph of the fracture of a cast iron mouthpiece or fitting-block at the base of a six-inch steam stop valve. The casting was very good and sound. The pressure was 275 pounds on the square inch. The plates of the 7-foot boiler shell were seven-sixteenths of an inch thick, doubled riveted, and carried 342 pounds before giving way. It is evident from this that the cast iron fitting-piece did not compensate for the loss of strength in the plate caused by cutting a six-inch hole in it. A point worth notice in cutting holes in boiler shells has never received the attention which it deserves. These holes are very frequently left ragged at the edge, and if closely examined it will be found that minute cracks radiate from them into the plate. The weakening influence of such cracks, however small and short, is well understood. In all cases the edges of holes in boilers should be cut off clean and sharp, and the general use of some modification of the rose cutter, which would smooth off holes up to six-inch in diameter, would be a very good thing.

THE SMALLEST TURBINE.—One of the most diminutive motors that has ever come under our notice that could be put to a practical use, says the *American Miller*, was a turbine on exhibition at the Centennial. The tube is three inches long and five-eighths of an inch in diameter, with an oblique inlet designed for attaching it to the faucet of a water pipe. On entering the tube by the inlet, the water passes a stationary wheel provided with a series of radial vanes, and leaving these it strikes a similar wheel, which is caused to rotate by the spiral motion which the water has acquired from passing through the vanes of the stationary wheel. A spindle and pulley connect with this wheel, and to the pulley is attached an endless cord, through which motion can be transmitted to machines requiring a moderate amount of force to propel them. The water, having been utilized, is conveyed away by a closely fitting rubber conduit which is drawn over the outlet of the pipe. This little turbine, for in principle it is nothing less, can be utilized in a variety of household operations. One of the dimensions stated above will furnish power sufficient to propel a sewing machine.

Planing Mill Machinery.

A writer in the *Northwestern Lumberman* gives some hints concerning the construction and care of planing mill machinery. He says:

I would say to those who contemplate putting in new boilers, to get such as will generate the most steam with the least amount of fuel, and for this object tubular ones stand at the head. It it true, the old Corlish boiler has many advantages over this style, and is claimed by some to be far superior to any other for planing mills, but I have failed to find it so in practice, and I have used almost every kind made and under all circumstances have found the tubular, if properly set, far superior. If you are to get new boilers, go to some reliable firm, who have a good reputation, tell them to what use you wish to put the boilers and that they must be made of the best refined iron, put together in the best possible manner, as a planing mill is one of the worst places known to put a boiler, for the reason of such unsteady fires which cannot be avoided where shavings are used for fuel, especially when bituminous coal is mixed with them.

The engine room should be built as remote from the machines as possible, for the purpose of avoiding the dust, which will more or less find its way to the engine, in spite of all the care that can be exercised in that direction; and for this reason I would recommend an engine built with as little brass and bright work as possible, as it cannot be kept clean without being continually wiped off, and engineers soon get tired of this; the consequence of which is, it goes about half clean; then it looks worse than the rough iron painted, as this can be wiped once a day and look comparatively clean. It is very different with a planing mill, than a machine shop, where there is no dust and it is an easy matter to keep an engine bright and clean. Another thing which proprietors of mills should look well to in getting steam power, i. e.: The amount of it; be sure that you get your engine and boilers large enough to drive easily all the machinery at once that you intend to put in, and just a little extra from the figures will be in your favor in the long run, for there is no place where an engine is taxed so severely as in a planing mill; the sudden starting of a heavy planer and saws strains an engine to its utmost, and if it is not well made and of sufficient power, the result is a "breakdown" and trips to the machine shop, to say nothing of the damage caused by the delay, which is often enough during one year to purchase a good engine. To insure steady motion the driving pulley should be as large as expedient, and a weight of 600 pounds to the inch of cylinder diameter, and the piston should have a speed of 350 to 400 feet per minute.

To find the horse power of an engine, multiply the area of the piston in square inches, by the speed of the piston in feet per minute, and divide the product by 33,000. The result is the horse power value of one pound mean effective pressure, and if multiplied by the whole mean effective pressure, will give the indicated horse power.

FIRE-PROOF STRONG ROOM.—We saw lately, says *Iron*, at the London works of Messrs. Chubb & Son, the largest fire-proof strong room yet made for use by any bank in this country. It is 20 feet by 12, and 9 feet high, and weighs 23 tons. It is divided into three compartments, the first serving as a passage or lobby, in which will stand several iron safes. The next larger is fitted up as a closet designed to contain iron safes on shelves. The largest one is provided with shelves all round, reaching from floor to roof, and intended to hold boxes containing securities, a certain portion being further enclosed for jewels and special valuables. The entire structure is made to take to pieces; but though the number of rivets and screws used is enormous, not one is fastened or is visible from the outside. Not a single butt-joint is used, and no crevice exists where a burglar's tool could be insinuated. An air chamber is provided between the skins, and fireproofing composition is filled in all round, above and below. The roof is fortified by girders, and the outer door is massively constructed of wrought iron and hard steel, weighing nearly a ton, and fastened by two of Chubb's locks, throwing bolts out from all four sides. An inner folding grille is used to ventilate the room by day while the door remains open, and an electric alarm is fitted so that any tampering with the door by night is instantly announced by a bell in the manager's room.

CARBONIC ACID AS A MOTOR.—Herr Beins, of Groningen, Holland, is of the opinion that carbonic acid (which he terms carboleum) will be the long-looked-for successor of steam, as a motive power. He has shown that, when sodium bi-carbonate is heated in a confined space, a portion of its carbonic acid is liberated, under any degree of tension; so that, for example, by heating the bi-carbonate to about 200 or 300 deg. (about 400 to 575 deg. Fah.), liquid carbonic acid is obtained under a pressure of from 50 to 60 atmospheres (750 to 900 pounds). If a more moderate pressure is wished, it is only necessary to moderate the amount of heat applied, so that it is quite within the power of the operator to store up the acid at any desired pressure. The observations of Herr Beins are practical enough to warrant the attention of those who are interested in the matters he discusses. He certainly indicates a cheap and practical method of generating a prodigious amount of energy, the utilization of which is attended with even less difficulties than steam.

SCIENTIFIC PROGRESS.

The Phenomena of Digestion.

Just now medical men in Paris, says the London *Telegraph*, are busy discussing a curious case which has come under the observation of the learned Dr. Verneuil. The doctor had a lad brought to him for treatment at the Hospital de la Pitie, who had swallowed by accident a dose of caustic potash. The terrible escharotic produced so tight a constriction in the gullet that no food could pass down into the stomach. Death from inanition must have been the result had not Dr. Verneuil courageously resolved to perform the dreadful operation known as gastrotomy. On the 26th of July, accordingly, he cut right into the lad's stomach and inserted into it an elastic tube, through which food could be injected. In this way soup, fine-chopped meat, mashed vegetables and drink were administered. On the 10th of September the young man recovered his health and spirits. He was able to go about and help the servants in the hospital, and seemed to have as much life and energy as he had before the accident. Between the 18th of August and the 14th of September he gained 10 pounds in weight, while being fed through the hole in his stomach. Of course this case must have a rare interest for all students of the complex phenomena of digestion, and it cannot but recall a still stranger one, which, nearly 40 years ago, Dr. Beaumont, a Canadian, had the good fortune to observe. His patient enabled physiologists, in fact, to formulate nearly all our existing knowledge of the processes of stomachal digestion. He was one Alexis St Martin by name, and, luckily for science, he had a hole made in his stomach through the sudden discharge of a gun, and Dr. Beaumont cured him so far that he recovered his health; but though the wound healed, the opening remained, and through it Dr. Beaumont was enabled to see the workings of a living human stomach in nearly all conceivable circumstances. Another case of the same sort—that of an Esthonian woman—came under the observations of Drs. Schroeder and Grunewaldt some four and twenty years ago, and vivisectors know how Blondlot and others artificially produced the same condition in dogs, and thereby gained a certain insight into the behavior of food in the ventral alembic of the tissues. It was found, for example, that in the fasting state the walls of the stomach appeared pale and flabby, and lay close together, whereupon some people erroneously concluded that the sensation of hunger was due to the rubbing of the coats of the stomach on each other. It was noted that whenever food was introduced the sides of the cavity reddened with the stimulated circulation and its muscular activity was aroused. As Dr. Beaumont said, from observations made on Alexis St. Martin, the chewed food was churned in the stomach, and carried round and round the course of its curvatures. In this way it was triturated and exposed to the solvent action of the gastric juice which acted on the albuminous and gelatinous substances swallowed, until gradually a milky fluid known as chyme was elaborated. Thus was it found out that we take usually about four hours to digest a dinner; and it was also discovered that different kinds of food vary much in their digestibility—notable, for example, that fats and oil take a long time to digest when introduced into the stomach alone, but are much more speedily got rid of by that organ if eaten with salad or vegetable matters.

Effect of Emotions.

Of all the curious facts observed by students of the phenomena of digestion, however, none was stranger than the extent to which emotions were seen to effect the operations of the stomach. Mental exertions pure and simple did not seem to retard digestion so much as had been conjectured. Yet when associated with deep emotions, or with that fretfulness of mind we call "worry," it appeared to have a baneful influence. As for the fiercer passions, an outbreak of them would sometimes suffice to prevent the stomach even when most vigorous from discharging its functions. Another mysterious phenomena noticed in connection with digestion was the sympathetic influence exercised by the stomach over the secretion of the mouth. This secretion, as is well known, has an important chemical action on certain constituents of food, changing by a sort of fermenting process starchy matters, for instance, into sugar. In Dr. Verneuil's case, whenever food was injected into the stomach of his patient "a flow of saliva in mouth is produced, in the injection of which a motion curiously resembling chewing is remarked." In short, the different parts of the digestive apparatus are so linked together by nervous connections that they "sympathize" with each other, and if one be stimulated the rest are also excited. But, as might be expected, there is no connection apparently between the nervous system of the stomach and the nerves of taste, for it is related of Dr. Verneuil's patient that when the food is put into his stomach, although his mouth fills with saliva, he feels no sense of flavor in the substance with which he is fed. He is only aware if they be hot or cold, and indeed no anchorite could be in a state of more philosophical indifference to the choicest pleasures of the table. The question forces itself on us, will it be a beneficial thing to rescue him from this condition? These are hard times, and savory food is getting dearer and dearer every day. Would not a man who was thus physically insensible to gastronomic luxuries, who cared not a jot what he ate or drank, have an advantage in the battle of life which ought not to be lightly estimated? So long as good digestion waited on appetite, he would be free from the carking care that darkens the soul of the sybarite as he ponders in his mind that most momentous of all questions, what shall I have for dinner to-day? or sits down to his banquet in fear and trembling lest the cook's kitchen science may for once have failed him in its preparation.

Ozone.

In the *Comptes Rendus*, De Carvalho describes an apparatus for ozonizing the unhealthy air of dwelling-rooms; such air is to be passed by means of an aspirator through a tube, in which the silent discharge of a Ruhmkorff's coil takes place; and the author is of the opinion that air subjected to this treatment will be freed from the organic matter suspended therein and its harmful character destroyed. To his paper are appended some remarks by P. Thenard, who says he considers it is high time that not only the public, but learned men should be made acquainted with the erroneous nature of the views generally held respecting the action of ozone on organisms. So far from having a beneficent effect, ozone is one of the most energetic poisons known; and the grave accidents which have happened in his own laboratory do not leave the slightest room for doubt about the matter. While leaving the physiological aspects of the question to M. Arnould Thenard, who has a work on the subject in preparation, he confines himself to stating that under the influence of ozone, even when very largely diluted, the blood corpuscles rapidly cohere, and even change their form, the pulse beats more slowly and in so very marked a degree that in the case of a guinea-pig, where the beats were nominally 148 per minute, they fell to 1-30th after the exposure of the animal for a quarter of an hour. In the present day, when medicine possesses in a knowledge of temperatures so excellent an indication of the stage of a disease, it is possible, he considers, that an agent may be found in ozone for controlling them when too high; to introduce, however, without further consideration, ozone into our rooms with the fallacious notion of thereby destroying bad air, is highly dangerous. While the most powerful poisons, when rightly administered, constitute some of our best remedies, we must first have learnt how to apply them lest we fall into error as regards the right time for application and the strength of the dose. Thenard then asks the question: Are we sure that there is ozone in the air? Its presence in our atmosphere is determined by the change in the depth of color of prepared paper. Do we know that there are no other substances in air which can affect the paper in the same way? By passing a current of air through a gas-blast, Wittman obtained air which acted on prepared paper as ozonized air does; while, however, this air disinfected putrid water without rendering it acid, ozone, so it is stated, did not disinfect it, but turned it acid. Moreover, it is known that ozone cannot exist above 200 degs., and yet the air modified by Wittmann's method had been exposed to the temperature at which glass softens. Although he is not prepared to deny the possible presence of ozone in the atmosphere, he holds it rash to regard as proved what is still vague and uncertain, and, maybe, dangerous. Since the publication of Thenard's paper in January last, this important question has not been solved, and in the presidential address which Dr. Andrews delivered before the British Association last month he states: "the chemist can furnish a simple test of this (unhealthy) state of the atmosphere in the absence of ozone, the active form of oxygen, from the air of our large towns.—*Academy*.

The Carpet Anthrenus.

The *Anthreni* as a genus are well-known pests of museums of natural history the world over. There are numerous species, some half-dozen of which are found in this country, including the well-known *Anthrenus musæorum*, Linn., the great enemy of collections of natural history, especially of stuffed birds, insects and other zoological specimens. But the *Anthrenus lepidus* of Leconte appears to frequent carpets and is particularly destructive to the former.

My first specimen came from Oregon. The next received came from Central New York, where this pest had received the name of "the California carpet moth," probably because some one had recognized it as the same insect which had been found infesting carpets in California, but it is not a moth, but a beetle, and like all the *Anthreni* belonging to the great order of *Coleoptera*, and to the family of *Dermistidæ*.

The larvæ of the *A. lepidus* are small hairy grubs, and change to pupæ within the larval skin, not casting off, as do some other kinds of beetles, the imago or perfect insect emerging from the pupa skin, passing out of the old cast-off shell of the larva at the same time. Any one who will take the trouble to collect a few of the larva, and put them into a glass bottle, with a few shreds of woolen cloth, can observe their transformations.—*Am. Jour. of Microscopy*.

Table of Highest and Lowest Sales in S. F. Stock Exchange.

Name of Company.	1 W'k to Dec. 7.		1 W'k to Dec. 14.		1 W'k to Dec. 21.		1 W'k to Dec. 28.	
	H.	L.	H.	L.	H.	L.	H.	L.
Adams Hill..	....	....	....	....	....	....	....	....
Advance.....	....	....	....	....	....	....	....	....
Alpha.....	37	31	35½	32⅜	34¾	30¼	26	18¼
Alta.....	3⅜	2	3¾	2½	3	2½	2¾	2½
Amer'n Flag.	....	....	....	....	....	....	....	....
Amer'n Flat.	....	....	....	....	....	....	....	....
Andes.....	2	1½	2⅜	2¼	2¾	2½	1⅞	1⅜
Alps.....	....	....	....	....	....	....	....	....
Amazon.....	....	....	....	....	....	....	....	....
Balt'm'e Con	3⅜	3	3	2¼	2½	2⅛	2	1½
Belcher.....	14⅝	13½	14¼	13	13⅜	10	9¼	8
Belmont.....	3⅜	2½	2¾	2¼	3	2¼	6	3
Best & Bel...	46	44	44¾	42	51¾	44¾	47½	38½
Buckeye.....	2	1	....	....	....	....	....	....
Bullion.....	32	31	30	....	30	27	24	18¼
Caledonia....	14	11¾	13¼	12	12⅝	10¼	13	11½
California...	51	47½	50¼	48⅜	50	47¾	47½	43
Challenge....	2¾	....	3	....	2	....	2½	2
Chollar-P'tsi	84¼	70½	83	77	86	81¼	80	72½
Confidence..	12⅜	12	12½	12	13	11	10	8¾
Con Imperial	2⅞	2.65	2.70	2.55	2.60	2¼	2	1⅝
Con Virginia	49	46¾	47⅝	42¼	46	44	44	35½
Crown Point.	9¼	8¾	9	8	9	7½	7	5½
Coso Con....	40c	45c	25c	....	20c	....	....	....
Daney.....	....	....	....	....	....	....	....	....
Dayton.....	3½	2¾	3¼	2¾	3	....	2	....
Eclipse.....	....	....	....	....	....	....	....	....
Empire (Id)..	....	....	....	....	....	....	....	....
Eureka(G V)	....	....	....	....	....	....	....	....
Eureka Con..	11	10¾	11⅛	11	11½	10⅝	11	10½
Exchequer ...	14	12¾	13⅝	12	13	11¾	10½	8½
Empire.....	....	....	....	....	....	....	....	....
Gila.....	1½	95c	9⅝	70c	62½c	45c	50c	....
Globe Con....	35c	20c	20c	....	....	....	....	....
Golden Char.	1¾	1½	2	....	2	1¾	2⅜	2⅛
Gould & Curry	14¾	12¾	13⅜	11⅞	13¾	12½	13⅜	11⅝
Hale & Nor..	7⅜	7	7⅞	7	8	7⅝	8	5
Ida Elimore...	....	....	....	....	....	....	....	....
Jefferson.....	....	....	....	....	60c	....	....	....
Julia.....	6¼	5¾	6¼	5¾	6	5	4⅛	3¼
Justice.....	26½	25⅜	26¼	24⅝	25¼	23⅜	23	19½
Jackson.....	3	2⅜	....	....	4	3⅜	4	4
K K Con.....	2⅜	....	....	....	3	2⅜	2½	2⅜
Kentuck.....	10	9½	9¾	9	10	9½	9	7½
Knickerb'k'r	50c	50c	75c	50c	75c	....	80c	50c
Keesler.....	2	1¾	2	1¾	1¾	1¼	1¼	....
Lady Bryan..	35c	27½c	2⅝c	....	2⅛	2½c	62½c	....
Lady Wash..	4¼	2½	3¾	2¾	3¾	3⅜	2½	2
Leo.....	....	....	....	....	....	....	....	....
Leopard.....	6⅛	5¾	6¼	5¾	5¾	4¾	4¾	4¼
Leviathan....	1⅜	1	1½	1¼	1⅝	1⅛	1.20	87½c
Mahogany.....	....	....	....	....	....	....	....	....
Mansfield	10c	....	....	....	....	....	....	....
Meadow V'y.	90c	70c	90c	35c	40c	30c	....	....
Mexican.....	24¾	22½	23⅝	19¾	21¾	19	19¼	16¾
Midee.....	....	....	....	....	....	....	....	....
Mint.....	....	....	....	....	....	....	....	....
Monitor-Bel.	....	....	....	....	....	....	....	....
Newark.....	....	....	....	....	....	....	....	....
New York....	1⅛	87½c	1¼	1	1.10	87½c	90c	87½c
Niagara.....	15c	....	17½c	....	....	....	....	....
Northn Belle	3¾	3¼	3⅜	3	3⅜	3	3½	3⅛
New Coso....	3½	2¾	3¼	3	3⅞	3¼	3½	3⅛
Occidental..	3	2	2½	....	....	....	1½	....
Ophir.....	46	43¾	44	35½	36¾	30	27½	20
Or Gold Hill.	....	....	....	....	....	....	....	....
Overman.....	122	96	118½	110	119½	104½	115	110
Pacific.....	25c	....	....	....	....	....	....	....
Phil Sheridan	....	....	....	....	....	2½	87½c	....
Ploche.....	....	....	....	....	....	....	....	....
Poorman	20c	15c	20c	....	30c	....	25c	....
Prospect.....	1⅜	1	1	87½c	87½c	80c	75c	50c
Pruesian.....	....	....	....	....	....	....	....	....
Ray & Ely....	3	4½	3½	3	3½	3	3½	2¾
Rock Island..	87½c	62½c	87½c	75c	87½c	80c	62½c	....
Rye Patch.....	....	....	....	....	....	....	....	....
Savage.....	12	10½	11¾	10	11⅞	10⅜	10	9
Seg Belcher..	83	65	89½	82½	90	85	85	74
Sierra Nev'da	13	11⅞	12½	11¾	12	11	10	8¾
Silver Hill...	11½	9	10⅜	9½	10	9	8¼	7
8th Chariot..	62½c	60c	50c	....	75c	62½c	1	87½c
Succor.....	50c	....	53c	....	75c	62½c	70c	55c
Union Con....	12⅜	11¾	12	10⅜	11⅜	10¼	10¼	8
Utah.....	15	14½	15	14¾	16	14¾	14	12
Wells-Fargo.	5c	....	20c	....	1	....	10c	....
Woodville....	1⅜	1¾	1¾	1	1¼	1	1	75c
Yel'w Jacket	17	15½	17½	16½	18	16¾	15½	15

Sales at S. F. Stock Exchange.

FRIDAY, A. M., DEC. 22.

935	Alpha	2	@23¾
705	Bost & Bel	46¾	@47½
160	Belcher	8	@9
235	Bullion	2	@23
1955	Caledonia	11¼	@11¾
515	Crown Point	8¾	@8¾
4050	Con Imperial	1⅝	@1¾
940	California	47¾	@47½
85	Cholar	8	@9
4195	Con Virginia	44	@43¾
150	Confidence	9	@9
250	Exchequer	13¾	@13½
720	Gould & Curry	13¾	@13¾
700	Hale & Nor	7	@7½
2800	Justice	22	@23
740	Julia	4½	@4¾
685	Mexican	19¼	@19¾
2190	Ophir	26½	@27½
325	Overman	110	@111
1005	Savage	9½	@10
265	Sierra Nevada	9¾	@10
50	Succor	53	@53
440	Union	9¾	@9¾
30	Utah	12	@12
1910	Yellow Jacket	15	@14½

AFTERNOON SESSION.

545	Alpha	24¾	@25
440	Alta	2⅝	@2¾
170	Andes	1⅞	@1⅞
2030	Belmont	3½	@3½
655	Best & Belcher	46¾	@47
340	Baltimore Con	2	@2
460	Caledonia	11⅞	@12
725	California	47¾	@47½
2900	Con Virginia	43¾	@43½
55	Chollar	7¾	@8
390	Crown Point	8¾	@9
20	Con Amador	15	@15
470	Challenge	2¾	@2¾
195	Eureka Con	11	@11
300	Gila	50c	@50c
460	Golden Chariot	2½	@2⅝
350	Hale & Nor	6⅞	@7
100	Hussey	2	@2
460	Julia	4¼	@4⅜
100	K K Con	3¾	@3¾
120	Kossuth	3	@3
350	Knickerbocker	3	@3
300	Leviathan	1 20	@1 25
1070	Leopard	4½	@4¾
150	Lady Wash	1½	@1½
490	Manhattan	15	@15½
350	Modoc	7⅜	@7⅜
430	Northern Belle	3	@3½
475	New Coso	3½	@3¾
620	New York	90c	@90c
1415	Ophir	27⅜	@26¾
100	Poorman	2⅜	@2⅜
50	Prospect	80c	@80c
105	Ray & Ely	3½	@3¼
30	Rock Island	62½c	@62½c
1500	8th Chariot	75c	@75c
175	Silver Hill	8¾	@8¾
655	Trojan	40	@40
295	Union	9¾	@9¾
685	Yellow Jacket	15¾	@15¾

SATURDAY, A. M., DEC. 23.

1235	Alpha	22¾	@23½
1120	Best & Belcher	44¾	@43½
430	Belcher	8¾	@8¾
70	Bullion	21	@19½
45	Baltimore Con	1¾	@1¾
1 730	Caledonia	12	@12¾
880	California	46¾	@45¾
200	Chollar	7	@7
6050	Con Virginia	41½	@41
97	Crown Point	5⅞	@6
2445	Con Imperial	1.50	@2
40	Confidence	10	@10
810	Exchequer	5	@10
985	Gould & Curry	12½	@12
430	Hale & Nor	6	@6¾
760	Julia	4	@4¾
1030	Justice	21	@23¾
100	Knickerbocker	3	@3
60	Kentuck	8	@9
855	Exchequer	8¾	@9
1145	G & Curry	12	@13
2260	Hale & Nor	7½	@8
1215	Julia	3⅝	@3¾
530	Justice	20	@19¾
10	Kentuck	7	@8
835	Mexican	17	@17
1295	Ophir	21	@21½
355	Overman	113	@111½
540	Savage	9¼	@9
710	Sierra Nevada	8¾	@8¾
63	Seg Belcher	75	@74
55	Utah	12¾	@12
325	Union	8¼	@8⅝
1550	Yellow Jacket	14	@14¼

AFTERNOON SESSION.

100	Alta	2¼	
60	Andes	1¾	@1⅞
3120	Belmont	5¾	@6
835	Best & Bel	42½	@43¾
150	Baltimore Con	1¾	@1¾
2500	Con Virginia	37¾	37¾
1350	California	44⅞	@44½
110	Chollar	7	@7⅝
25	Challenge	2¾	10c

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY A. M., DEC. 1.

590	Alpha	30¼	@31
2185	Best & Bel	50¾	@51¾
400	Belcher	10	@10¾
110	Bullion	27	@27¾
3085	Caledonia	11¾	@11¾
245	Chollar	81½	@85
615	California	43¾	@43¾
235	Crown Point	7⅝	@7⅝
2750	Con Virginia	45½	@46
692	Con Imperial	2¼	@2.30
230	Exchequer	11¾	@11¾
1010	Gould & Curry	13¾	@13¾
655	Hale & Nor	7¼	@7⅝
310	Julia	5½	@5¾
710	Justice	23¾	@23¾
548	Mexican	20½	@20¾
2180	Ophir	30¼	@31¾
955	Overman	112½	@115
285	Savage	10¾	@10¾
140	Sierra Nevada	11	@11⅜
75	Seg Belcher	85	
475	Union Con	10¼	@10⅝
15	Utah	14½	@15
375	Union Con	10¼	@10⅝
305	Y Jacket	16½	@16¾

AFTERNOON SESSION.

160	Alps	10	c
50	Alta	2¾	
200	Belcher Con	2¾	@2¾
250	Belmont	2¾	
400	California	48¼	@48
50	Challenge	2	
50	Eureka Con	11¼	
255	Golden Chariot	2¾	@2¾
200	Hussey	40	
120	Jackson	4¼	
580	Knicker	87½	c
685	Leopard	4¾	@4¾
210	Leeds	2	@2
285	Manhattan	15	@15½
1285	Modoc	7¾	@7¾
740	Northern Belle	3	@3¼
200	New Coso	3¼	c
820	New York	95	@90c
295	Ophir	29½	@29¾
50	Prospect	50	c
100	Panther	45	c
700	Phil Sheridan	1⅝	
190	Raymond & Ely	3¾	
760	S Chariot	75	@1
55	S Hill	9¾	

30	Dayton	2	
220	Eureka Con	10½	
120	Gila	50	c
550	G Chariot	2¾	@3
730	Hale & Norcross	5¾	@6
350	Julia	3¾	@4
390	Jackson	4	
40	K K Con	3¾	
1350	Oceanic	4¾	@3¾
300	Leviathan	87½	c
90	Lady Wash	2½	@2¾
45	Manhattan	14¾	
400	Modoc	7¾	@7⅝
685	Mexican	18¼	@18¾
900	Northern Belle	2¾	@2¾
1250	New Coso	3¾	
85	New York	87½	c
50	North Con Vir	87½	c
25	Occidental	1½	
90	Overman	1⅞	
1425	Ophir	22⅝	@22½
185	Raymond & Ely	3¾	@3⅝
566	South Chariot	1¼	
440	Silver Hill	7	@7½
1500	Trojan	60	@50c
1275	Woodville	1	@75c
110	Wells-Fargo	10	c

THURSDAY, A. M., DEC. 28.

245	Alpha	22½	@22¾
1175	Best & Belcher	41¾	@42⅛
150	Bullion	26½	@26
710	Belcher	9	@9¼
415	Crown Point	6¾	@6¾
1680	Con Imperial	1.80	@1.90
5675	Con Virginia	38	@37½
1530	California	45	@45¾
500	Caledonia	12¾	@12⅝
105	Chollar	7	@7⅝
40	Confidence	10	
1010	Exchequer	9¾	@9¾
820	Gould & Curry	12½	@12¾
820	Hale & Nor	7¼	
805	Justice	20¾	@21
1215	Julia	4¢	@4¼
710	Belcher	9	@9¼
415	Crown Point	6¾	@6¾
1680	Con Imperial	1.80	@1.90
5675	Con Virginia	38	@37½
1530	California	45	@45¾
500	Caledonia	12¾	@12⅝
105	Chollar	7	@7⅝
40	Confidence	10	
1010	Exchequer	9¾	@9¾
820	Gould & Curry	12½	@12¾
820	Hale & Nor	7¼	
805	Justice	20¾	@21
1215	Julia	4¢	@4¼
250	Lady Bryan	62½c	
1850	Mexican	19	@19¼
740	Overman	112	@113
895	Ophir	23	@22¾
400	Overman	111	@113½
565	Sierra Nevada	9¼	@9¾
20	Seg Belcher	75	
170	Utah	14	@13½
680	Union	10	@9⅝
895	Y Jacket	17	@14¾

AFTERNOON SESSION.

370	Alpha	23	@22½
400	Andes	1⅞	
480	Alta	2½	@2⅜
200	Belcher	9¼	@9½
1813	Belmont	6¾	@5
820	Best & Bel	41¾	@42
30	Bullion	21¾	
200	Baltimore	1¾	@1⅞
1045	Con Virginia	38¼	@38¾
740	California	45½	@45
464	Caledonia	12¾	@12⅜
190	Gould & Curry	12½	@12⅝
630	Gila	50	@55c
140	Gen Thomas	1	c
700	Grand Prize	4	
600	Hale & Norcross	6¾	@6½
1275	Gold Chariot	3½	@3⅜
430	Hale & Norcross	6¾	@6½
250	Julia	2¼	@2
600	K K Con	3	
290	Knickerbocker	90c	@1
200	Koesuta	1⅜	
300	Lady Wash	3	
425	Leonard	4½	@4¾
740	Manhattan	14½	
810	Modoc	8¼	@8
935	Northern Belle	2¾	@2¾
40	North Con Vir	87½	c
300	New York	85	@90c
520	New Coso	3¾	@3⅝
1295	Ophir	23¼	@23¾
90	Overman	114	@113¾
50	Occidental	1⅝	
400	Prussian	50	c
350	Phil Sheridan	2¾	
100	Prospect	55	c
3 3	R & Ely	3	
431	Sierra Nevada	9¾	@9¾
20	Silver Hill	8¼	
1300	South Chariot	1¼	@1
690	Trojan	60	@70c
10	Wells-Fargo	15	c
100	Woodville	1	c
280	Yellow Jacket	15	@15¼

Pacific Board—Latest Sales.

WEDN'SDAY, A. M., DEC. 27.

10	Alpha	19¾	@19¾
150	Atlantic	2¾	
50	Andes	1⅝	
150	Best & Bel	41	@41⅜
350	Belcher	8¾	@9
1820	Con Imperial	1.65	1.65
235	Con Virginia	34¾	@35
60	California	43⅜	@42⅞
135	Crown Point	5¾	@5¾
40	Caledonia	12¾	
190	Gould & Curry	11¾	@12
530	Hale & Nor	5¾	@6
190	Julia	3¾	@3¾
250	Justice	19¾	@19¾
80	Leviathan	90c	@90c
430	Mexican	17¼	@17⅜
680	Ophir	21¾	@20¾
945	Savage	9¾	@9¾
100	Twin Peaks	1½	
60	Utah	12¾	@12
20	Unio	8¾	
220	Yello Jacket	13	

AFT NOON SESSION.

60	Alp	22	@21¾
3	Belcher	9	
180	Belmont	5	@6
60	Best & Bel	42	@41¾
100	Baltimore	1⅜	
220	California	44¾	@44
100	Caledonia	12¾	
175	Con Virginia	37¾	@37
30	Crown Point	5¾	@5¾
380	Con Imperial	1.80	@1.82½
20	Eureka Con	10¼	
150	Gt Eastern	1¾	
130	Gould & Curry	12¾	@12¾
230	Golden Chariot	2¾	@3
110	Gen Thomas	87½	@1
240	Hale & Nor	5⅞	@5⅝
200	Julia	3¾	@4
145	Justice	20½	@20
50	Knickerbocker	90c	
3.0	Leopard	4	@4¼
200	Loyal	2¼	
100	Lady Bryan	62½	c
250	Golden Chariot	2¾	@3
120	Mexican	18½	@18¾
450	Northern Belle	2¾	@2¾
100	N Modoc	55	c
580	Ophir	22¾	@22½
100	Panther	45	c
100	Phil Sheridan	2¾	
200	S Chariot	1	
65	Sierra Nev	8¾	@8¾
540	Trojan	60	@55c
125	Union	9½	
10	Yellow Jacket	14¾	

California Board—Latest Sales.

AY, A. M., DEC. 27.

70	Alpha	19	@18¾
130	Alta	2¾	@2¾
23	Belcher	8¾	
100	Baltic	26	c
30	Best & Bel	39¾	@40
75	Caledonia	11⅞	
50	California	42¾	
15	Chollar	7	
200	C Comstock	45	@50c
280	Con Virginia	35¾	@35¾
700	Con Imperial	1⅞	@1⅞
60	Crown Point	5¾	@5¾
130	Exchequer	8¾	
100	Gen Thomas	75	c
200	Gila	5	@60c
125	Gould & Curry	12¾	@11¾
100	Globe	2	
70	Hale & Nor	6¾	@6¾
45	Julia	3¾	
105	Justice	20½	@19¾
50	Kossuth	1¾	
70	Leopard	4	
300	Leviathan	90	@95c
600	Monumental	6	c
170	Mexican	16¾	@16¾
295	Ophir	20¾	@20¾
100	Phil Sheridan	2¾	
150	Prospect	50	c
1000	South Chariot	1¼	
100	Succor	57½	
10	S Nevada	8¾	
240	Southern Star	1¾	
240	Savage	9¾	@9¾
500	Trojan	55	@60c
30	Utah	12¾	@13¼
20	Union	8¾	@8¾
100	Wells-Fargo	17	c
125	Woodville	95	@90c
165	Yellow Jacket	13¾	@13

AFTERNOON SESSION.

30	Alta	2¼	
35	Belcher	8¾	
40	Best & Bel	41½	@42
45	Caledonia	12¾	
132	California	44	@44¾
200	Con Virginia	36	@37¾
200	Con Coso	3	@3c
50	Crown Pt	5¾	@5¾
150	Gila	45	@50c
880	Gen Thomas	55	@87½c
100	Gould & Curry	12¾	@12¾
200	Globe	1	7c
100	Hussey	3	@3c
115	H & N	5¾	@5¾
125	Justice	20	
30	Julia	3¾	@3¾
509	Jy Glynn	5	c
100	Leviathan	90	c
20	Leopard	4	
950	Lady Bryan	60	@61½c
50	Mexican	16¾	
50	Manhatan	14¾	
50	N Coso	3¾	
90	Ophir	21¾	@ 2¾
100	Panther	45	c
2400	Trojan	60	@ 0c
40	Savage	9¾	
700	South Chariot	1	10@1 05
50	Union Con	9¾	
50	Woodville	90	
80	Yellow Jacket	14¾	

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Deling'nt. Sale.	Secretary.	Place of Business.
Alps S M Co	Ely District	10 50	Dec 16	Jan 16 Feb 9	O D Squire 231 Montgomery st
Adams Hill Con M Co	Eureka	8 25	Dec 7	Jan 12 Feb 2	W W Traylor 309 Montgomery st
Amazon Con M Co	Nev	8 20	Nov 28	Jan 4 Jan 25	J A Reichart 330 Pine st
American Flag M & M Co	Ely District	9 25	Dec 19	Jan 29 Feb 23	G R Spinney 320 California st
Crown Point Ravine M Co	Washoe	4 15	Dec 15	Jan 22 Feb 10	J M Buffington 309 California st
Con Imperial M Co	Washoe	2 25	Dec 19	Jan 24 Feb 14	W E Dean 419 California st
Baltimore Con M Co.	Washoe	13 50	Dec 7	Jan 10 Jan 30	C A Sankey 331 Montgomery st
Belmont M Co	Nev	10 50	Nov 22	Jan 4 Jan 30	F Swift 419 California st
Dayton G & S M Co	Washoe	6 1 00	Nov 6	Dec 12 Jan 2	W E Dean 419 California st
Florida M Co	Washoe	7 25	Dec 6	Jan 13 Feb 8	L Hermann 220 Sansome st
Glasgow G & S M Co.	Washoe	4 15	Dec 6	Jan 10 Jan 31	J A Reichart 330 Pine st
Gould & Curry S M Co	Washoe	23 1 00	Nov 15	Dec 29 Jan 16	A K Durbrow 309 Montgomery st
Knickerbocker M Co	Nev	16 *1 25	Nov 13	Dec 16 Jan 4	J H Sayre 330 Pine st
Lady Bryan M Co	Washoe	14 50	Nov 2	Dec 28 Jan 18	W H McClintock 419 California st
Lady Washington M Co	Washoe	9 50	Nov 11	Dec 14 Jan 2	D L Thomas 419 California st
Lemoille M & M Co	Cal	2 20	Dec 1	Jan 8 Jan 29	L Hermann 220 Sansome st
Mansfield M Co	Cal	6 50	Nov 28	Jan 4 Jan 23	J M Bishington 311 California st
Niagara G S M Co	Nev	4 25	Dec 4	Jan 5 Jan 29	W R Townsend Nevada Block
North Con Virginia M Co.	Washoe	6 50	Nov 21	Dec 22 Jan 18	J Maguire 419 California st
Raymond & Ely M Co	Pioche	6 1 00	Dec 5	Jan 15 Feb 8	T W Colburn 419 California st
Rye Patch Con M & M Co	Nev	5 6	Nov 11	Dec 19 Jan 9	D F Verdenal 409 California st
Savage M Co	Washoe	24 1 00	Nov 25	Dec 28 Jan 17	E B Holmes 309 Montgomery st
Superior G & S M Co	Washoe	4 10	Dec 15	Jan 17 Feb 5	J Tyson 411½ Clay st
Trojan M Co	Washoe	4 25	Dec 14	Jan 15 Feb 5	D Wilder 328 Montgomery st
Yellow Jacket M Co	Washoe	24 1 00	Oct 28	Dec 4 Jan 3	G W Hopkins Gold Hill

*$1.25 old stock; 30c new.

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Alpine G & S M Co	Washoe	I	3	Dec 5	Jan 6 Jan 22	C A Gould 419 California st
Black Hawk Coal M Co	Cal		5	Nov 16	Jan 17 Feb 17	H A Powell 520 Montgomery st
Blue Jacket M Co	Nev	3	2 25	Nov 3	Dec 9 Dec 30	C J Eaton 724½ Market st
Cabinet M Co	Washoe	2	5	Dec 11	Jan 16 Feb 15	J F Sterling 330 Pine st
Cosmopolitan M Co	Washoe	4	25	Dec 8	Jan 12 Jan 31	M Landers 309 Montgomery st
Denver Con Q M Co	Cal	—	2 60	Dec 13	Jan 23 Feb 14	A C Sweetzer Nevada Blk
East Branch M Co	Cal		6	Dec 15	Dec 9 Jan 10	J H Page 429 California st
Eclipse & Lee M Co	Cal		2	Nov 14	Dec 16 Jan 5	D Buck 309 Montgomery st
Emigrant M Co	Cal		1	50 Nov 10	Dec 12 Jan 3	W H Chickering 220 Sansome st
Great Blue Gravel Range M Co	Cal		7	50 Dec 22	Jan 27 Feb 14	W Bryant 33 Merchants' Ex
Gold Run M Co	Cal		14	50 Nov 14	Dec 21 Jan 10	C C Palmer 41 Market st
Josephine Gravel M Co	Cal			10 Dec 6	Jan 8 Jan 25	Wm Small 531 California st
Lexington M Co	Nev		1	5 Nov 10	Jan 12 Jan 30	H B Livingston 330 Pine st
Montezuma M Co	Nev		1	½ Nov 29	Jan 2 Jan 19	H B Winston 402 Montgomery st
Monumental Quicksilver M Co	Cal		2	5 Nov 17	Dec 26 Jan 18	W H Manlove 5 Market st
New York Hill M Co	Cal		3	20 Dec 20	Jan 27 Feb 16	F J Hermann 612 Commercial st
Pinehill Petroleum Co	Cal		1	Dec 4	Jan 24 Feb 13	G S Riggs 515 California st
Peytona G & S M Co	Nev			50 Nov 21	Dec 23 Jan 8	T J Hinton 215 Sansome st
Plymouth Rock M Co	Utah		3	1 Dec 2	Jan 8 Jan 27	E Chattia 442 California st
Rising Star M Co	Cal		2	10 Nov 8	Dec 9 Dec 30	J W Coppage 330 Pine st
San Francisco Petroleum Co	Cal		2	5 Nov 22	Dec 25 Jan 14	W Easton 32 Montgomery st
San Francisco Sulphur M Co	Nev		2	10 Nov 15	Dec 20 Jan 10	J Roberts 328 Montgomery st
Silver City M Co	Nev		1	25 Nov 16	Dec 22 Jan 11	A K Durbrow 309 Montgomery st
Taylor M & M Co	Cal		—	20 Dec 27	Jan 29 Feb 23	S S Murfey 607 Montgomery st
Vulcan Coal M Co	Cal		2	10 D

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR.

MECHANICS' MINE.—*Dispatch*, Dec. 23: The water is now all out of the shaft of this mine, near Sutter Creek, and the work of sinking is progressing. The shaft is down about 160 feet, and there is a three and a half-foot ledge of splendid rock. The company will soon commence crushing the rock, when its merits will be more positively known. All the present indications are that this will prove a very valuable mine.

FLUME COMPLETED.—The large flume of the Amador canal company, to be used in place of the pipe near New York ranch, has been finished, and the water was turned through it last Sunday. This is a fine piece of work, and presents a beautiful sight for the eye. It is about 60 feet high at its highest point. The flume was substituted for the piping to enable the company to float down wood and timbers. Floating can now be carried up from the large pipe near Clinton down to the lower end of the canal.

MONTGOMERY OAK.—*Ledger*, Dec. 23: A clean-up was made at the Volunteer mill last week. Upwards of 100 tons of rock from the Montgomery mine was put through, yielding close on $1,000, averaging about $8 to the ton. This is regarded as a highly satisfactory yield, inasmuch as the Volunteer mill is not exactly suitable for crushing rock of the Montgomery kind, and considerable gold is lost. The crushing at the Kearsley mill will undoubtedly give a much better percentage of gold, as the mill is better adapted for the kind of rock met with hereabouts. The stockholders feel greatly encouraged, and we expect to see ere long a 40-stamp mill in operation close to the mine.

RICH ROCK.—We have been presented by Captain Beck with a small piece of quartz taken from the Spanish mine, near Mokelumne river, which he is now putting in working shape. The specimen is speckled all over with free gold, and is by long odds the richest ore we have seen for some time. Captain Beck informs us that it is nothing unusual to come across similar pieces of rock. After inspecting samples of ore from this claim one is filled with wonder that such a rich mine has remained comparatively idle for so many years.

NORTH GOVER.—The shaft of this mine is down 100 feet. We understand that arrangements have been made by the company with Knight & Co., of Sutter Creek, for the erection of hoisting works over the shaft.

ALAMEDA.

NEW COAL MINE.—Alameda *Independent*, Dec. 23: The Summit coal mine, about eight miles southeast of Livermore, is found to be more and more valuable the further it is explored. The vein was first discovered last spring, and runs in an east and west direction for a mile and a half, and is about six feet wide. A thousand tons have been taken out by hand and tested in four mills and different factories at Oakland, San Jose and San Francisco, as well as in Livermore and other towns near here, and the quality has given uniform satisfaction. The coal can now be delivered at San Francisco at a cost of $5 per ton, and could be delivered for $3 if there was a railroad from the mine to the present overland railway, and machinery on hand for hoisting the coal. About a hundred or so yards south of this vein, and parallel with it, lies another vein of coal which has not yet been prospected, but looks on the surface as if it were larger than the first mentioned one. To all appearances there seems to be in these hills an abundant supply of a kind of coal that will be in daily increasing demand in this section as well as throughout the whole southern part of our State. It needs the use of capital to be properly developed.

CALAVERAS.

RICH ORE.—Calaveras *Chronicle*, Dec. 23: We have been shown some extraordinary rich specimens of ore taken from the well-known "Greenhorn" mine, at Mosquito gulch, owned by Messrs Rodgers & Potter. The rock, which was taken from the bottom of the shaft 35 feet deep, is thickly flecked with particles of free gold, forming one of the richest and handsomest specimens we ever saw. At the depth of 35 feet the ledge in the Greenhorn is from 12 to 20 inches in width, all high grade ore. The company now have something like 15 tons of immensely rich rock on the dump, and are constantly adding to it. Former crushings of ore from the Greenhorn have invariably paid largely, but the rock now being taken out will reach higher figures than any previously mined.

MINING MOLECULES.—The mill at the Dunyea mine, lately supplied with a new cam-shaft, cams, dies, etc., is again in motion and isn't likely to "hang up" very soon. The tunnel in the Emerson mine, Happy valley, is completed. Lack of lumber prevents the immediate resumption of operations. Moser is running a tunnel to facilitate the opening of his hydraulic on Tunnel ridge. Veith, piping.

ITEMS from the upper country are slightly "attenuated" this week—as few and far between as angelic calls. Chick & Son have lately discovered a promising quartz ledge in the vicinity of the Lone Star mine, West Point. The crushing of rock from the Champion will be finished to-day or to-morrow. Everything is progressing favorably at the Mina Rica.

MINING.—Calaveras *Citizen*, Dec. 23: Treat & Wyllies' claim, on Gaston hill, near Cave City, is now ready and waiting for water. They have two races to wash through, one on the north and the other on the south side of the hill, and during the summer and fall months have run two powder drifts, and charged the one on the north side with 1,000 pounds of powder and the other with 875 pounds, both blasts doing well and blasting the hill, so that when water is turned on they will wash the dirt very fast. In the drift on the north side of the hill, some very good gravel was found and promises to pay well.

EL DORADO.

ANOTHER BONANZA.—*Mountain Democrat*, Dec. 23: At the Griffith Consolidated mine, near Diamond Springs, an immensely rich development was made last Thursday night. At the depth of fifty feet, in an eight-foot ledge of good milling rock, a seam was struck which is about two and a half inches wide, literally a pepper-and-salt conglomerate of rich sulphurets and free gold—fully as much of the latter as of the former. The quartz is a regular ribboned blue and white, and the ledge is strong and well-defined. Mr. Griffith calculates on quarrying out a five thousand dollar slab from the above described rich vein, in fact this object has probably been accomplished by the time this item reaches the eyes of our readers. We shall take a peep at the mine within a few days, when we will give our patrons further information as to its appearance and condition. We have seen some very rich ore which was taken from the shaft nearer the surface, and equally fine samples from other and remote portions of the ledge, both north and south of the shaft. We are very confident that rich developments will be made in that mine under Griffith's energetic management.

INYO.

THE DEFIANCE.—Inyo *Independent*, Dec. 25: We understand that the Defiance furnace, or furnaces, will be started up for a continuous run directly after New Years, and under such favorable conditions as to leave no doubt but the property will pull through its embarrassments, not only on time, but a month or two to spare. To this end Superintendent Reddy is directing all his energies and best judgment, so we have no doubt the result will be just as intimated.

EMIGRANT COMPANY.—*Coso Mining News*: We hear from Mr. Peter Taylor, Superintendent, that the Emigrant company's difficulties have all been satisfactorily adjusted, and that work will at once be recommenced upon their mines. Mr. Taylor arrived here about 10 days ago, and at once commenced paying up accounts held against his company. Mr. Taylor will at once begin the work of sinking to a sufficient depth upon their mines to demonstrate their permanency and whether the quantity of ore to be obtained from them will warrant the erection of a 20-stamp mill instead of the 10 stamp, as first contemplated. The pipe for conducting the water from the Bureau springs to the mines, where the mill will be erected, is now in San Francisco, having arrived from Glasgow, Scotland, some time ago. The work of laying down the pipe, however, will hardly be commenced before spring, as there are places in the mountains where severe frosts will be likely to interfere with the work. Work upon the mines will be actively prosecuted during the winter, the necessary machinery, timbers, lumber, etc., for the mill will be ordered, and, when the spring opens, but a short time will be required to place everything in shape to send out bullion to a large extent.

CERRO GORDO.—The Union is steadily worked along and considerable ore taken out. Only one furnace, however, is in operation, the upper one having been shut down, probably for all winter. The new shaft also is being pushed along and making good headway. Great things are expected of the latter and it is confidently hoped that a large body of ore will be encountered upon striking the ledge. It has cut already some small strata of ledge matter, but no ore has been taken out. After having reached a certain depth quite a distance will have to be drifted to cut the main ledge. The ore extracted for the last year from the old works could certainly not compare favorably with that of former times, either in regard to quality or to quantity. On an average it has been very low grade and scanty.

LAKE.

OAT HILL.—Lake Co. *Bee*: The superintendent of the Oat Hill mine was in Middletown last week hiring miners. The company expect a full force, and the mine in running order by the 15th of next January.

THE AMERICAN mine has recently changed hands; a company from Vallejo has bonded the mine. Mr. Soper is superintendent. At present there are about twenty men at work. On the first of January next the mine will be in working order, when there will be a force of two hundred men.

MARIPOSA.

FROM MARIPOSA TUNNEL.—Mariposa *Gazette*, Dec. 23: In one of our late issues we mentioned that the vein had been struck by the main heading. The good news then published to the people was a mere idea of what was in store—as developments of the past week have shown. The vein has been prospected for some seventy feet in length, and is nowhere less than five feet wide, while for the greater distance its width is from six to seven feet. Assays and "horn" prospects show a goodly amount of free gold. The latter is quite coarse and of good quality. At any rate, developments have induced the company owning this property to immediately begin—put their stamps in order—and appearances indicate that there will be lack of capacity to handle all the rock which they can command. Already from that part of the vein now opened hundreds of tons of good ore can be obtained.

MONO.

MINING CAVE.—Inyo *Independent*, Dec. 23: Some time last week a couple of miners working on the 150-foot level of the Comanche mine, Benton, were shut off from the outer world by an extensive cave of ore between them and the shaft. A strong force was promptly set to work in extricating them, but which could not be accomplished until after they had been most unwilling prisoners for some 18 hours. They were uninjured, however, and used their picks and even giant powder in trying to work out. Another miner met with a fall of 40 feet, and strange enough, got off without a scratch.

NEVADA.

SHULTZ GRAVEL M. Co.—Nevada *Transcript*, Dec. 23: Out on Banner hill, about three miles from this place, a company composed of Virginia City gentlemen are opening a gravel claim. I. W. Duncan is the superintendent. Work was done on the ground about fifteen years since, but on account of the pitch of the bedrock, and the necessity of going deeper, which the company owning it was unable to do for want of funds, the claim was abandoned. Mr. Honsinger, the President of the present company, was one of the original owners, and knowing that there was good ground there, has organized the present company, with a view to open and thoroughly develop the claim. The company is the same as the one that has opened the Centennial mine in Washington township. Work was commenced five weeks since. An incline is being sunk, and is now down about forty feet. It is the purpose of the company to run down until they strike bedrock, when, if the prospect warrants it, machinery will be put up to work the claim on an extensive scale. The gravel was rich when worked originally, and the company feel confident of opening a first-class mine. There is a large body of wine gravel in sight now, through which the incline is being sunk. The members composing the company are men of means, and can command any amount of capital. Although they reside on the Comstock and know of the fabulous treasure contained therein, they think there is a good field for the investment of capital in Nevada county, as is shown by their purchase and development of two mines in our midst. They are the kind of men needed in the county, and our residents gladly welcome them to their midst. Capitalists elsewhere will, after a while, learn that a better section for mining does not exist on the coast. There is room and opportunity for all of them.

PLACER.

MINING ITEMS.—Dutch Flat *Forum*, Dec. 23: The Elmore Hill, Southern Cross and Polar Star claims continue washing a few hours only each day. The Summerset claim is washing nights only. The Franklin claim is about ready for the first rains, having nearly cleared the tunnels and sluices of the debris occasioned by the powder blast of last week. The Baker claim is still being worked with vigor. One of the powder drifts is nearly completed and a blast will be exploded therein in a few days. The Lakamp claim is now washing a few hours each day.

REMINGTON HILL MINES.—Rhode Island Co. have finished cleaning up, and it is said to have paid well. As the weather remains good for outside work they have concluded to continue ground sluicing until the storms drive them into their drift diggings.

The Wide West Co. are busily engaged laying in a winter's supply of drifting timbers and wood. They are also advancing a side drift across the channel, where an air shaft will be raised, and at which point side drifts will be opened and the ground breasted out in large blocks to the main tunnel. This mine is looking splendid, the gravel in places prospecting as high as two dollars to the pan.

LOWELL HILL MINES.—In the Swamp Angel the main tunnel running east across the channel has been advanced 700 feet through gravel, and as yet there is no signs of rim rock, thus showing it to be very extensive. The breasting out of the large block of ground north of the main tunnel has been somewhat delayed of late, owing to bad air. To remedy this a drift is being run west 180 feet, to connect it with old drift diggings, where a good supply of air can be had; it is being run by four hour shifts and will be completed in three days. Having a very large supply of drifting timbers, lagging, wood, etc., on hand, and the prospects improving as they advance their drifts, this claim may be classed as one of the most prosperous mines in this vicinity. The Wild Cat Co. are hard at work running their bedrock tunnel. Wilkinson Co. will commence work again in a few days. The Fowler Bros., owning 1,000 feet of ground east and adjoining Wilkinson Co., tapped a channel through a bedrock tunnel at a distance of 200 feet, but as the rock dipped heavy into the hill this tunnel has been abandoned. Another will be run considerable lower. Lavey Co. are advancing their bedrock tunnel.

LIBERTY HILL MINES.—Liberty Hill Co. turned on and began washing again last Monday. They are using 1,600 inches of water and working seventeen men. Having a large amount of gravel, shaken up by a recent blast, the work is progressing rapidly and favorably.

SIERRA.

IOWA.—*Mountain Messenger*, Dec. 23: The Iowa company are not quite down with their shaft yet, but will be in a short time, no accident preventing. They have been delayed some by water, etc., but still are progressing fairly.

SISKIYOU.

THE KLAMATH RIVER CLAIMS.—Yreka *Union*, Dec. 23: From parties from Scott Bar we learn that Kettlewood & Co., having worked out all the ground enclosed by their dam, have taken their wheels and machinery out of the river. Within a couple of feet of their head dam they got a splendid prospect, but could not work it this season as it would undermine their dam. They therefore built a dam on it some 24 feet wide at the bottom and 16 feet at the top, to prevent the dirt washing away when the water raises, and will work it next season. Bean & Co. are still working, though they have not taken out much lately. From Mr. Bean we learn that a few days ago they struck a rich prospect again, and he expected that they soon would take out big pay again. He says he would not be surprised if they were able to work all winter now. They got on to a very rich streak soon after they got the claim opened, but shortly after came on to a patch of flat smooth bedrock, which of course would hold no gold. Mr. Bean thinks they have now got over this patch, and expects to strike the rich streak again every day.

GOT A GOOD PROSPECT.—We learn that some men who recently commenced operating an old claim on French bar, on Scott river, struck a fine prospect last week. They took out about $200 in one day. Among it was a nugget which weighed nearly $100. This is highly encouraging, and the party will continue opening the claim, feeling confident that such prospects show plainly that there is something in it.

SCOTT BAR DITCH.—We learn that the S. J. M. M. & D. Co. are making splendid progress with their ditch to take water on to Scott Bar. It is expected that it will be completed to the Bar before long. This ditch will open a large quantity of mining ground and will furnish water to work many claims besides those that the company will work itself. There are many other places in this county which if outside capital would come and put water on would pay largely both the company that builds the ditches and other parties who would buy water of them.

THE EVENING STAR MINE, owing to the freezing up of the water has had to shut down for a week or two. From parties who have lately visited this mine we learn that it still turns out its usual dividend to its lucky owners, and that its permanency as a first-class mine is now beyond a doubt. The ledge, in the tunnel now being worked, is 10 feet wide, and above the tunnel it widens out to 16 or 13 feet. It is a fine solid body of ore with perfect casings and foot walls, and there is enough now in sight to supply the mill for at least four years steady crushing. The rock is of fine color and the pay is very equally distributed. Of course there are some spots which are richer than others, but it is all good for an average of $10 per ton, which about all the ore taken out of this mine thus far has averaged. In the spring, or as soon as the present tunnel is run through the ore body, the owners contemplate sinking a winze in the center down on the ledge to the depth of about 160 feet. A tunnel will then be run in from the face of the hill to tap this winze or shaft. Parties who know say that enough ore can be easily taken out of the mine to run a 12-stamp mill all the year round. The owners contemplate before a great while to make an addition to their milling facilities, as their water privileges furnish them with water enough to run eight stamps most of the year, and the rest of the year they have water enough for an eight-stamp battery and a steam engine. This mine is generally thought to be one of the best pieces of quartz property in the northern part of the State, and as the owners seem to be very well satisfied, they no doubt think so too.

SONOMA.

ITEMS.—*Russian River Flag*, Dec. 21: The Fall claim, Thos. Armstrong superintendent, is being worked. The Bacon mine has a force of men getting out ore; it is expected that Eames furnaces will soon be erected. M. D. Haskings improvements to the 10 ton Eames at the Great Eastern enables the company to turn out three to five flasks of mercury per day. Twenty men are at work at the mine. Mt. Jackson mine has shipped 21 flasks of quicksilver this week. J. S. Shaffer came in from the Mt. Jackson mine this week, and from him we learn that the three furnaces are all now running uninterruptedly.

TUOLUMNE.

TUNNEL.—Tuolumne *Independent*, Dec. 23: A San Francisco company, represented by a practical miner, Mr. Graham, formerly of Mariposa, is about to sink a shaft near the Shaw's Flat road, among the boulders. An overshot water wheel, for pumping and hoisting purposes, will be erected, and a shaft will be sunk for the purpose of "bottoming the boulders," or at least to ascertain the practicability of running a tunnel from Dragoon gulch.

VERY little snow has fallen this winter in the mountains—except during our first rain, which soon melted away. Hunters report not a particle of snow between here and Aurora.

SOULSBY.—We understand that two Burleigh drills are to be put in operation in this mine before long.

Nevada.

WASHOE DISTRICT.

JUSTICE.—Gold Hill *News*, Dec. 27: Daily yield, 330 tons of ore, keeping the mills all steadily running, and laying up a reserve of from 30 to 40 tons of ore per day for use in case of storms or bad roads. Another mill is to be added to the crushing capacities of the mine. The yield of bullion for December will be considerably in excess of that for November, the amount of ore crushed paying much more per ton than it has any time in the past.

CON. VIRGINIA.—Daily yield, 200 tons of ore. Repairing and enlarging the drifts connecting the Gould & Curry shaft with the mine is being pushed with the usual vigor. It will take from ten days to two weeks yet to finish that portion of the work. Nearly three days' time have been consumed during the week in repairing the main drift east at the 1350-ft station, almost entirely cutting off the extraction of ore during that time. No work has been done on the 1700-ft level during the week, on account of the intense heat in that portion of the mine.

YELLOW JACKET.—The east cross-cut from the north winze 45 feet below the 1740-ft level is steadily advancing to the eastward, the face in quartz and favorable ledge formation. An east cross-cut has been started near the north line on the 1940-ft level.

CALIFORNIA.—Daily yield, 500 tons of ore, keeping the mills all running up to their full crushing capacities. The yield of bullion for December will not vary much from that of November. The ore breasts show little or no change. The face of the prospecting drift south on the 1600-ft level is still in good ore. The main west drift on the 1650-ft level from the C. & C. shaft is steadily advancing, the face in rock somewhat harder than at last report.

BALTIMORE AND AMERICAN FLAT.—The upraise on the 650-ft level is pushed ahead, the face following the small vein of ore, which continues of an encouraging character.

NORTH CON. VIRGINIA.—The mine was never in as fine a condition for active development as at present. The new pumps are doing excellent work. Sinking the main shaft is being pushed forward with all possible vigor.

BULLION.—The south drift on the 1500-ft level is still in very favorable ground. The main north drift, on the 2000-ft level in the Alpha ground, is making rapid headway, the face still in porphyry mixed with streaks of quartz.

JULIA.—The west cross-cut from the main south drift on the 1800-ft level is steadily advancing, the face still in quartz and porphyry mixed. The ledge is showing large, well-defined and greatly improved in character on this level.

OPHIR.—Daily yield, 200 tons of ore. The ore breasts on the 1600 and 1650-ft levels show no change. The north drift on the 1700-ft level is showing very favorable ore indications, and the entire prospects of the 1700-ft level are looking more encouraging.

OVERMAN.—The main south drift on the 1200-ft level is steadily advancing toward the Caledonia line, to connect with the north drift from the Caledonia shaft. The station has been completed at the 1400-ft level, and a drift is being pushed rapidly toward the ledge.

NIAGARA.—A station has been opened at a depth of 480 feet in the main incline and a drift started parallel with the ledge.

LADY WASHINGTON.—The drift north from the main east cross-cut is to-day in 52 feet. The whole face is now in quartz, showing good streaks and bunches of ore.

PROSPECT.—Very good progress is being made drifting west at the 400-ft level. The drift is now in 270 feet, and the face is at present in splendid looking vein matter.

ERIE CON.—This mine has settled its financial difficulties, and has been again started into full operation under very favorable circumstances. The location is a good one, and, if well worked, bids fair to develop a good paying mine.

SAVAGE.—A heavy lift pump is being lowered to the 1000-ft station. This pump will be ready to start into full operation in a day or two more.

CALEDONIA.—The bottom of the shaft encountred much softer ground during the past week, carrying a considerable amount of quartz of a very favorable description.

GOULD & CURRY.—The east drift on the 1700-ft level is being put in good repair for more active use.

SIERRA NEVADA.—The prospecting drifts north and south on the 1700-ft level are making steady headway, the face of each in very favorable ground.

HALE & NORCROSS.—The pumps are kept steadily running. The flow of water shows a steady weakening. The cave in the main incline is nearly repaired.

SILVER HILL.—The north drift on the 414-ft level is steadily approaching the south line of the Justice, the face still in very favorable ledge material.

LEVIATHAN.—Cross-cut No. 3, at the 600-ft level, is now in the ore vein, and good assays are obtained from the face.

NORTH CARSON.—The ore prospects at the lowest or 500-ft level are excellent, but further development at that point is discontinued for the present.

CHOLLAR-POTOSI.—Sinking the main incline is progressing two and a half feet per day. Sinking the combination shaft is going steadily forward.

FLORIDA.—Sinking the shaft is making the best of progress, the bottom being in porphyry, mixed with clay and stringers of quartz of a very lively and healthy character.

WARD.—The southeast drift on the 1600-ft level of the Julia, to tap the Ward shaft, is being pushed forward with all the force that can be used.

SUCCOR.—Owing to some unavoidable delays in regard to the machinery the new pumping machinery has not been put into full operation.

UTAH.—Sinking the shaft is making fair progress. The rock in the bottom is very firm, but blasts well.

BUCKEYE.—The north drift on the 350-ft level is showing some very fine ore prospects.

CABINET.—Bottom of new shaft in good looking ledge porphyry, with streaks of quartz and clay.

DAYTON.—The prospecting drifts north and south on both the 600 and 700-ft levels are making the usual excellent progress.

KOSSUTH.—The prospecting drifts on both the 600 and 500-ft levels are making the best of progress, with steadily increasing ore prospects at every point.

NEW YORK.—The enlargement of the pumping compartment of the shaft is being pushed to completion.

COSMOPOLITAN.—Ore extraction and development work generally going ahead well.

WEST BELCHER.—The 300-ft level is showing excellently in good pay ore.

SUTRO TUNNEL.—Material in face of header hard porphyry, with seams of quartz and clay. Total length of tunnel, 14,448 feet.

TROJAN.—The ore developments on the 300-ft level continue of a very fine character.

LADY BRYAN.—All the machinery is on the ground, and good progress is being made with its erection.

BULLION DISTRICT.

ORE.—*Silver State*, Dec. 20: It is customary to get bullion from ore, but Charley Twiss changed the order of things by bringing a carload of ore from Bullion—that is Bullion district—to the Humboldt reduction works yesterday. The ore is from the Centennial mine, on which Mr Twiss has been working for some time past. Bullion district is situated in the range of mountains east of Battle Mountain, and we learn that there are three or four mining companies at work there.

EUREKA DISTRICT.

ADDITIONAL WATER JACKETS.—Eureka *Sentinel*, Dec. 22: The Richmond company is receiving the necessary machinery and appliances for additional water-jacket furnaces. One of them will have a capacity of 100 tons per day, which necessarily makes it a mammoth concern. The tests made by the Richmond with water-jacket furnaces have proven eminently satisfactory.

K K.—All accounts agree that the K K has a mammoth body of ore. It extends from the second to the seventh level, and is of great width. The K K is certainly a valuable property, and the only wonder is that the stock is not selling for more money.

HUNTER DISTRICT.

ENCOURAGING.—Eureka *Sentinel*, Dec. 21: This district is situated in the eastern portion of White Pine county, not far from Ward. Reports from there of late are very encouraging, and it is thought that next season it will rank as a very prosperous camp. Cherry Creek, Ward and Hunter, these three districts promise to do much in the near future towards bringing old White Pine again to the front. The big tunnel into Treasure mountain, being run by the Eberhardt and Aurora company, is also another favorable omen for that section of the great east. Taken all through, the prospects of our neighboring county appear brighter now than for years past.

INDIAN DISTRICT.

WORK RESUMED.—*Silver State*, Dec. 20: We learn that operations have been resumed on the Eagle mine, Indian district, south of Unionville, by a New York company, which has leased or purchased the property. There is a new 15-stamp mill on the mine, built by the Oakland gold and silver mining company. The property is believed to be valuable, and with good management will soon be paying dividends. We have been

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Case-Bearing Moths.

Description of a New Californian Species.

The following paper on the case-bearing moths (*Psychidæ*) with reference to the Californian species, was read at a recent meeting of the California Academy of Sciences by Henry Edwards, Esq. We have prepared engravings of the case and larvæ, which are herewith presented:

Among the whole of the insect races, perhaps there are no more curious and interesting examples than are to be found in the family *Psychidæ*, the species of which, in the early stages of their growth, weave habitations for the caterpillars of fragments of stick, bark, lichens and other vegetable substances, carrying these singular structures about with them .through the whole of their larval stage, and in the case of the female, arriving at maturity, bringing forth her eggs, and eventually dying without once quitting her self-constructed prison. The *Psychidæ* are a portion of the great silk-spinning family of the *Bombycidæ*, but present many characters which are distinct in themselves, and entitle them to rank, as they are now by most entomologists allowed to do, as a separate and well defined tribe.

Though containing comparatively few genera and species they have a wide geographical distribution; examples of the group are to be found in Europe, North and South America, West Indies, Mexico, Ceylon, Northern India, China, South Sea islands, and Australia, being most abundant in the sub-tropical regions of the globe. Many of the species are, however, small in size, and it is possible that a very large number yet await the industry of observers.

In the construction of the caterpillar cases, they manifest wonderful ingenuity, and their houses are even more remarkable than those of the well known caddis-flies among the *Neuroptera*. Pieces of bark, leaves, straws cut to a uniform length, twigs, mosses, lichens and grass, form, among the various species, the outer covering or decoration of the home, while the interior is lined with dense, soft silk, the threads of which are also used to bind together the external fragments. Almost as soon as the larva is hatched from the egg, it begins the formation of its case, never quitting its habitation as it enlarges in size, but splitting it at the sides, weaving into the opening portions of the vegetable matter chosen and adding to the exterior larger pieces of stick, straw or leaves, as the case may be. "While the creature is small, and the house of no great weight, it is carried nearly upright, but when it attains size and consequent weight, it lies flat, and is dragged along in that attitude." The abdominal legs are furnished with a series of strong hooks, by which the larva retains so firm a hold of the interior of its tube that it is impossible to remove it without injury. When feeding, only the head and the first three or four segments are protruded, and if the caterpillar wishes to remain quiet, it fastens itself by strong silken threads to the branch on which it may chance to be; these threads, on a desire for removal, being bitten off close to the case.

It has the power of turning round inside of its case, and when full grown, and about to change to the chrysalis state, it places its head downward, so that when the perfect insect is ready to emerge, it may do so from the posterior portion of the tube. And it may here be said that it is the male alone which escapes from its curious habitation. The female is, in most of the genera, totally unprovided with legs or wings, and is little more than a living bag of eggs, looking, as one author has said, "more like a grub than a moth, the head, thorax and abdomen being hardly distinguishable from each other." Her eggs are laid within the body of the tube, after which operation she dies, the first occupation of the young caterpillars being to consume the body of their mother, "a proceeding almost exceptional in the lepidopterous insects." Having done this, they leave their early home and go forth into the world to follow independent lives.

The males emerge from the chrysalis state in about three weeks, and are dull-looking moths of dark color, generally unattractive in appearance, having the antennæ in some cases deeply pectinated only at the base, and in others, feathered throughout the whole length. They are remarkably swift in their flight, dashing themselves, in search of the females, wildly among the branches of the trees, and as their wings are delicate in structure, in many species nearly transparent, specimens in good order are very rare in collections.

The typical genus *Psyche* is mostly confined to the old world, some 40 species being there known to naturalists. The most striking examples of the group, however, in which the larva case are sometimes four or five inches in length, belong to a genus named *Œceticus*, of which a species named *Œceticus Saundersii* is found abundantly in the West Indies, feeding upon fruit trees, and at times causing considerable damage. A closely allied form is common in Sinaloa, Mexico, some of the tubes of which, together with about 16 species of *Psychidæ* from various portions of the globe, I have the opportunity of exhibiting this evening. I have, however, in my collection, many of the cases, the perfect insects of which are unknown to me, and I may here mention that in confinement it is, from some cause or other, almost impossible to bring these creatures to maturity. During my residence in Australia, one species which, in its caterpillar state, was common upon the *Leptospermum lanigerum* (the tea-tree of the colonists), though persistently collected through several years and watched with incessant care, never reached the perfect stage, and to this day the imago is unknown to me. Nor was this due to the attacks of parasitic insects, as the substantial and somewhat formidable looking houses of the larva rendered them almost impervious to the onslaughts of ichneumons and other insect enemies. Death usually occurred after the caterpillar had undergone its change, the chrysalis gradually drying up after assuming its proper form, nor could any care and attention which I was able to bestow avert this misfortune.

Owing to the resemblance which exists between these remarkable insects and the fasces which were borne before the dignitaries of ancient Rome, one species has been termed the lictor-moth, while others are known as house-builders, sack-bearers, basket-carriers, and like appellations. According to the Rev. J. G. Wood, "the Singalese call them by a name which signifies billets of wood, believing that the insects were once human beings who stole firewood while on earth, and are forced to undergo an appropriate punishment while in the insect state."

The species at present described as natives of the United States are very few, not more than five, belonging to perhaps as many genera, being distinctly known to entomologists. The most common of these is a species called

Cases of Œceticus Davidsonii, attached to the Stem.

1, 2. Chrysalis, removed from its case.

Thyridopteryx ephemeriformis, which, according to Dr. Harris, is occasionally abundant in Philadelphia and its vicinity, and there popularly known in its larval state as the drop-worm, or basket-worm. It is at times very destructive to the arbor-vitæ, larch and hemlock trees. In California, though none as yet have been described, three species are known to me, two of which belong to the typical genus, *Psyche*; the third, and by far the most interesting, which has just been discovered by our President, Prof. Davidson, representing the genus *Œceticus*. It is, however, a matter of regret that at present the caterpillar cases of these three species are alone known, the perfect insects as yet evading our discovery.

Though, perhaps, not quite in order to give names to insects from their earlier stages alone, I am induced to offer brief descriptions of these curious creatures and to suggest the names appended to them, in the hope that I may, by directing attention to the subject, induce observers in various portions of the State to devote their energies to the discovery, not only of the more mature conditions of the species already imperfectly known to us, but to the detection of other forms of these most interesting insects.

Psyche fragmentella. Hy. Edw. n. sp.

Chrysalis case about an inch in length, tapering gradually to its posterior extremity, and composed externally of portions of leaves and bark, mostly ovate in shape, and from one to two lines in greatest diameter, in most cases laid flat on the silken web, and not overlapping each other. Chrysalis pale tawny, shining, smooth, of uniform thickness throughout.

Length, 0.40 inch.

On trunks of pine trees, Strawberry valley, Siskiyou county. Hy. Edw.

Psyche coniferella. Hy. Edw. n. sp.

Chrysalis case a little over an inch in length, thickened anteriorly and composed of fragments of the leaves of pine, about three lines in length, laid in rows upon the silken web, and overlapping each other, in the manner of *P. graminella* and other European species. The fragments diminish in length on the posterior layers.

Grass Valley, Cal. On palings and trunks of pine trees. Hy. Edw.

Œceticus Davidsonii. Hy. Edw. n. sp. (See engraving.)

Chrysalis case about one and a half to one and three-fourth inches in length; stout, a little thickened in the middle, and composed of pieces of sticks or twigs from one-third to one and a quarter inches in length, laid side by side longitudinally, one or two pieces nearly always extending posteriorly some distance beyond the termination of the case. The fragments with which the case is covered are of different lengths, and are about 15 in number, the interstices being filled with wood dust (most probably produced by the jaws of the insect itself,) closely woven into the silken groundwork of the case. The edges of the pieces of wood are always neatly rounded by the insect, and all outstanding branches are bitten off. Chrysalis, with the abdominal portions, light chestnut brown, with the wing cases almost black. It is nearly tubular in form, smooth, with some small hooks on the abdominal segments.

Length, 0.65 inches.

Discovered by Prof. Geo. Davidson on Mt. Diablo, on the branches of *Castaneopsis chrysophylla*, Dougl., (chinquapin chestnut.) I have much pleasure in recording this interesting discovery by attaching to the species the name of our respected President.

It will be observed, both in the present species, and one closely allied to it from Australia, that there are, as I have showed, in most of the cases, some pieces of twigs longer posteriorly than those of which the remainder of the case is composed. It has struck me that these may be intended as a means to assist the male insect, or arriving at the perfect state, to escape from the body of the tube, the twig affording foothold and enabling the creature to draw its somewhat unusually long abdomen from the aperture. I do not state this as a fact, but the subject is worth the observation of those who may be fortunate enough to have the opportunity. I suspect that the cases containing males only have these lengthened sticks, but if this be so, we are utterly at a loss to understand the process by which the creature arrives during the caterpillar stage, at a knowledge of its sex, and so frames its habitation accordingly.

The Engineer.

The Latest from the Jetties.

The New Orleans *Picayune* gives the following information concerning the jetties. It says: We learn that for some time past the channel between the jetties, at the mouth of South Pass, is everywhere more than 200 feet wide for a depth of 20 feet at average floodtide, and that in the middle of this wide channel the depth is more than 22 feet. This is equal to from 22½ to 23 feet at the highest tide at South Pass, when a range of three feet tide, with a channel depth of 19½ feet, for from 80 to 100 feet in width is usually reported at Southwest Pass. Therefore, it is seen that the jetties have given, though yet in an incomplete state, a magnificent channel across the South Pass bar to sea, twice as wide and several feet deeper than has ever been obtained across the Southwest Pass bar. If this is considered as any indication of a failure of the jetty system, then we should welcome all such failures; they are what we should pray for earnestly. All through South Pass, from its head to the jettied channel over the bar, as is generally known, the depth exceeds 30 feet for more than 200 feet in width.

We are informed that the works required to confine the flow of water from the main river, above the common head of the passes, into South Pass, so as to secure a like deep channel entrance to South Pass over the river middle-ground shoal above its head, are being energetically prosecuted, with every prospect of early success. Already, notwithstanding the low stage of the river, the one-dipper dredge boat at work there to expedite the cutting out of a deep channel entrance, has succeeded, as we are assured, in obtaining a depth of inlet of from 20 to 22 feet across this shoal, which the tidal current suffices to maintain and widen. Soon, we are told, two more powerful dredges will be put to work there, and, with three boats working together, an entrance channel across this hard sand middle-ground shoal, of sufficient width and depth for the largest class of ocean steamers, even at the present low river stage may be expected at an early date. With the river at the hight it was three months ago, we would have even now a clear and unobstructed channel of more than 22 feet in depth, from New Orleans to the sea, through South Pass.

The Work of the Engineer.

At the opening of the Edinburgh university addresses were delivered by the respective professors. In the class of civil engineering, Prof. Fleming Jenkin made some remarks in regard to the aims of the profession, and the spirit in which they should be pursued. He defined the work of the engineer as the application of science to the satisfaction of man's material wants, and claimed that every exact science—by which he meant every science the results of which could be numerically expressed—required for its practical application the assistance of the engineer; and if the historical sciences were less exclusively their own than those that deal with numbers, yet, wherever any science whatsoever was concerned with production or distribution, the engineer could not be repelled as an intruder. No man, he submitted, who loved exact knowledge, could fail to find scope for the exercise of his intellect in the practice of the engineer, and that practice, moreover, was curiously suited to men of the most opposite temperament. Two conditions, and these only, were needed. The man must love his work, and have ability to perform it. In answering the question, whether the engineer may find in the exercise of his profession the solid pleasure of believing that he is working for the general good, Prof. Jenkin said: "By our work we feed mankind, we clothe mankind, we house mankind; through our work deserts are peopled, and old countries teem with a new life. We promote wealth, which, in its simplest sense, is but well-being. Let who will look backward on a past golden age, enveloped by a haze permitting imagination to people its pastures with idyllic beings; we face the present with faith in a future molded by knowledge of the truth. If the husbandman does well, producing food, the engineer, doubling that food, does better. When the engineer cheapens cloth he betters the condition of man more than if he halved his cloak with a beggar. To cheapen dwellings is better than to build an almshouse. I almost relinquish speak of the more direct benefits he confers by giving pure water, fresh air and cleanliness to the dwellers in towns. The direct action of the sanitary engineer is more visible, but is not really more beneficial than the work of all other branches of the profession. The man who, by a better form of bearing, diminishes friction, thereby cheapens production and clothes the poor. We miss the direct sense of alleviated suffering which must be the physician's chief reward, but yet our steamers fetch his drugs and our mills prepare them. The arts which are concerned in the production of beauty are all, save one, strangers to us, and even though the province of architecture is our natural heritage, we have failed to claim our right. Lastly, I believe that I am making no idle boast when I claim that if we, as engineers, labor diligently in our vocation, whether our opportunities be great or small, we shall not labor in vain."

French Engineering.—The project of a great maritime canal between the English channel and the Mediterranean is being more and more considered in France. The delegates of chambers of commerce have, it appears, formed themselves into a commission to promote its execution, and have explained the project to various members of the national government. The Minister of Finance asked for a sketch of the necessary works and the cost, and the Minister of Public Works has acknowledged the advantage of a canal serving for vessels of 250 or 300 tons. It seems that, in regard to the financial aspect of this undertaking, the commission, adopting the estimates of the most reliable engineers, put the cost at some 65,000,000 francs, or about $13,000,000, of which $3,000,000 will be expended on the Seine and the Yonne, $2,000,000 on the Burgundy canal, and the remainder on the Rhone, these being of course the approximate amounts. The depth would be 13½ meters on the Rhone and two meters elsewhere. The locks would be uniformly 133 meters long and 12 broad on the canals. Transshipment would in any case be necessary only at Lyons. As to the length of time required for such a work, the engineers' estimate is six years, provided no unusual difficulties present themselves.

A Chance for Railway Builders.—The *Railway Age* says: American railway builders who are out of a job at home may find it profitable to take a look into the southern hemisphere. The fever for railway enterprises has broken out in the Australian colonies, and several of the colonial governments are taking a direct interest in some of them. The South Australian government proposes to build seven lines, with an aggregate length of about 400 miles, at a cost of $10,000,000. New Zealand proposes to borrow six and a quarter millions for a similar purpose, and Tasmania and Victoria are discussing legislation in aid of railways. The entire mileage of railway in existence in all the vast countries of Australasia at the close of last year was as follows: New South Wales, 459; Queensland, 368; Victoria, 674; South Australia, 274; Western Australia, 50; Tasmania, 45; New Zealand, 257; Tahiti, 21: total, 2,148, or about as many miles as have already been built in the frontier State of Minnesota. If any one will take the atlas and get an idea of the enormous area of these southern lands, and the possibilities for development which await them, he will see that there is an excellent method in the madness, as some might call it, in these regards of the Australasians.

The Northern Pacific.

The *Rollway Age* says: The directors of the Northern Pacific railroad do not seem to have lost faith in their enterprise, notwithstanding the cloud under which it rests. Mr. Stark, the vice-president, who has recently returned from a journey across the entire line, states that much of the country between Fargo and Bismarck, from the Red River of the North to the Missouri, the present terminus, is in good forming land; and although that beyond, in Dakota and Montana, is generally treeless and dry, he thinks that by irrigation it can be made good grazing land. Heretofore only the Minnesota division has been operated during the winter, the Dakota division of 200 miles having been abandoned on account of the driving snow storms, the intense cold and the lack of sufficient business. The receipts of that division, however, having increased during the summer to about $12,000 per mile, and the war department being desirous of keeping communications open, the railroad company will make the effort to run their trains—doubtless to the great joy of the settlers along that dreary 200 miles to whom the absence of the locomotive through the whole bleak winter must be a great privation. From Bismarck it is expected to run stages to Deadwood City, in the Black hills, whether there still seems to be a flow of sanguine gold hunters. The Government grant to the Northern Pacific railroad company, under which 555 miles of the proposed 2,000 have been built, has about two years to run, but the company hope to obtain an extension of eight years, which, considering the formidable character of the enterprise, does not seem unreasonable.

SHIP CANAL NEAR THE GULF OF MEXICO.—The Austin *Statesman* says: The most intelligent citizens of New Orleans, and of cities along the Mississippi and its tributaries, have organized a chartered corporation with a capital of $5,000,000, for the purpose of excavating a slack-water ship canal from New Orleans itself to deep water in Barrataria bay. The boats that have preyed upon New Orleans commerce till commerce died of the plague will themselves be no more. Galveston and cities along the southern coast of Texas would be enriched by this ship canal, which lessens the commercial distance between New Orleans and Galveston nearly one-half, and for the reason that it would lessen the cost of traversing this distance in sailing vessels more than half. But the great and effected would be discovered in the reversal of the commercial map of the South. Trade and traffic and travel from the Ohio and Missouri, and the whole wealth of the country on either side of the Mississippi, the very day that Cowdon's slack-water canal may be opened, would be turned south from the east. The new and the old northwest would alike come down the river and down the railways across Arkansas and Texas to find access to Europe, the West Indies, South America and Mexico, through Southern seaports, and through these would the South receive the products and merchandise of the exterior world. It is a splendid vision of a magnificent future.

GAS WELL.—The new gas well at Beaver Falls, Pa., has been cased 805 feet with 10-inch casing, and 405 with eight-inch. A splendid stream of salt water has been reached, which yields a very fine quality of salt, one gallon of water producing one quart of salt.

New Gold Diggings.

Barney Hughes, the well-known prospector of Montana, John R. Murphy, the first sheriff of Sweetwater county, Wyo., and Henry Lovwell, a noted prospector, have found ten dollor diggings on the head of Big Wind river, 15 miles south of the United States Government graded wagon road which leads from Camp Brown to the Yellowstone national park. The diggings are 120 miles from Lander city, and about 150 from Franklin, Idaho, the terminus of the Utah Northern railroad; and the camp of the finders is about the southern boundry of the park, at the eastern base of the Two Ocean pass. The discoverers report an abundance of gold everywhere throughout a basin 30 miles in extent. The only drawback is the depth to bedrock. The formation of the country is granite, black slate and porphyry, with basins of washed deposit. There is abundance of water, grass game and fish. Grizzlies are numerous, and the buffalo winter in that vicinity. The discoverers are men who have panned out their barrels of gold in the West, and are not horseback prospectors, but dismount camp for weeks and sink holes most industriously. The Wind river valley, as near the camp as Bear buttes, just east of Bull lake, is a fine agricultural country, and the river bottom is not simply fringed with trees like most Western streams, but is heavily timbered. The camp is called "Rawacaboo."—*Montana Herald.*

A FALL of meteoric stones took place near Stalldalen, in Sweden, June 28th, between 11 and 12 A. M. Twelve fragments have been found, one of which weighs four and one-half pounds. A spectator affirms that a very intense whistling was heard, accompanied by a light which was very distinct, though the day was clear and cloudless. Two very loud explosions were heard, [succeeded by one less violent, after which eight or ten persons saw the meteorites fall.

Useful Information.

Hints for the Apprentice.

No workman who receives compensation for his services has a right to forget how to do that which he has been shown how to do; nor is workman working for wages has a right to do anything without thinking about what he is doing, and to think out why or the reason for the way he does it. The habit of forgetting is a bad habit; working without thought is a bad habit; and bad habits in the use of tools are common. It is a bad habit to follow, this striking at a nail with a hammer and missing it; cushioning the blow on your thumb, not so particularly bad on account of the thumb, but it is a waste of blows. Striking at a chipping-chisel and missing it, allowing the mechanical energy stored up in the hammer to expend itself on your hand is not good policy, as it is a loss of time; and striking over the chisel so that the blow is received from the handle is not good practice, as that part of the handle "is not worth a cent" to drive chipping chisels; and besides, handles are limited in their endurance, and to keep up the repairs is costly. In forging, all the blows, of either hammer or sledge, that stop on the anvil do not perform useful work. Using the middle of the file only, when it is made to cut the whole length, using a new file to clean castings, and using a file to do rough work, are bad habits. Using a chisel, lathe or planer tool, or any tool that can be ground, dull, when there is a grindstone running near by, is not the best thing to do; and leaving your tools lying around anywhere, your machine unclesued, the benches in confusion, is a shockingly bad habit.

It is a bad habit to do anything without thinking why you do it that way. If told to do a thing in a certain way, do it as you are told; but, while doing it, think out why you do it in that way. If by the time you have it done you are not satisfied as to why it is done in that way, ask why. If you are given a job and not told how to do it, think out "how and why." There are usually two or more ways to do any piece of work; if one way is better than another there are good reasons to be found for it.

This bad habit of centering a piece and forgetting to see whether it was true, putting it in the lathe and forgetting to drill and countersink the centers, commencing to turn and forgetting to square up the ends, commencing to turn and forgetting to take into consideration whether the piece is large or small, iron or steel; forgetting to set your lathe running faster as your piece grows smaller; strapping a piece on the planer and forgetting to pack it up so as not to spring it, planing down the side and forgetting to turn the tool-post over sideways; trying to make a finished job and forgetting to file off the scale on the corners of a casting; cutting screws and forgetting to oil the dies; running your milling machine and forgetting to oil the cutters; drilling and forgetting to center the drill first; running your machinery all day and forgetting to clean and oil the slides and bearings; all these things are every-day reminders of forgetfulness, but still this is a habit less excuseable than that of working without thinking. Another common specimen of bad habits is the screwing up of every bolt or nut as tight as it can be turned, whether it is necessary or not; when, by thinking what you are about, many times you would see that a single turn of the wrench was sufficient. If we would put a little less tension on our bolts and nuts, and a little more on our thinking and reasoning powers and memory, we would have fewer bad habits and it would be better for us.—*Prof. J. E Sweet.*

Relation of Oil to Power.

The function of an oil when used to lubricate is to lessen friction, and the more perfectly that it is done the more thoroughly is its purpose accomplished. Resistance to motion by surfaces in contact is modified firstly by the nature of those surfaces, secondly by their area, and lastly by the weight or force imposed upon them. Exactly why oil should be a lubricant any more than water or a mucilaginous or emulsive body has not as yet been determined, and what its molecular condition has to do with it is not yet definitely ascertained. Oil applied between two surfaces or bearings, fills the superficial pores of the metal and forms a film between the surfaces and thus keeps them apart, and the particles of oil are made to move amongst themselves and keep these surfaces from absolute contact.

Too little attention is paid by users of machinery to adapting the quality of the oil to the work to be done; for instance the cotton or woolen mill which uses lard or so called "heavy" oil on their engine and spindles would find the latter absorbing or destroying much of the power of the former simply in overcoming the resistance due to the viscosity or "heaviness" of the oil itself, for we must remember that the absolute resistance of the spindle is but slight, and even a slight adhesiveness due to the oil itself, would almost equal the normal resistance of the unoiled spindle.

Then again, the tendency to gum or thicken of the oil in question adds to its undesirability, and when we see this resistance multiplied by the thousands of spindles at work we can imagine the drain of power simply in overcoming the resistance of the oil. Paraffine oils and other refined derivatives obtained from petroleum are peculiarly adapted for all this work—heavy or light—for by a judicious admixture of them with animal oils for the purpose intended an oil may be obtained suitable for any work. In this class of oils the tendency to gum or oxidize is checked, as the petroleum holds in solution the other oils, and being non-evaporative and non-oxidizing itself, it imports those properties to the oils in combination.

The skillful manufacturer can now produce an oil which will run a watch or clock or sewing machine, and all the way up to the ponderous journal exerting tons of weight on its bearing, but we are yet to see whether the wants of an age demanding the most ponderous machinery and rapid motion will produce an oil with which to lubricate it. Fortunately in this country we are not called upon to devise a substance to lubricate the bearings of huge vessels of war as our English cousins have to do. The time may come when Yankee ingenuity and skill may be put to the test to produce a vessel and armament which will dwarf their new iron-clad, the *Shah.*

The crank bearings of brass and white metal of this vessel became so heated as to "melt and run" from the enormous strain imposed upon them. By using a phosphor bronze instead of the former metal this objection was somewhat overcome, but with the development of her 7,500-horse power it was found that while the phosphor bronze bearings became heated and cut they did not fuse and run as with the former metal. Now the British admiralty want an oil to prevent this excessive heating. Who can supply it?—*American Manufacturer.*

FIRE-PROOFS.—Jane Grey Swisshelm writes from Leipsic: "The double floors which are universal here ought to be so with us, for the space between is filled with ashes; so, with thick partition walls, it is next to impossible to burn a house down. I am told they have no fire-engines in Germany, and do not fight fire with water, but with ashes, clay, sand, old mats and axes. There has not been a fire-alarm in Leipsic since we came to it, which was the 27th last April."

HONEY AND ITS FALSIFICATIONS.—Max Singer says: Starch, bean flour, sand, gum, mucilage and gelatine are used as adulterants of honey. They are readily recognized, as they all thicken on heating, while the pure honey becomes thinner under those conditions. The addition of water alone is detected by the density, seven deciliters of genuine honey weighing one kilo.

Good Health.

Nervousness and How to Overcome It.

From an article on this subject in the *Herald of Health*, we make the following extracts:

The symptoms of nervousness are too many to mention, and vary in different subjects. The patient knows and feels he is ill, but cannot tell where or how. He becomes fretful and peevish and angry without a cause. He is easily startled, complains of irregular action of the heart, sleeps badly, and this loss of sleep spoils the next day's happiness. Resolution and courage fail, memory is impaired, he becomes tired and easily confused. He is subject to fits of melancholy, continually makes himself unhappy. He looks on the dark side, and seems to have no silver ray to line the clouds of life. If the nerves of motion become weakened the sufferer has little pleasure in either bodily or mental exertion. The appetite fails, becomes capricious, inconstant; the patient complains of a bad feeling, a pain in the head, flatulence, irregularity of bowels. Woe be to him now, if he flies to alcohol to stimulate his failing powers!

I shall not here enter into the symptoms of hysteria, so often the result of nervousness in both men and women.

Now, from whatever cause or combination of causes nervousness has been produced, if happiness and health are to be restored, the causes must be removed and the injury they have caused be repaired. For in proportion to the weakness of a man's system and the enfeeblement of his nerves, will be the liability of his falling a victim to other and more fatal maladies; and thus it is that every day we find such diseases as bronchitis, consumption, Bright's disease, brain disease, and insanity following at the heels of nervousness.

The indications for treatment are fourfold. First, we must remove the cause, restore the tone of the heart, improve the blood. All injurious habits must be given up; late hours and intemperance in eating abandoned; smoking, if practiced, stopped. This done, the patient is on the road to a cure, for nature is very kind when she has a chance, though she is dreadfully ornel when abused.

The food is most important. It must be abundant and wholesome—neither too much nor too little. It should not be sloppy, and soups had better be avoided so long as solid food can be taken. Rise from the table feeling you have had enough, but not oppressed with what you have eaten. Many a man has lived to old age by following this rule. The bread should be stale, and no very heating food taken.

Eight hours' sleep should be taken every night if possible. This alone will nearly cure. "Early to bed and early to rise," should be the motto. Sleep is the salvation of the nervous system. When there is strength, a cool bath, short and quick over, with much friction under a sheet, should be taken every morning, and a reaction secured. Without a reaction much harm results.

The exercise should be moderate and pleasant. Riding, driving, rowing, light physical labor, are all good. Breakfast early, dine at one or two, and sup two hours before going to bed; drink no tea.

Take no narcotics to make you sleep. A few raw oysters before bedtime are worth all the narcotics in the world, are easily digested, and furnish material for restoring nervous tissue and blood. If you wake up in the middle of the night, sometimes a small, stale biscuit eaten will send you off to sleep again.

A change of scene, air, and cheerful society, with sea-bathing, are excellent agents for curing nervousness.

Avoid physic—it exhausts the tone of the system, the very thing you would restore.

Above all, keep up a good heart, and a firm reliance on the great Author of life.

Metallic Poisoning.

Some years ago a superior sort of candles was introduced, which looked well and gave a remarkably clear, bright flame. But people who used them became affected with strange symptoms. The doctors were consulted, and it was found that the candles derived their attractive qualities from arsenic being used in their manufacture in such quantities as to be dangerous to health—if not to life. The fact was made public, the new candles being nicknamed "corpse candles;" and they proved, no more than the dog of the story, able to survive the imposition of an ill name. They disappeared, but have reappeared in Paris, where a rich lady, living in a fashionable quarter, lately became ill in such a way that she was supposed to be suffering from slow poisoning. The doctor who was called in found, one morning, the water placed by her bed covered with a thin film of arsenic. She had been in the habit of reading in bed, and the candles she used having been examined were found to be of dazzling whiteness, a whiteness, however, as was shown on analysis, caused by the admixture of arsenic, which, being volatilized during the process of combustion, had poisoned the air of the room. They were corpse candles. When once an article of this kind gets into the market it is very difficult to exclude it, as has been shown in the case of arsenical wall paper and other poisonous fabrics. Lead compounds, again, are very dangerous and insidious. The workmen in the manufactories in which they are prepared suffer greatly from their poisonous nature, and there does not appear to be any practical remedy. Lead poisoning in manufactories and workshops can only be prevented ultimately by a variety of minute precautions which it is very difficult to get workmen to take. A curious instance of lead poisoning was recently reported from St. Mary's hospital. A cab-washer, who was in the habit of working all night and leaving off when the public houses opened, had also acquired the habit of having a glass of beer or gin at that hour, and it was generally the first served in the house, so that he usually got the liquor which had remained all night in contact with the lead of the draw pipe. When taken to the hospital the poor man had completely lost the use of his upper extremities, and his voice was reduced to the merest whisper. His gums showed the well known blue line indicative of lead poisoning, and some of the gin which he had drunk, being tested, gave 1.430th grain of lead per fluid ounce. The well known proverb promises the worm to the early bird; here the early bird has had a narrow escape from the worm.—*Iron.*

Antidote for Poison Oak.

J. H. Sherman, M. D., writes as follows: Some years ago Dr. W. F. Jackson published an antidote for bee stings, mosquito bites, and, I believe, for the bites of insects generally. The information has been of great service to me, for it always relieves. Aqua ammonia, applied to the part affected, is the remedy. To compensate for this and other valuable hints for practice gleaned from our journals, I wish to call the attention of the profession to a sure antidote to the effects of poisoning from *Rhus toxicodendron* or *R. radicans.*

The antidote is fluid extract of *Aristolochia Serpentaria* (Virginia snake root), applied by means of a large camel's hair pencil. If applied on the earliest manifestation of the poison it will arrest the symptoms at once. My first trial was with a lady patient on Newton street, Boston. She was a fair skinned, light complexioned, delicate woman. At my first visit her face was so swollen, blistered and mottled that her best friends could not have recognized her; so badly were the integuments of the eyes swollen, that she could not see. She had a high fever and much burning, smarting pain over the face and in the head. My prescription was Bell, and local application of a weak solution of the acetate of lead. The husband of the lady aroused me early on the following morning, saying that his wife had passed a sleepless night, and desired my presence immediately. I found her in great agony, and on further investigation it appeared that the disease had been aggravated by the lead work. The extract of Serpentaria was now applied, and with the effect of producing almost immediate relief, so that in a few minutes the patient was quite comfortable. On the following day the inflammation and swelling had diminished to a degree which was to me a matter of surprise, and in a few days desquamation took place and recovery was complete.

Since the above case was treated I have used the remedy in other cases and with like results.

MINING AND SCIENTIFIC PRESS

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Our latest forms go to press on Thursday evening.

San Francisco:

Saturday Morning, Dec. 30 1876

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SMELTING ORES.—Advices from Lima state that a new process for smelting ores has been introduced there. The item says "the process seems to vary from others merely in the fact that crude petroleum and superheated steam are employed in smelting ores. The heat generated is said to be immense. Experiments so far with refractory ores, both copper and silver, are very successful. The process takes much less time than that needed for ordinary methods, and a larger percentage of valuable metal is saved, little being lost by volatilization on account of the intense heat." The last few lines make us think that the writer is a "little off" in the knowledge of what he was writing about. The meager description given is unsatisfactory, but it strikes us that it may be the same process which was introduced here a few years since and made such a lamentable fizzle. They got intense heat in that, we recollect, and there was a small lead mine going up the chimney while the fires were running. Crude petroleum and superheated steam were used in that process as in this, but if the good people of Lima make no more out of the "new process" than we did on this coast they will not get rich very fast. Some of our good citizens were considerably out of pocket in trying to make the thing work here after buying the patent, and if the miners in Lima do not look out they will come to grief also.

MEMBERS of the New York Stock Exchange are not permitted to become members of the American Mining Board.

THE product of the leading mines in November was $3,554,262, of which $1,500,000 was gold.

THE SUTRO TUNNEL has cost, so far, the sum of $2,623,900. About 10 feet per day is now made.

The Mining and Scientific Press for 1877.

With the year 1877 commences the thirty-fourth volume of the MINING AND SCIENTIFIC PRESS. The paper has been established for so long a period of time that it is well known throughout the country, and we have no occasion to call attention to its continued and prosperous existence. The PRESS enters upon the labors of the ensuing year with strength, confidence and trust.

It will be the first year of the second century of the Republic. The indications are throughout the country that the years of depression are at an end, and that brighter days are dawning. It is believed that the Centennial resting and sight-seeing will mark the close of the era of the recovery from war curses, and that the clouded industries of the country will shine forth anew in a real and substantial prosperity. The year 1877 will be a year of work and of fit rewards for the toil.

The PRESS enters upon the work of such a year with renewed energy and in possession of the advantages which our work hitherto has gained for us. We shall give our journal a brighter face by means of a complete new outfit of type and other mechanical appliances. We have also in view improvements in our engraving department which will enable us to increase and improve our presentation of original themes in illustrations. In paper, press-work and all the matters which go to make up the mechanical appearance of the PRESS, the future shall surpass the past.

In the editorial conduct of the PRESS we shall labor with full enthusiasm and with untiring energy. We are full of belief in the principles and progress which we advocate. It is our ambition that every column of our paper shall contain something in thought or fact which our patrons will find of real value to them. Our work is done with the greatest care and watchfulness and with a full eye upon all sources whence light can come upon the industry in the promotion of which we are engaged. This policy is expensive, because of the labor which it demands. It would be far easier to fling together a weekly issue of the trash which rises uppermost in daily doings, and inflict it upon readers, but such a sheet would not answer our ideal. We search for that which is good and useful, and which has in it the quality of true success and progress, and nothing short of this standard is accepted. Upon this method of our work we believe we are gaining the success which is now attending our effort.

We take pride in our work for the good which we aim to accomplish. It is noble to labor in the cause of industrial progress and to think that the PRESS is a permanent agency from which earnest practical men can draw aids for their undertakings, and strength for their lives and hearts. We believe that labors such as we undertake are for the benefit of the community and result in far more general good than the most labored treatises issued in the interest of corporations and political parties. In these features of our work we feel that we have the full sympathies and approbation of our readers, and we believe that they may feel satisfaction in having contributed to build up a journal in which the truest interests of our coast receive fitting recognition.

Aside from these general considerations we have at this time special words to speak. While the clouds refuse the rain there is a feeling of lack and distrust prevailing. Some of the miners are becoming uneasy lest the clouds refuse to pour forth their usual abundance so that the mountains may store it up for future use. The depressed condition of the stock market is not likely to last forever, for it has been in just as bad a state before and still recovered. Although an unfavorable season is by no means to be feared yet, because the remedy may come speedily, we beg our readers not to allow any present unfavorable outlook to prevent their renewing any subscriptions which may expire with the year. There can be no doubt that if the season should disclose hardships the PRESS would be more than ever a friend and wise adviser. A man who labors in the face of disadvantage labors a thousand times as effectually if he have the aid of a thousand experiences to supplement his own. It shall be more than ever our task to furnish information which shall be valuable to those who struggle in the face of adverse conditions.

With the new year we should have at least 5,000 names added to our list, and each one of this number will aid us in the further improvement of our journal. A true newspaper is a great co-operative concern in which all readers are stockholders, and the more stockholders we have the more we can spend in pushing our paper forward in qualities of excellence and usefulness. Will not all our friends aid us to this end? We are indebted to them for many favors both to us and to our agents, and all these are appreciated. We ask a continuance of these valuable aids to our success, and look upon those who grant them as co-laborers with us for the good at which we aim.

A New Mining Bill.

The telegraph informs us that O'Neil, of Pennsylvania, has introduced in Congress a bill proposing to amend the mining laws, so that any person, association or corporation may own adjoining or adjacent claims in any mining locality. Said owner may include in the application for a patent all of said claims, provided that the amount expended for labor and improvements on any one or more of said claims shall equal in the aggregate the full amount now required to be expended on each separately. And after said application is filed, and pending the issuance of the patent, no further labor on said claims shall be required to hold them. The bill is now before the House mining committee.

The members of Congress from this coast are pretty well posted on mining matters and we should judge look out pretty sharp for the mining interests, so that there is little fear that any bill with disadvantageous features will pass without close scrutiny. As far as the brief telegram above describes the new bill we see nothing injudicious in it. As long as the full amount of annual expenditures is disbursed in any one claim of a bunch of them which belong to one person or combination, we see no reason why they should not be covered by one patent. It is very often inconvenient in such case to do a little work on half a dozen claims which might as well be done on one and to more advantage. Frequently four or five claims may be developed through or by means of one claim and the work done on that may do more to develop the others than little patches of work done on each of them.

The silver question and the big bonanzas have had the effect of drawing the official attention of the Government more to the mines than has ever before been the case, and there is no fear but that by proper representation the rights of the miners will be fully respected and every assistance given to the proper development and encouragement of the industry. The country looks to the miners for its supply of hard coin, and will do nothing to hinder the good work they are doing in getting it out of the bowels of the earth. The only features in changing the mining laws of late have been that the Government seems to be trying as much as possible to have the miners patent their claims. Most of the late legislation has a tendency to simplify the process and lessen the expenses of patenting. This feature is a good one, as it tends to establish permanent and undisputable title to mining property, so that it can be sold or bought on the same terms as other real estate. While we by no means desire much "tinkering" with the mining laws, whatever shows a desire to simplify them is commendable, and we at present see no reason to oppose Mr. O'Neil's amendment.

Index of Vol. XXXIII.

The close of a volume of our newspaper is a point of interest both to editors and readers. It marks the end of a period of newspaper life. As the index is prepared it stands as a review of the months through which the periodical has passed, and indicates the channels in which the types have had their course. It is a matter of some surprise and much gratification to us to be reminded by the solid columns of the index of the myriad of topics which we have presented during the last half year. They cover all the branches of home and farm life, and are so varied in their subjects and method that we can be sure that they have touched the many minds which are embraced in our wide circle of readers. The index reminds the reader of the fact that a volume of the PRESS is a treasury of much useful information, apt suggestions and earnest thoughts of life and purpose. This cannot well be otherwise, for many are the pens which have flown in our service during the past six months. As the editor looks over the index and notes the subjects, thoughts of the writers in their widely scattered homes come to mind, and he is prone to thank them again and again for the hearty assistance which they have given in the work of the volume.

To the reader the sight of the index will be very grateful. To the very many subscribers who save their papers carefully, the index comes as an aid to reference and they may now close and bind their files confident that they possess the key which will open to them desirable things. Although the index marks the close of a volume it is no indication of cessation from work and interest. For already the labor upon No. 1, Vol. XXXIV. is in rapid progress and if the new comer does not please our friends better than the one to which we now say good bye, it will not be because we have not tried to make it excel.

QUICKSILVER.—The receipts of quicksilver at this port for the year, up to December 1st, aggregated 57,600 flasks. The receipts in November were 6,951 flasks—the greatest number in the year. It is estimated that 500 flasks per month are sent to the Nevada mines from the quicksilver mines. On this estimate the *Bulletin* figures up the product of our California mines for eleven months at 63,100 flasks—the largest production ever before made by the coast. Quicksilver is lower in price now than it has been for some years, the rate being 50 cents per pound.

The Drainage of the Comstock Lode.

[Written for the PRESS by P. AUG. HUMBERT.—No. 4.]

Method of Raising Water with Underground Steam Engines.

The defects I, II and IV of the surface engines and usual pit-work, led principally to this class of engines, which they remove very effectually. Hardly no momentum exists, consequently much greater speed can be derived, while the pit-work consists of only the pump column, taking up no room and subject to no wear and tear; no heavy weights move in the shaft so that caves cannot happen through the working of the machinery.

Under the following circumstances they are to be recommended:

I. Where sinking is concluded.

II. Where the mine waters are cold enough to be used for condensation.

III. Where too great quantities of water such as to flood the machinery are not liable to be struck.

It will immediately be seen that this system is not adapted to the Comstock mines, still we will not pass this class of machinery without examining closer its defects and merits, as it may, if not in this locality, be well adapted to others.

Fig. 21 represents the appliance of this system.

The compound engine works the force pumps, which throw their water by the column *A* to the surface; while, say 50 feet deeper, is placed a hydraulic engine *H*, which receives its water as motor through the pipe *c*, which is connected with a pipe *A*; consequently the engine is worked by the total pressure given by the weight of the water column to the point *c*. The water which works the hydraulic engine is returned into the discharge of the hydraulic pumps at *d*, and with the actual amount of water to be lifted from the mine is thrown into the tank *f*, from which it is taken by the force pumps of the steam engine, and thrown to the surface.

The hydraulic engine is only a means to prevent the steam engine from being flooded, and is placed at the sump, where, even should it be under water, it can continue its work.

An objection is raised against this system by some on account of the condensation of steam, but this is of little consideration, for really a small benefit is derived when the weight of the column of steam is compared to the condensation which occurs when the pipes are well covered. An economy is certainly effected in the maintenance cost, when compared with the speer-rod system.

Conclusions.

I. The advantages which this system of engines have is to do away with all the momentum of the pit-work, consequently they can be run at greater speed.

II. Not so much danger of breaking any of the parts.

III. A saving in ruining expenses.

The idea that the valves of the pumps do not work well with such lifts is a mistake, and one of the best proofs of their success is the large number being erected both in England and on the continent.

III. Hydraulic System.

We have seen that while the underground steam engines removed some of the difficulties of the speer-rod system, yet there were others incurred in the work to be performed on the Comstock, which are of such a serious character that they cannot be advocated for this section of country.

There only now remains one other method which allows us to solve the problem, and that is the usage of hydraulic power. This system, while combining all the benefits of the underground engines, removes all the defects of the speer-rod system and enables to control with safety and economy the largest quantities of water at the greatest depths. The principle of this system is to substitute an artificial for a natural head of water, and to use this acquired power to raise the water from the mines. The water of the system is therefore simply used to transmit power in the same way as steam or compressed air. The machinery consists of four distinct parts:

I. On the surface, steam engine, boilers and pumps to accumulate the water power.

II. Accumulator or receiver of the water under a certain pressure and for its distribution.

III. Conducts or pipes which transmit the water under the required head, and return it to be re-employed in the system.

IV. Hydraulic engines and pumps, which do the work required in proportion to the transmitted water power from the surface.

Fig. 22 represents an appliance of these parts and shows the working of a hydraulic system.

A compound engine, *A*, works the accumulating pumps, *C*, which throw their water through the pipe *a*, in the accumulator *B*. The piston of the accumulator carries the box *F*, in which is put sufficient ballast to give the required pressure to the water, which is then led through the pipe *H*, into the mine and to the hydraulic engine *K*, and after usage returned by the pipe *G* to the tank *E*, from whence it is taken by the accumulator pumps to be used over again. By the forward and backward motion of the hydraulic engine water is pumped by the pumps *c'* and *c''*, and thrown through the pipe *L* to the surface. The pipe *M* discharges its water in the sump of

the engine *K* from the station below, aad the pipes *N* and *O* serve to work tbat engine, heing the continnance nf pipes *H* and *G*.

The stations are from 600 feet upwards apart; this distance is what determines the pressure to be used in the accumulator.

The sinking is done by placing a hydraulic engine at the last station and using speer-rods till the next station is attained, then the usual system is laid and the sinking engine moved down 600 feet more to recommence the work nf siaking the shaft.

No objection can he raised ngainst tbe lift of, say, 600 feet hy the pumps, because the pressure on the pump valves is often for underground steam engines 1,200 feet, aad nn inconveniences have been noticed. An objection is, however, raised to the pressure on the valves of the hydraulic engine, but this pressure does not actually exist, except in the pipes nnd cylinder of the hydraulic engine and is not therefore an injury to the wear of the valves, hut only a question of enongh metal to resist it.

Supposiag a system working with an accumulated pressure nf 600 pounds per square inch, at 600 feet depth, the pressure ia the pipe of the hydraulic engine would he 600 pounds, plus the weight of the column of water. For 2,000 feet in depth the pipes would have to resist a pressure of 600 pouads, plus the weight of a column of water of 2,000 feet, or taking 30 feet to equal 15 pounds per square inch, the pressure for any inconvenience; this difficulty is therefore removed.

II. The weights moving in the shaft being only water through pipes, creates no jar tbat might occasion caves.

III. The pumps can he run nt different velocities, not being connected together, hy admitting more water to the hydraulie engine.

IV. The pit-work in the shaft, consisting only of pipes, does not take up so much room as not to be able to add one or more systems if necessary, without removing the nld one.

V. If the system is calculated for 1,000 feet, and it is required to reach 2,000 feet, it only being a question of runuiug double as many hydraulic engines, it only requires more accumulated water, consequently more capacity in the accumulator pumps, and power to drive them, therefore aaother engine and accumnlator pumps nre placed on the surface, aad the required depth can he reached without total new machinery.

VI. Taking these last-named advantages in consideratioa, the machinery can he planned to do exactly the work required for the present, leaving it open in the future to increase this power in the simple maaaer mentioaed, consequeatly a reduction is here attained in the outlay of capital, eaabling the cost of pumpiag to he less.

This power beiag easily conveyed to any part of the miae, can be used to run winze engines, hour for 2½ lbs of coal, heing equal for 1,400 horse pnwer to a consumption of 1,400×2½ = 3,500 lbs of coal per hour; per 24 hours = 3,500 ×24 = 84 tons of 2,000 lbs, nr equal to 58 8-10 cords of wood—say 60 cords of wood at $12 per cord, heing equal to $720 per day, or about $260,000 per anaum.

The steam engine would have to indicate about 2,100-horse power to do this work, and the cost of the cagine, pumps, accumulator and hydraulic engines would be in the neighborhood of $900,000 in place.

Total Cost.

Wear and tear, at 10 per cent. per annum	$ 90,000
Interest, 10 per cent. per annum	90,000
Salaries, etc	80,000
Sundries	20,000
Fuel necessary	260,000
Total	$540,000

We will take the yearly cost at $500,000. In this section twelve mines would be benefited, so that their waters would be raised on aa average at $41,666.75 yearly. The dnily cost of raising this amount of water would he $1,110, or for about 70 cents per ton of ore now raised in this section. At 2,000 gallons per miaute, 2,880,000 gallons per 24 hours would be raised, at a cost of 40 cents per 1,000 gallons. It will be found that with the present system, at about 1,600 feet, the raising of 350 gallons per minute

Asbestos Fiber.—In another colnmn will be fnund the advertisement nf Mr. Philip Hinkle, agent fnr the "Ashestos pstent fiber company," of Philsdslphia, and to it we call the attention of enginsers and others using the kind of goods he has for ssle. Ashestns, as is well known, is a minsral indestrnctible by sither firs or acid, and this, with its non-conductive lnbricating and other psenliar qualities, rsuders it an article especislly adapted for the purposes referred tn. In its natnral stats it consists nf coarse fibsrs matted together in an intrsctihle mass, bnt hy the patent process nf the company namsd, this mass is disintegratsd and all earthy and sxtraneons matter removsd, and a soft, silky fiber prodnced. And this, hy anothsr patent process, is mannfactnred into steam packing, joints, bnsrds, eovering for boilers, pipes, etc., to prevent radiation of heat and condsnsation of stesm; writing papsr, etc. We are informed thst the fibsr company has the sole right for mannfacturing the pure asbestos fiber, and the usefnl prodncts msde therefrom, for which several pstents have bsen granted them, and that all other eo-oall-d pnre asbestos packing, etc., not hearing tbe stamp of the fiber company and the date of the patents, infringe npon their rights, and are of impure a-bestos. The fiber eompany, however, nse only the pnre utilizsd fiber in all their asbestos goods, and for their superior.ty over all others they received at the international exhibition at Philadelphia two medals of honor, and two certificates of the highest merit. They now offer their goods, through their agent, to the public of California with the fnll belief that all pnrchasers will be satisfied of their genuine and snperior qualities.

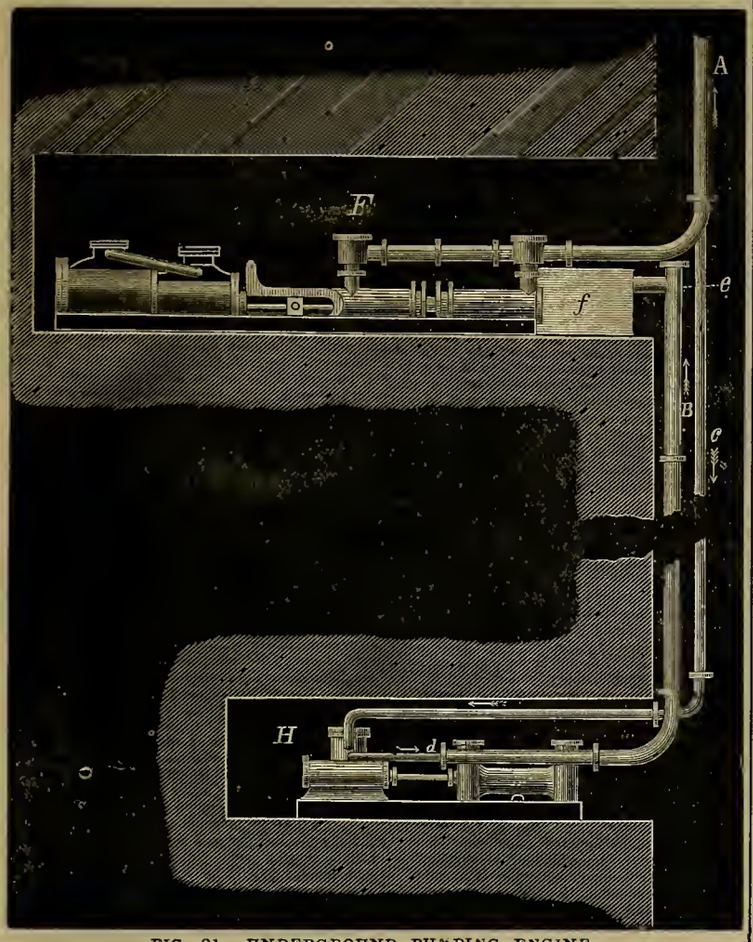

FIG. 21. UNDERGROUND PUMPING ENGINE.

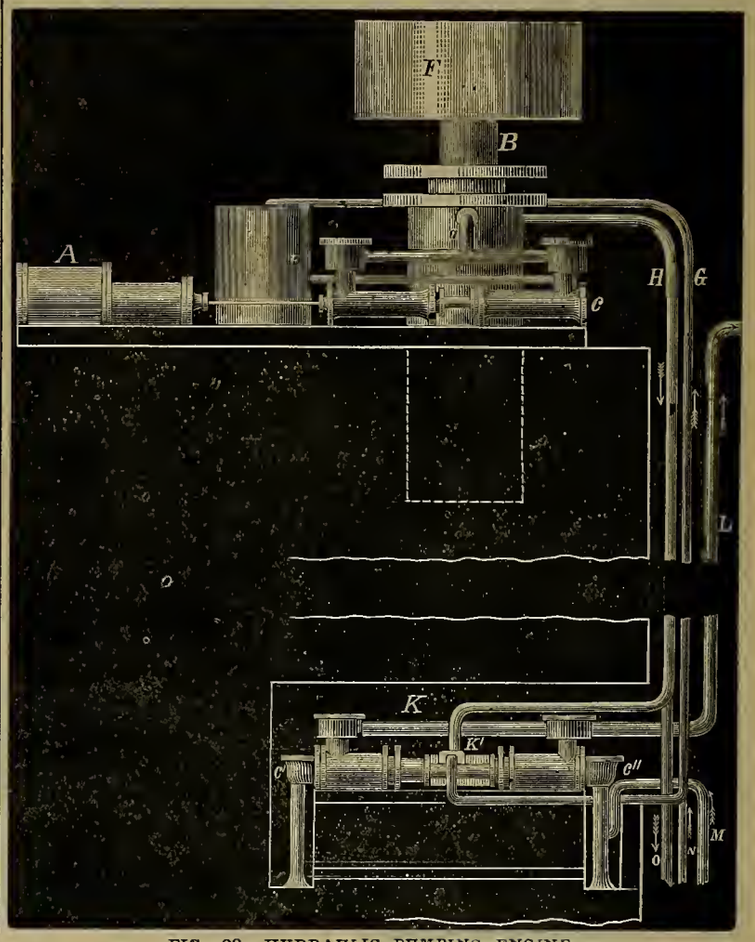

FIG. 22. HYDRAULIC PUMPING ENGINE.

2,000 feet = 600+2,000.15 ÷ 30, or 600+1,000 = 1,600 lbs per square inch.

Now the pressure in the discharge pipe of the hydraulic engine will equal the column of water returned, equal also to 2,000 feet, or 1,000 lbs, so that the weight on the valve of the hydraulic engine is only 600+1,000 — 1,000 = 600 lbs.

A slight increase exists on account of the difference of areas, but it amounts to nothing in the practice. We can therefore say that no greater actual pressure exists on the valves of the hydraulie engine than the accumulated pressure at the surface. The pressure in the pipes can easily be controlled by using pipes of sufficient thickness, and in the hydraulic engine by the usage of plungers and outside packing no leakage is to be feared.

It is a fact that although no system of draining mines has been more objected to by practical men, it has, wherever employed, even in Saarbruecken, Germany, where the crudest system ie in existence, given such satisfaction as to completely remove the objections advanced by the most prejudiced people. The most prominent engineers in Englnnd are advocators of this system for localities where the difficulties of pumping are much less than on the Comstock as far as depth, hot water, rapid sinking and inconstant quantities or water are concerned.

Conclusions.

I. The question of momentum can he here disregarded, ae each engine working independently of the other, the momentum of a 600-foot column is practically of no account, and even in the hydraulic engine for sinking, 600 feet of speer-rods and column has never been found of faas, etc. One accumulator can be employed for several mines, enabling to pump with less cost as far as fuel and lahor are concernod. The loss of transmitting this power is actually nothing, being only the friction in the pipes.

This method is so perfect in all fundamental principles that it is to be wondered how objections can be raisod sufficient to deter its introduction on the Comstock; it is impossible to impress sufficiently upon the minds of persons interested in this mining district the necessity of replacing machinery incapable of doing the required work in time to prevent the stoppages which will occur in the working of these mines, when it will be found that that which it has been tried here to demonstrate will come true, to-wit:

The system and machinery used on the Comstock for pumping is inadequate to do the work required.

It is not the quantity of water to be raised which will throw impediments in the way, there is no trouble about draining the mines, but the power used must be properly applied to insure success.

Before closing it may not he foreign to this subject to approximate what is actually necessary to drain these mines.

Between the Sierra Nevada mine on the north and the Imperial on the south, machinery capable of raising actually 2,000 gallons of water per minute, at an average of 2,500 feet, for the present would be perfectly sufficient to drain all the shafts included in the section.

Actual H. P. = 2,000×8×2,500 ÷ 480.60 = 1,400.

An actual horse power can be produced hy costs very nearly $300 per day, or 60 cents per 1,000 gallons.

The advantage in concentrating the productiou of a power as by hydraulic is too well understood, as far as economy is concerned, to need further explanation. The close proximity of the mines, the variable amount of water, the rapid sinking of the shafts, the great depths attained and to be reached, combined, point more forcibly towards the adoption of this system on the Comstock than in any other mining district.

For greater economy it is advised to make a combination of as many mines as possible, but should other reasons overrule this suggestion, each mine can pump for itself and accumulate the power required, and still all the advantages pointed out will exist, making this system more economical and insuring the easy handling of the waters.

Advices from Panama of the 16th, state that the commission which lately arrived from Europe for the purpose of making a new survey for an inter-oceanic canal across the Isthmus of Darien, left Panama on the 11th for the scene of their labors. The commission expect to be occupied with explorations and surveys until June next.

The Sutro Tunnel will strike the Comstock lode in the Savage property, at a depth of about 2,000 feet from the surface. When completed the tunnel will be about four miles long.

It is said that Dr. Linderman, Director of Mints, will recommend the establishment of one at Omaha.

The largest fire in Tokio (Yedo) since April, 1872, occurred November 29th, beginning just before midnight and lasting about eight hours. Sixty-five streets, containing 5,000 houses, were totally destroyed, and 50 lives believed to be lost. The loss of property is estimated at $10,000,000. The residence of the Austrian Minister was burned, and that of the United States Minister narrowly escaped. There were prompt and effective measures taken by the government for the relief of sufferers. The burnt region is rapidly rebuilding, with the introduction of great public improvements. The great fire in Tokio on the 29th ultimo was followed by another on the morning of the 2d instant, which destroyed 226 houses.

Monday night's overland train brought from Washington $2,000,000 in greenbacks for the office of the U. S. Assistant Treasurer. This money will be applied to the payment of demands against the Government. Mr. Sherman, the Treasurer, has on hand: National bank notes, $790,000; old worn-out notes, $460,000; fractional currency, $156,000; redeemed gold notes, $669,000—making a total of $2,075,000. In addition, he has nearly $4,000,000 in gold coin and $110,000 in silver

Air Gas for the Lighting of Mines, Etc.

It has been found that from petroleum can be obtained a light oil particularly well adapted for gas making purposes, with entire freedom from the sulpbur which is given off by ordinary coal gas during combustion. To this important matter our attention was drawn a few days ago whilst going through the works of the Protector lamp and lighting company, at Worsley, near Manchester, where are made the miners' safety lamps, patented by Mr. Teale, and where some hundreds are turned out weekly. Having seen the lamp tested in the Oaks colliery, near Barnsley, when the light was found to be very bright and soft, whilst the safety portion of the patent was all that could be desired, we were induced to inspect the mode of making the oil, and the means by which the apparatus for lighting up collieries or buildings was constructed. The air gas oils made by the company, when used in the patent apparatus, are capable of yielding a sufficiency of vapor to saturate atmospheric air at the lowest temperature. They belong to two distinct groups of light paraffine, the first being adapted for use in cold climates, and termed the Pentyl group, and the other most suitable for hot climates, and known as the Hextyl group. Together they have a specific gravity commencing at 628 and terminating at 669, but which by mixture can be made up to any required intermediate average gravity. It has a boiling point of about 126 degs. Fah., or 86 degs. below the boiling point of water, and is composed of 83¼ per cent. of carbon and 16¾ per cent. of hydrogen.

One pound of this oil gives off a vapor sufficient to saturate 51 cubic feet of dry air at a temperature of 32 degrees Fahr., forming a permanent gas of 30-candle illuminating power, when burned in suitable Argande consuming four cubic feet per hour. One ton of the oil contains 1,870 pounds of carbon, and 370 pounds of hydrogen, yielding 114,240 cubic feet of 30-candle air gas, being more than 12 times the quantity obtained from one ton of cannel coal, producing about the same high illuminating quality of gas. As the amount of light in all illuminating gases is in direct proportion to the amount of carbon which can be brought to a state of intense incandescence, and taking the diluent nitrogen in the air gas to be set off by the diluent marsh gas and carbonic oxide in coal gas, the great superiority of air gas over that produced from coal will be apparent. As to safety in the use of gas oils, it appears that there is no possibility of exploding them, as they are merely inflammable in the same way that oil of turpentine or spirits of wine are, and with proper care there can be no escape of any vapor from them. The gas generator containing the air gas oil in use is so constructed that no flame can possibly enter it, and is generally placed in an underground vault if connected with mines, or in an outhouse if used in a building. The patent apparatus consists principally of two distinct parts—a blower and a generator. The weighted blower is suitable for general use, and is set in motion by a wound-up weight formed of slotted iron plates placed on the shank of a hook connected to a wire cord passing over pulleys to a drum on the axis of the blower. This blower is constructed of a cylindrical case (partly filled with water, similar to an ordinary wet gas meter), within which revolves a wheel divided into four spiral compartments which act as pumps, the water forming a piston to force the air from the front inlet near the axis to the back outlet at the top. This is a simple and reliable blower, starting immediately a burner is turned on and stopping at once when it is turned off. The only attention which the apparatus requires is to wind up the weight when necessary, and which should be seen to every day, whilst once in about two months a small quantity of water should be poured in. The air is carried from the blower by a pipe passing through the wall of the building and underground to the generator, from which air gas returns into the place where it is required by another pipe at the side of the first, and is thence distributed to the burners.

One of the most approved arrangements for ordinary use is the constructing of any required number of separate generators or flats, according to the number of lights, which are worked either singly or several of them are connected together, air being directed by suitably disposed valves or cocks to flow continuously through the whole or only through any one or more, or it may be divided so as to pass partly through one and partly through another, according to the changes of temperature and seasons. Each generator exposes a large surface, by which to restore from the surrounding atmosphere to the liquid within an amount of heat proportionate to that abstracted by the vapor, and this it does continuously, thereby maintaining a medium condition of temperature by which the saturation of the air and consequent quality of the light is practically unvarying. This, together with the system of working, appears to be an essential feature of the success of the air-gas apparatus. The burners of the company are made of a chemically prepared mineral material, perfectly incorrodable, and does not in any way deteriorate by use, and consequently lasts for an almost indefinite period. The apparatus is made for any number of lights up to 500, or even more we believe should such be required. Not the least important feature in connection with the air gas, to our thinking, is that it does not affect the organs of vision the same as coal gas does, as the burners yield only products of combustion equally as harmless as those evolved from the purest wax.

The apparatus, we may say, is specially constructed for collieries or other mines, and the gas is made in the following manner: The reservoir is first filled with gas oil, then by means of a valve the oil is admitted as required into the generator, which consists of a number of tubes, partially filling them, but leaving sufficient space to allow air to pass over the gas oil. There is a weight which is wound up by a winding wheel; this acts upon a fan connected with the blower, forcing air into the generator, and in its passage turning air into gas, and passes into a governor, which regulates the pressure, and also provides a store of gas sufficient to keep the gas jets supplied during the operation of winding up the weight. The gas is conveyed in pipes in the ordinary way. The whole process is a most interesting one, whilst the gas seen in the works, offices and houses was bright, soft and singularly transparent, and evidently could not affect the eyes of those working by it or reading continuously for hours to anything like the same extent as coal gas does.—*London Mining Journal.*

The Decline of Gold Mining in the Colony of Victoria.

Gold mining was a few years since the staple industry of Victoria, and its palladium against all the various ills which from time to time befall newly settled countries.

From the discovery of gold in 1851 to the end of the year 1875, the total amount exported was 46,423,285 ounces, valued at $882,962,528. During the nine years from 1852 to 1860, inclusive, the average yearly export of this precious commodity was 2,643,131 ounces, and the average yearly value, $50,000,000. From 1861 to 1870, inclusive, the average yearly export was 1,644,641 ounces, and the average yearly value $33,000,000. Since 1870 the yearly export has been: In 1871, 1,647,389 ounces; 1872, 1,298,839 ounces; 1873, 1,291.014 ounces; 1874, 1,012,152 ounces; 1875, 794,164 ounces. The yield of gold in Victoria may be assumed to be equal to the quantity of Victoria gold exported. The discovery of this precious metal made Victoria, what it still undoubtedly is, the chief of the Australian colonies. But there is a gradual decline in mining industry and in the production of gold.

A journal published at one of the principal mining towns of Victoria says:

"The great mining industry of Bendigo will quietly fade into insignificance year by year, unless a reaction is provoked by interested means. Gold fields, cities and towns, will be undesirable places to locate in by and by if depopulation continues so rapidly to go on. The once great Ballarat has lost about 7,000 inhabitants in a few years; Castlemaine is dwindling down to a roadside nonentity; Ararat will soon only be represented by bricks and mortar; and Sandhurst is also following in the wake. Stowell appears to be the only money center that is attracting population at present. It is really painful to witness the continued fall taking place in the oldest mining sites of the colony."

Some of the journals take a less mournful view of the situation than that above quoted; but after all it does really appear to be a fact that the money interest is in a moribund state. Many mines now being worked do not return enough to make a fair wage, and others barely doing so. In too many cases it appears as if work at the mines was continued for purposes of speculation, dealing in mining stocks being as prevalent as in San Francisco; the shopkeepers and other hopeful people having, within the past year, lost largely by this indulgence. Many scientific men in Victoria have expressed decided opinions that the gold in Victoria is not half worked out; that the quartz reefs at present worked are only the outcroppings, and that throughout the colony, at far deeper levels, gold can be found in abundance.

Rising Sun.—While in Colfax on Saturday last we paid a short visit to the Rising Sun mine. Owing to the shortness of our stay, we are unable to give as minute description of the mine and mill as we would like to. The hoisting and other machinery are all of the latest inventions and work to a charm. The mill is kept running to its utmost capacity, and from prospects shown us, we think that large dividends will be in order shortly. The shaft is down over 600 feet; the 700-foot level will soon be opened. As the shaft goes down the ore improves in quality and evenness of distribution of the precious metal throughout the quartz. About 40 men are employed in the mine and mill, and the mine will prove to be quite a material aid in increasing the wealth and prosperity of Colfax. Mr. Neff, the superintendent, is very courteous and gentlemanly, treating all visitors well, and in the management of the mine has developed superior skill and ability in superintending the operations of the company. We wish the Rising Sun continued success, and hope every member of the company will bag a neat little fortune from the mine.—*Dutch Flat Forum.*

Embalming.—The *Lancet* describes Tranchina's method as follows: Eight decigrammes of arsenious acid, combined with a little cinnabar, are dissolved in nine kilogrammes of spirits of wine, and injected, *secundum artem*, into the carotid artery. For more than two months the body remains fresh, inodorous, inflexible and (thanks to the cinnabar) of its natural color. Thereafter desiccation commences, and it indurates so as to last for any time. Modifications by Ganual and others have improved upon Tranchina's method.

Sigel District.

Sigel mining district lies about 14 miles northeast from Gold Hill, between Oarson and Truckee rivers. The distance traveled to get there, by the old overland road and the balance of the roundabout way, however, is nearly twice that number of miles. The ledges of the district were discovered some years ago, but owing to the poverty or inability of the discoverers, their development has been necessarily slow and much delayed. Within the past few months, however, some of them have come into deserved prominence through the development of their real merit, assisted by the requisite capital, the old locators having either sold out or brought to their assistance financially able friends in San Francisco. For instance the

McClellan Consolidated,

Mentioned in our regular weekly mining report of November 27th, and also the Accidental Consolidated. The McClellan men have sunk a shaft 40 feet deep in the ledge, which crops out strongly at the surface. The vein material was principally quartz, giving good assays in silver and gold, and, owing to the easterly dip of the vein, the shaft passed through to the west wall, when it was thought best to discontinue sinking. A drift was then started to the northeast in the ledge, running in a distance of 50 feet. A cross-cut is now being made through the ledge, which is some 40 or 50 feet wide, to determine its full value at that point. The rock is looking and promising very finely, and good pay ore may be encountered any day. Sufficient has already been developed in the way of good ore prospects to induce sinking deeper and opening the mine at a depth where the vein matter is more concentrated.

The Accidental Consolidated

Also shows a prominent ledge, fully 25 feet in width between the walls, of a fine character of quartz, giving numerous excellent assays in silver and gold. Two shafts have been sunk upon it and, although a recent location, considerable work has been done. The proprietors of both this mine and the McClellan Consolidated are full of faith in the value of their property, and propose developing the same with energy and eventually with profit to themselves. There are other promising locations in Sigel district, which we will mention at some future time, but these are the best managed and most actively worked at present. Mr. A. C. Burrington, superintendent of the McClellan Consolidated, passed through here a few days since en route for San Francisco, to arrange for the winter supplies, and has probably already returned to the mine. During the coming season we shall expect to hear of good returns from Sigel district.—*Gold Hill News.*

Cheap Washing.—The *Gazeta Industrial* says a new system of washing has lately been introduced in some French towns, which system deserves to be especially mentioned. The economy which it affords is so considerable that its cost is reduced to the following figures: 5 centimes, (less than one cent), for a pair of drawers, 2½ centimes (¼ d.) for each shirt, etc. This is the process: One kilo, (2 lbs.) of soap is reduced with a little water to a sort of pap, which having been slightly warmed, is cooled in forty-five liters (10 gallons) of water, to which is added one spoonful of turpentine oil and two spoonfuls of ammonia; then the mixture is agitated. The water is kept at a temperature which may be borne by the hand. In this solution are introduced the white clothes, and they are left there two hours before washing them in soap, taking care in the meanwhile to cover the tub. The soapy water may be warmed again and be used once more, but it will be necessary to add half a spoonful of turpentine and another spoonful of ammonia. Once washed in soap, the clothes are put in warm water and the blue is applied. This process, it is obvious, spares much time, much labor and fuel. On the other hand, it gives to the clothes a whiteness much superior to that obtained by any other method, and the destructive use of the beetle is not necessary to clean the clothes from the impurities which they contain.

Hard Times in the Black Hills.—A private letter from a former Eurekian states that times are fearfully hard in the Black hills. The writer also says that the weather in that region is extremely cold. The freezing up of the water has operated to very materially curtail placer mining, which, so far, has been the mainstay of the country. He thinks there are plenty of good mines in the Black hills, including some very promising quartz ledges, but he gives it as his opinion that next April or May will be soon enough for any one to think of going there. He predicts that the Indians will keep quiet during this winter, inasmuch as they seldom do anything in winter that will cause them to break camp, a thing they might be forced to do if they interfered with the whites.—*Eureka Sentinel.*

Another Bridge Over the Mississippi.—The recent completion of a new railway bridge over the Mississippi, furnishes another illustration of the strong desire to remove obstructions to swift transportation at any cost. The new structure is of iron, and was built by the American bridge company for the Chicago, Milwaukee and St. Paul railway company, at La Crosse, and it now furnishes an unbroken line from Chicago to St. Paul. Still more important evidences of the tendencies of the age are afforded by the attention given to projects for tunneling the Hudson at New York and the British channel.

The Advance of Agriculture.

In the main there are two ways in which the science of the farm can be advanced. First, by constant and intelligent efforts among farmers to make their land and stock yield larger returns, and second, by studying more carefully the commercial laws which govern the sale and handling of products until they reach the consumer.

In the full and best discharge of his business the farmer is both a merchant and a manufacturer. He manufactures necessaries and he sells that which people cannot do without. He has this advantage at the outset, and there are a hundred chances for turning it more fully to his profit. But the greatest part of the farmer's business is production. Production with him is growth, either of plant or animal. But what is growth? Growth is material increase in accordance with natural laws. What is the understanding of natural laws? It is natural science. Who is he who raises the best crops? He is the man who can work best with the natural laws which regulate growth. And who is the man who works best by natural laws? He is a scientific man. Here we are, then, right upon a question which agriculturists have stumbled upon repeatedly. The man who raises the best crops and the best stock and keeps his soil in the best condition is the scientific farmer. He may be scientific without knowing it, but he is scientific nevertheless, for he gets the best growth, the best growth is gained by conformity to natural laws, and conformity to natural laws is working upon scientific principles. This is not what is generally understood by "scientific farming," but that makes no difference. There are several ways of reaching facts, but he who gets them, understands them and profits by them, is the scientific man. Although no wise man will neglect the careful study of what men have written about agriculture in books and newspapers, it is possible to conceive that a man may be scientific without them by closely reading the lessons which he sees in his land and animals. The reason "scientific" or book farming has so often failed is because some of its advocates have been reading with their hooks upside down or because they have not been wise enough to apply the truth which they read to their farming operations. They have been called "scientific farmers," and their failures have brought a name which they did not deserve into disgrace. They may have been educated men, they may have been wonderfully wise in certain directions, but they were not scientific *farmers*, because farming, like anything else truly scientific, must succeed.

It is difficult to see how the operations of the farmer, depending, as they do, upon natural laws, can be expected to reach a great advance without a better understanding of those laws, any more than one can see how an inventor can gain a great triumph without knowing the mechanical laws which govern the movement of wheels, the power of springs and levers and the extent of force which may be involved in his machine. Is it any more necessary for the mechanic who makes a mold-board, to understand what curve he can use to get the cleanest turn with the least resistance, than for the farmer to understand what is the natural effect of turning the furrow and what laws govern growth upon the inverted ground?

As we have claimed that every successful farmer is, to a greater or less degree, a scientific farmer, it will be appropriate to discover what natural science really is. Charles Kingsley says: "Science is knowledge of a natural object, its causes, its effect, its classification, or, in plain English, it is asking about an object which comes before us. What is it? How came it where it is? And what can he done with it?" What straightforward, simple questions these are, and yet the answers to them compose science. It is useful and practical science, and that is what we need in agriculture. The man who gets a larger yield from his field than that obtained from the one which lies next to his has gained possession of science in some way. What is necessary now for the advancement of the agricultural industry is that this valuable science, or knowledge of how to do it, shall be wider spread, and for this dissemination there can be no better way than for farmers to push ahead together for the improvement of practice in all branches of the industry.—*Rural Press.*

Improving.—Shady Run, until recently, had always been considered in the shade, but the last year's work in developing the mines has proven them to be rich and extensive. Therefore the erection of several business houses has taken place within the last five months. At present they have two hotels and two saloons. Mr. Talbot, the owner of one of the hotels, will open a store in one of his buildings in a short time. They have had several dances lately, and in order to keep up the reputation of the town, some of them make it a practice of putting heads on each other in the most approved style.—*Dutch Flat Forum.*

There is nothing like beginning with settled economical principles. Extravagance is a habit easily contracted and goes on increasing in volume as a snowball does when rolling down hill.

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Foreign Patents.

In addition to American Patents, we secure, with the assistance of co-operative agents, claims in all foreign countries which grant Patents, including Great Britain, France, Belgium, Prussia, Austria, Baden, Peru, Russia, Spain, British India, Saxony, British Columbia, Canada, Norway, Sweden, Mexico, Victoria, Brazil, Bavaria, Holland, Denmark, Italy, Portugal, Cuba, Roman States, Wurtemberg, New Zealand, New South Wales, Queensland, Tasmania, Brazil, New Grenada, Chile, Argentine Republic, AND EVERY COUNTRY IN THE WORLD where Patents are obtainable.

No models are required in European countries, but the drawings and specifications should be prepared with thoroughness, by able persons who are familiar with the requirements and changes of foreign patent laws—agents who are reliable and permanently established.

Our schedule prices for obtaining foreign patents, in all cases, will always be as low, and in some instances lower, than those of any other responsible agency.

We *can and do* get foreign patents for inventors in the Pacific States from two to six months (according to the location of the country) SOONER than any other agents.

The principal portion of the patent business of this coast has been done, and is still being done, through our agency. We are familiar with, and have full records, of all former cases, and can more correctly judge of the value and patentability of inventions discovered here than any other agents.

Situated so remote from the seat of government, delays are even more dangerous to the inventors of the Pacific Coast than to applicants in the Eastern States. Valuable patents may be lost by extra time consumed in transmitting specifications from Eastern agencies back to this coast for the signature of the inventor.

Confidential.

We take great pains to preserve secrecy in all confidential matters, and applicants for patents can rest assured that their communications and business transactions will be held strictly confidential by us. Circulars free.

Home Counsel.

Our long experience in obtaining patents for Inventors on this Coast has familiarized us with the character of most of the inventions already patented; hence we are frequently able to save our patrons the cost of a fruitless application by pointing them to the same thing already covered by a patent. We are always free to advise applicants of any knowledge we have of previous applicants which will interfere with their obtaining a patent.

We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents or purchasers of patented articles, can often receive advice of importance to them from a short call at our office.

Remittances of money, made by individual inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money but their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to our agency.

Engravings.

We have superior artists in our own office, and all facilities for producing fine and satisfactory illustrations of inventions and machinery, for newspaper, hook, circular and other printed illustrations, and are always ready to assist patrons in bringing their valuable discoveries into practical and profitable use.

DEWEY & CO.,

United States and Foreign Patent Agents, publishers Mining and Scientific Press and the Pacific Rural Press, 224 Sansome St., S. F.

ISSUED OCT. 1st, 1876.

Testing and Working Silver Ores.

The above is the title of an illustrated work of 114 pages, for miners and prospectors by Chas. H. Aaron, which has just been issued by Dewey & Co. Mr. Aaron has managed to give many useful hints and suggestions, free from all technicalities, and in such a style as to be easily comprehended. It is written for the miner, with no chemical symbols or metallurgical technicalities to confuse those who are not chemists or metallurgists. The following summary of the contents of the work will give an idea of its scope:

Under the heading of the first chapter, "Testing Ores for Silver," we find paragraphs on ore formation, test for silver, with heat and water, acid or blow pipe. In speaking of testing for a process, the extent and richness of ore is considered, smelting ores, selecting and working sample, appliances for testing, roasting, etc. Under the head of "Working Ores" the author describes Aaron's process, has something to say of superheated steam, preparation of dichloride of copper and protochloride of copper, use of copper and iron, quantity of chemicals, carbonate of lime, chloride ores, amalgam, Patchen's process, etc. He also describes the methods of working roasted ores, treatment of base metals stirring, heat of furnace, want of sulphur, etc. Under the head of "Leaching Processes" are the titles, Smelting, Mexican process, Kroencke's process, Chilean process, etc. Under "Pulverizing Machines" are described the arastra and its construction and operation, stamp batteries, screens, Crocker's trip-hammer battery, Paul's pulverizing barrel, Kendall's battery, Noice's pulverizer, a cheap rock breaker, etc.

In speaking of amalgamators the author describes a cheap amalgamator, grinding the ore, directions for making a barrel, preventing mechanical wear, use of quicksilver, copper in bars, Freiberg barrel, cheap barrel, trough, barrel on rollers, Aaron's amalgamator, separator, etc.

He describes an improved retort, roasting furnace, furnace tools and furnace building. Among the miscellaneous mention may be found Aaron's leaching apparatus, with two or three different arrangements, a small mill, sampling tailings and settling tanks, dichloride of copper, etc. Mr. Aaron is a practical miner, of long working experience on this coast.

The book is a serviceable one for miners' and prospectors' use. Price, post free, (in leather,) $2.00. Address Dewey & Co., MINING AND SCIENTIFIC PRESS, 224 Sansome street, San Francisco.

APPRECIATION ABROAD.—We copy the following from the *Mining and Monetary Gazette*, of London, Eng.: "We deemed it advisable, as affording valuable information to our readers, to publish in recent issues of *The Gazette*, the full text of the "United States Mining Laws and Instructions, by the Commissioner of General Land Office," taken from our talented contemporary, THE MINING AND SCIENTIFIC PRESS, of San Francisco. The documents have now been issued in a handsomely-bound volume by Messrs. Dewey & Co., the publishers of our transatlantic contemporary, and it will be found very useful to those already interested in American mines, and to others who may be tempted to embark in that enterprise in the States."

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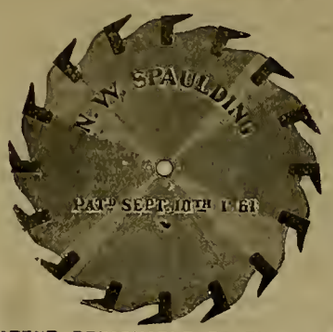

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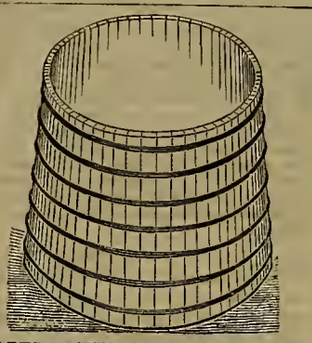

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Continued from Page 436.

informed that it is the intention at present to work the ore for gold only, though some of it assays well in silver.

TYBO DISTRICT.

FREIGHT.—Eureka *Sentinel*, Dec. 22: The railroad managers say that Tybo receives more merchandise than any other of the outlying districts. It also furnishes a large amount of back freight, all of the teams that go there and to Belmont returning loaded to the guards with bullion. The freight on bullion from Tybo to this place is $14 per ton. The Tybo bullion is the highest grade base bullion made in Eastern Nevada.

WHITE PINE DISTRICT.

MORE ORE.—White Pine *News*, Dec. 23: The Eberhardt & Aurora company are continually blessed with more good luck than any mining company that we know of. Some time ago Capt. Frank Drake conceived the idea of running a drift from the great ore chamber in which they have been working for the past two years, and about two weeks ago came upon the ore body he was seeking. The ore is of high grade and the body is large, with strong indications of its developing into a large chamber. This is exceedingly good news for the company and is none the less so to the people of this district. Capt. Drake informed us that he would close down the mill about the first of January, and would not start up again until next spring. He has tried for two or three years to haul ore from the mine to the mill during the winter months, but has found it too expensive to keep the road free from snow. Besides the ordinary work on the tunnel and the incline shaft, he proposes to do a large amount of dead work during the winter. We predict that the company will have out more ore next year than its 30-stamp mill can work.

WINNEMUCCA DISTRICT.

THE MINES.—*Silver State*, Dec. 20: Work has been resumed on the Pride of the Mountain and Fairmount mines in Winnemucca district. The former is owned by the Humboldt M. & M. Co., and the latter by J. W. Clemo. Both are taking out ore, and have very encouraging prospects. Five tons from the Pride is now being taken to the Humboldt reduction works to test the richness of a body of ore recently discovered in the mine.

Arizona.

MINES.—Arizona *Miner*, Dec. 8: The Senator mine is hoisting ore from the 200-foot level and throwing about 24 tons into light every day. Col. Bigelow and the Hon. Johnston De Roche assert that their mine is "way up" and the bonanza of the Prieta. The Crook mill is pounding away continually with five stamps on custom work. The Crook mill is running on a twenty-ton batch of Crook ore from Shelltobrand's claim, and will start in next on a 150-ton lot from Curtin's claim on the Crook. Many of the old claims on Lynx creek are still paying expenses and some of the placer miners are making money. Many of the Lynx creek placer miners are gone and others going to the Black hills of Dakota. The Bullwhacker mine has two shafts and is piling up a large dump at the mouth of each. The Elliott Brothers are pushing things night and day at the Thunderbolt, and reducing the ores of the accidental and the amount of timber in their neighborhood amazingly.

Utah.

LEEDS DISTRICT.—*Salt Lake Tribune*, Dec. 21: The many arrivals from Salt Lake City show that northern Utah has concluded that the claims of our camp are at least worthy of investigation. All concur with us that the ores and ore bodies already exhibited justify the many boasts of superiority made, both as to their quantity and as to their quality. So much good ore is to be seen that all express surprise that so long a time has elapsed ere the claims of this country would be recognized. The real cause has been sandstone. Nobody could be found who believed in a sandstone formation—the thing was incredible. Owing to the district being nearly all located, miners who really desire to obtain a foothold are leasing mines. Several leases have lately been perfected and ore is accumulating rapidly. Negotiations for the sale of several properties are now pending.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

FOR WEEK ENDING DECEMBER 19TH.

ENVELOPES.—Alfred S. Addis, Anaheim, Cal.

LIQUID DROPPERS FOR BOTTLES.—Cornelius E. Davis, St. Helena, Cal.

RETURN TUBULAR BOILERS.—Robert Ehman, Vallejo, Cal.

BED CHAIRS.—Henry W. Fortune and Augustus H. Roberts, S. F.

DISTRICT TELEGRAPH BOXES.—George S. Ladd and Stephen D. Field, S. F.

DEVICES FOR PLACING SUBMERGED BLASTS.—Louis J. Le Conte, Oakland, Cal.

PLOWS.—Christien Myers, Marysville, Cal.

ÆRIAL MACHINES.—John B. Ward, S. F.

SPRING BED BOTTOMS.—Micajah Collins and Benjamin A. Lillie, Portland, Ogn.

KEYHOLE GUARDS FOR LOCKS.—Calvin H. Covell, Stockton, Cal.

BALE TIES.—William P. Gerlach, S. F.

MACHINE FOR WINDING PAPER INTO ROLLS.—Gardner Howland, Los Angeles, Cal.

LOCOMOTIVE SPRINGS.—James Jenkins, Carlin, Nev.

COMPOUND FOR ARTIFICIAL STONE.—Llewellyn L. Leathers, Oakland, Cal.

DREDGING MACHINES.—Allexey W. Von Schmidt, S. F.

GANG PLOWS.—Elisha W. Walton, Collinsville, Cal.

"The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

AERIAL MACHINE.—John B. Ward, San Francisco. This invention is a novel aero-motor, in which a mechanism is provided, combining the application of downwardly and horizontally acting currents of air with suitable guiding and directing planes, so that the machine may be elevated or depressed, driven forward or turned in any direction at will. Briefly described the operation is as follows: When the apparatus is set in motion upon a smooth space a blast fan will drive it forward upon wheels until a considerable speed is attained. A large plane surface is then turned to such a position that its front inclines upwards, and this, together with the effect of the downward blast from fans in the sides and a central screw, it is supposed will raise the machine from the earth. By the use of the plane and the gates the inventor claims to be able to turn the machine up or down, right or left at will. When the machine is to be brought again to the earth it is done at some favorable place where it can alight gradually and move along upon its wheels until it comes to a stop. The plane referred to is constructed with an arched top so braced and strengthened with ribs as to give the greatest amount of stiffness.

LIQUID DROPPERS FOR BOTTLES.—Cornelius E. Davis. This invention consists in the application to the necks of bottles, from which it is desired to draw liquid drop by drop, of a permanent device for causing the liquid to thus drop, which device is so applied that it will not interfere with the insertion of an ordinary cork or stopper in the mouth of the bottle. Liquid droppers have heretofore been made by perforating the cork which ordinarily stops the mouth of the bottle, but this method has the disadvantage of allowing the liquid to evaporate through the passages and is otherwise inconvenient and imperfect. This device, however, permits the bottle to be tightly corked whenever the liquid is not to be used and provides a very convenient and simple arrangement for this purpose.

GANG PLOW.—Elisha W. Walton, Watsonville, Santa Cruz county. This patent covers certain improvements in gang plows by which the inventor is able to accommodate the action of the plows to the character of the ground over which they travel. While ordinary gang plows operate very well for plowing over level ground, they either utterly fail or plow very imperfectly on side hills or in passing over hilly or knolly land. The improvements of Mr. Walton are intended to adapt this style of plowing machine to uneven land, and so that they can be operated on the side of a hill so as to turn a full and complete furrow.

BED CHAIR.—H. W. Fortune and Aug. H. Roberts, S. F. This invention relates to an improved manner of combining a bed extension with a chair frame so that when the extension is folded up into the chair frame a neat and comfortable easy chair is provided.

General News Items.

INSPECTOR-GENERAL DUMONT recommends the abolition of the Board of Supervising Inspectors of Steamboats.

THE convent at St. Elizabeth, Canada, was burned on Monday night. One hundred persons were in the building. Nine children are reported missing.

CAPTAIN HALL, of Detroit, who has just prepared the marine statistics of 1876, places the number of lake disasters at 636, and the value of property lost at $1,100,000.

A PETITION is in circulation for the reinstatement of ex-Paymaster Spaulding, and nearly all the members of the court-martial which tried him have appended their names to it.

THE steamship *Oceanic* has just made the fastest passage on record from Yokohama. She came in 14 days 15 hours and 20 minutes, the fastest previous time being that made by the *City of Peking*—15 days 12 hours.

THE Post Office Department calls attention to the provisions of the General Postal Union treaty made at Berne, which positively prohibits the transmission, in the mails, of gold or silver money, jewels or precious articles, or any other article whatever liable to custom duties.

IT is feared Turkey will resist nearly all the proposed reforms which the Powers considered the minimum they are entitled to demand. It is thought Elliott, the British ambassador, favors resistance on the part of Turkey, and his departure from Constantinople is considered reassuring for peace.

CERTAIN bondholders of the California Northern railroad company have commenced suit against Richard Cheney et al., for foreclosure of a certain mortgage, and to get possession of said railroad. Butte county intervenes, and sets up a claim arising from payment of $20,000 annually as interest on railroad bonds.

Meetings and Elections.

TROY CONS. M. Co.—Dec. 22. Trustees—H. S. Brown, C. H. Wakelee, E. C. Brown, F. S. Spring and A. F. Brown.

JERSEY M. & S. Co.—Dec. 20. Trustees—W. C. M. Petty (President), H. H. Pearsons, J. I. Ayres, Wm. Hamilton and J. A. Blossom. H. B. Whitehouse, Secretary.

MCCLELLAN M. Co.—Dec. 24. H. D. Naber, President; H. Bredhoff, Treasurer; Otto Metchke, Secretary. Directors—R. H. Pahl, F. Mortens, H. D. Nabsr, John McKenzie, H. Bredhoff.

ACCIDENTAL CONS. M. Co.—Dec. 23. H. D. Naber, President; H. Bredhoff, Treasurer; Otto Metchke, Secretary. Directors—R. H. Pahl, F. Mortens, H. D. Naher, John McKenzie, H. Bredhoff.

SILVER HILL M. Co.—Dec. 18. Directors—H. H. Pearson, President; Hon. Romualdo Pacheco, Vice-President; T. C. Lampe, James Brooks, Julius Jacobs, H. Angustus Whitney, Secretary, re-elected; Jno. Cashin, Superintendent.

LADY BRYAN M. Co.—Dec. 27. Martin Joice, President; John S. Luty, Treasurer; Wm. H. McClintock, Secretary; and John C. Schmitt, Superintendent.

Bills Introduced in Congress Relative to California.

Mr. Luttrell, of California, has introduced in the House of Representatives the following bills relative to California:

A bill (H. R. 4,122) to quiet land titles in the State of California.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that, in all cases where the State of California has heretofore made selections of any portion of the public lands of the United States in said State, in lieu of sixteenth or thirty-sixth sections, which last named sections were, at the date of such selection, embraced by the exterior boundaries of valid Mexican or Spanish grants, and where the final surveys of such grants had not been made and finally approved at the date of such selection, and where the lands embraced in such selections have been listed and certified over to the State by the proper authorities of the United States, and where any indemnity school selections have been made by the State, and the lands embraced therein have been certified over to the State by the proper authorities of the United States, and the State has disposed of the same to purchasers in good faith under her laws, the lands so selected and certified over, as aforesaid, shall be, and are hereby, confirmed to the State of California, subject to the limitations and exceptions hereinafter contained; *provided*, that in case the State shall, by virtue of this Act, receive indemnity for sixteenth or thirty-sixth sections to which she was not entitled under existing laws, such sixteenth or thirty-sixth sections shall be subject to the disposition of the United States in the same manner as other public lands.

SEC. 2. That this act shall have no application to such indemnity lands as were, at the date of its passage, in the occupation of any *bona fide* settler, claiming the same in good faith under the pre-emption or homestead laws of the United States; *provided*, That at the date of such settlement the purchaser from the State, or those claiming under him, was not in possession of the land by virtue of occupation or cultivation of the same, or by reason of having improvements thereon; and that the land had not, at the time of such settlement, been certified over to the State of California by the proper authorities of the United States.

A bill (H. R. 4,174) to appropriate money to improve the navigation of the Sacramento river.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, that the sum of $100,000 be, and is hereby, appropriated, to be paid out of any money in the Trensury not otherwise appropriated, for the improvement of the navigation of the Sacramento river, between the town of Red Bluff and the bay of San Francisco in the State of California.

A bill (H. R. 4,173) to appropriate money for the improvement of the navigation of Feather river, California.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, that the sum of $25 000 be, and is hereby, appropriated, to be paid out of any money in the Treasury not otherwise appropriated, for the improvement of the navigation of Feather river, between the city of Marysville and the town of Vernon in the State of California.

GENERAL CROOK'S expedition is on its way homeward. Since the fight in the Big Horn mountains, small bands of Indian braves have been wandering about the country in this vicinity and keeping watch of all his movements, a fact that tends to make the surprise of the hostile Sioux by the troops a matter of extreme difficulty, if not wholly impossible.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office at San Francisco:

SUMMIT M. Co.—December 22d. Location: Plumas county. Capital stock, $2,500,000. Directors—Al Peck, J. F. Storer, E. P. Sanford, A. Martin and C. Lehman.

NEVADA AMALGAM REFINING Co.—December 22d. Object: To introduce and extend (by licensing) the use of certain patent rights, heretofore held and hereafter to be acquired by Conrad Wiegand, of Virgina City, Nevada, having for their object the mercurial separation of other metals and for the separation of other metals from gold. Directors—Joseph Perkins, Charles S. Capp, J. M. Gitchell, E. P. Flint and Conrad Wiegand. Capital stock, $250,000.

UNITED CARRIAGE CO.—December 22d. Object: A general delivery, transfer, express and transportation business in San Francisco. Trustees—G. S. Ladd, J. W. Coleman, James Gamble, C. S. Greathouse, John J. Valentine, William Ashburner and Stephen D. Field. Capital, $250,000.

SAN FRANCISCO WATER Co.—December 22d. Object: To supply the towns of Redwood City, Menlo Park and Mayfield with water. Trustees—J. J. Felt, Calvin Paige, William C. Talbot, Bartlett Doe and D. C. McRuer. Capital, $300,000.

NORTHERN LIGHT G. & S. M. Co.—December 27th.—Location: Shasta county. Capital stock, $6,000,000. Directors—Jacob Schrieber, Thos. A. Cunningham, Jas. White, John Hinton and Francis S. Munroe.

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by SUTRO & CO.]

SAN FRANCISCO, Dec. 27, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 93½ to 93¾. Silver 6½@6¾.

GOLD in N. Y., 107½.

GOLD BARS, 880 to 890. SILVER BARS, 8@10 per cent. discount.

EXCHANGE on N.Y., 50@55-100 per cent. premium for gold; on London bankers, 49½; Commercial, 49¾; Paris, five francs per dollar; Mexican dollars, par.

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METALS.

[WHOLESALE.

THURSDAY, M., Dec. 28, 1876.

American Pig Iron, ℔ ton	20 00	@	— —
Scotch Pig Iron, ℔ ton	29 00	@	30 00
White Pig, ℔ ton	— —	@	30 00
Oregon Pig, ℔ ton	— —	@	— —
Refined Bar	— —	@	4¾
Boiler, No. 1 to 4	6 ¼	@	9 ¾
Plate, No. 5 to 9	5 ¾	@	8¾
Sheet, No. 10 to 14	— —	@	— —
Sheet, No. 16 to 20	— —	@	— —
Sheet, No. 22 to 24	6	@	— —
Sheet, No. 26 to 29	6½	@	— —
Horse Shoes, per keg	— —	@	8 00
Nail Rod	9½	@	— —
Norway Iron	8¾	@	9¼
Rolled Iron	7½	@	9
COPPER.—			
Copper Tin'd	— 37	@	— 48
Sheathing, ℔ ℔	— 37	@	— 40
Sheathing, Yellow	— 21	@	— 22½
Sheathing, Old Yellow	— 10	@	— 11
Composition Nails	— 21	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ℔ ℔	— 14	@	— 25
Anderson & Woods' ordinary sizes	— —	@	— 16
Drill	— —	@	— 16
Fist Bar	— 16	@	— 20
Plow Steel	— 8¼	@	— 12½
TIN PLATES.—			
10x14 I C Charcoal	10 50	@	— —
10x14 I X Charcoal	12 50	@	— —
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	— 24	@	— —
Australian	— 18	@	18 ½
ZINC.—By the Cask	— —	@	— 11
Zinc, Sheet 7x3 ft, No 7 to 10 ℔ ℔	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 12½
do do 8x4 ft, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	3 50	@	— —
QUICKSILVER, per ℔	— —	@	— 55

GENERAL MERCHANDISE.

WHOLESALE.]

WEDNESDAY, M., Dec. 27, 1876.

BAGS.

Eng. Stand Wht..	9¼	@	10
Neville & Co's..			
Hand Sawed 22x38	9¾	@	10
24x36	10½	@	11¾
23x10	11	@	12
Machine do 22x36	9¼	@	10¾
Flour Sacks ⅛s ..	9	@	11
" ¼s	6	@	7
" ½s	4½	@	5
Hessian 60-in do	11	@	12
do 45-in	9	@	10
do 40-in	8	@	9
Wool Sacks, 3½ ℔s	45	@	50
" 4 "	50	@	52½
Stand. Gunnies	11½	@	12
Bean Bags	7	@	8

CANNED GOODS.

Asst'd Pie Fruits in 2¼ ℔ cans	2 75	@	3 00
do Table do	3 75	@	4 25
Jams & Jellies 4 25	—	@	—
Pickles ¼ gl..	—	@	3 50
Sardines, qr box	65	@	1 90
do half boxes	3 00	@	— —

COAL—Jobbing.

Australian, ℔ ton	8 00	@	8 25
Coos Bay	8 00	@	9 50
Bellingham Bay	— —	@	8 00
Seattle	— —	@	9 00
Cumberl'd	14 00	@	17 00
Mt. Diablo	5 75	@	7 75
Lehigh	— —	@	22 00
Liverpool	8 50	@	9 00
West Hartley	— —	@	14 00
Scotch	8 50	@	9 00
Scranton	13 00	@	16 00
Vancouver's Isl.	10 50	@	12 00
Charcoal, ℔ sk	75	@	—
Coke, ℔ bbl	—	@	60

COFFEE.

Sandwich Island	—	@	21½
Costa Rica par ℔	21	@	—
Guatemala	20½	@	21½
Java	—	@	23
Manilla	20	@	21
Ground in oil	25	@	—
Chicory	27	@	—

FISH.

Sac. Dry Cod, new 5 cases	6	@	5½ 7
do boneless	8½	@	10
Eastern Cod	8	@	8¾
Salmon in bbls	6 50	@	7 25
do ½ bbls	3 75	@	4 00
do 2 ℔ cans	2 65	@	—
do 1 ℔ cans	1 80	@	—
do Col. R. ½ b	4 25	@	4 50
Pickl. Cod, bbls	22 00	@	—
do ½ bbls	11 00	@	—
Mack'l, No. 1, ½ bbls	11 00	@	—
" Extra	—	@	12 00
" in kits	1 25	@	2 50
" Ex mess	3 50	@	4 00
" Ex mess, ½ bs	—	@	12 00
Pic'd Herr'g, bx	3 00	@	3 50
Bos'n Sm'k'd Her'g	40	@	50

LIME, ETC.

Lime, St'a Cruz, ℔ bbl	2 00	@	2 25
Cement, Rosendale, do	2 75	@	3 50
do Portland do	4 75	@	5 50
Plaster, Golden Gate Mills	3 00	@	3 25
Land Plastar, ℔ ton	10 00	@	12 50

MISCELLANEOUS.

Pulu	—	@	7½

NAILS.

Assorted size, keg	3 25	@	4 00

OILS.

Pacific Gine Co Nnat F't No. 1	1 00	@	90
Pure	—	@	—
Castor Oil, No. 1	1 25	@	—
Baker's A A	1 25	@	1 30
Olive Plagniol	5 25	@	5 50
do Pessel	4 45	@	4 50
Palm ℔	9	@	—
Linseed, raw	—	@	75
do boiled	—	@	80
Cocoanut	—	@	80
China nut in oe..	—	@	70
Sperm	1 60	@	1 65
Coast Whales	5[illegible]	@	5[illegible]
Polar, refined..	62½	@	65
Lard	1 10	@	1 15
Oleophine	—	@	44
Devoe's Brill't	44	@	45
Nonpariel	50	@	—
Anreka	31½	@	38
Barrel Kerosene	32½	@	—
Downer Kerose'e	45	@	—
Elaine	48	@	50

PAINTS.

Pure White Lead	9¾	@	10¼
Whiting	—	@	1¾
Putty	4	@	5
Chalk	—	@	1½
Paris White	—	@	2½
Ochre	—	@	3½
Venetian Red	—	@	3½
Averill Chemical Paint, per gal. White & tints	2 00	@	2 40
Green, Blue & Ch Yellow	3 00	@	3 50
Light Red	3 00	@	3 50
Matallic Roof..	1 30	@	1 60

RICE.

China No. 1	5½	@	8
Hawaiian, ℔ ℔	—	@	9 00
Carolina, ℔ ℔	10	@	—

SALT.

Cal. Bay, per ton	10 00	@	14 00
do Common	5 00	@	7 00
Carmen Island	12 00	@	15 00
Liverpool Sne	— —	@	28 00

SOAP.

Castile ℔ ℔	10	@	10¾
Common brands	4½	@	6
Fancy do	7	@	8

CANDLES.

Grant's	16	@	16¼
Mitchell's	18	@	20

SPICES.

Cloves ℔ ℔	45	@	47½
Cassia	23½	@	26¼
Citron	28	@	30
Nutmeg	95	@	97½
Whole Popper	14¼	@	14½
Pimento	16	@	17½
Grd Allsp'rds	—	@	12
do Cassia do	—	@	1 50
do Cloves do	—	@	1 50
do Mustard do	—	@	1 50
do Ginger do	—	@	1 00
do Pepper do	—	@	1 00
do Mace do	—	@	2 00
Sowen's Pure Ground ℔ ℔	—	@	50

SUGAR, ETC.

Cal. Cnbo per ℔	—	@	12¾
Circle A crushed	—	@	12¾
Powdered	—	@	13
Fine ornshed	—	@	12¾
Granulated	—	@	12¼
Golden C	—	@	10
Hawaiian	10	@	11
Cal. Syrup in kgs	—	@	72½
Hawaiian Molasses	25	@	27½

TEA.

Uolong, Canton, ℔	19	@	25
do Amoy	28	@	50
do Formoes	40	@	80
Imperial, Canton	25	@	40
do Pinesuey	45	@	80
do Moynne	60	@	1 00
Gunpo'der, Cant	15	@	1 00
do Pingsney	50	@	90
do Moynne	65	@	1 25
Yng Hy., Canton	28	@	40
do Pingsuey	40	@	70
do Moynna	65	@	85
Japan, ¼ chests, bulk	30	@	75
Japan, lacquered bxs, 4¾ and 5 ℔s	45	@	67
Japan do, 3 ℔ bxs	45	@	90
do pl'n bx, 4¾ ℔s	35	@	65
do ½ ℔ paper	30	@	55

TURPENTINE.

Eastern	52½	@	55

LEATHER.

[WHOLESALE.]

WEDNESDAY, M., Dec. 27, 1876.

Sole Leather, heavy ℔ ℔			25@22
do do light ℔ ℔			20@2
Jodot, 8 Kil., per doz	48	00@	50 00
Jodot, 11 to 13 Kil., per doz	68	00@	70 08
Jodot 14 to 19 Kil., per doz	82	00@	84 00
Jodot, second choice, 11 to 16 Kil. ℔ doz	57	00@	74 00
Cornellian, 12 to 16 Ko	51	00@	67 00
Cornellian Females, 12 to 13	53	00@	67 00
Cornellian Females, 14 to 16 Kil	71	00@	76 50
Simon Ulimo Females, 12 to 13, Kil	58	00@	62 00
Simon Ulimo Females, 14 to 15, Kil	66	00@	70 00
Simon Ulimo Females, 16 to 17, Kil	72	00@	74 00
Simon, 18 Kil. ℔ doz	61	00@	62 00
Simon, 20 Kil. ℔ doz	65	00@	67 00
Simon, 24 Kil. ℔ doz	72	00@	74 00
Robart Calf, 7 and 9 Kil	35	00@	40 00
French Kips, ℔ ℔	1	00@	1 15
California Kip, ℔ doz	40	00@	47 10
French Sheep, all colors, ℔ doz	8	00@	15 00
Eastern Calf for Backs, ℔ ℔	1	00@	1 25
Sheep Roans for Topping, all colors, ℔ doz	9	00@	13 00
Sheep Roans for Linings, ℔ doz	5	00@	10 50
California Russett Sheep Linings	1	75@	4 50
Best Jodot Calf Boot Legs, ℔ pair	5	00@	5 25
Good French Calf Boot Legs, ℔ pair	4	00@	4 75
French Calf Boot Legs, ℔ pair	4	00@	—
Harness Leather, ℔ ℔	24	@	32½
Fair Bridle Leather, ℔ doz	48	00@	72 —
Skirting Leather, ℔ ℔	33	@	37½
Welt Leather, ℔ doz	30	00@	80 00
Calf Leather, ℔ foot	17	@	¾
Wax Side Leather, ℔ foot	17	@	—

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UNITED STATES

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Mining and Other Companies.

Cerro Bonito Quicksilver Mining Company. Location of principal place of business, San Francisco, Cal. Location of works, Carro Bonito mining district, Fresno county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors held on the 13th day of November, 1876 an assessment (No. 1) of four dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, 418 Californin street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 15th day of December 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the eighth (8th) day of January, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors

J. W. CLARK, Secretary.

Office, Room No. 2, 418 Californin St. San Francisco, Ca

POSTPONEMENT.—The day for deeming the above assessment delinquent is postponed from December 18th, 1876 to January 8th, 1877, and the day of sale from January 8th to February 1st, 1877. By order of the Board of Directors, J. W. CLARK, Secretary.

Great Blue Gravel Range Mining Company.—Location of principal place of business, San Francisco, State of California. Location of works, Placer County, State of California.

Notice is hereby given that at a meeting of the Directors, held on the 22d day of December, 1876, an assessment (No. 7,) of Fifty Cents per share was levied upon the capital stock of the corporation, payable immediately in U. S. gold coin, to the Secretary, at the office of the company, Room 33, Merchants' Exchange, San Francisco, Cal.

Any stock on which this assessment shall remain unpaid, on Monday, the 29th day of January, 1877, will be delinquent, and advertised for sale at public auction and unless payment is made before, will be sold on Wednesday, the 14th day of February, 1877, to pay the delinquent assessment, together with the costs of advertising and expenses of sale.

W. BRYANT, Secretary.

Office, Room 33, Merchants' Exchange, California street, San Francisco, Cal.

Josephine Gravel Mining Company.—Principal place of business, San Francisco, Cal. Location of works, Brushy Canyon, Placer Co., Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the sixth day of December, 1876, an assessment of ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 531 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the eighth day of January, 1877, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 25th day of January, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

WM. SMALL, Secretary.

Office Room 1, No. 531 California street, San Francisco, California.

Mariposa Land and Mining Company of California. Location of principal place of business, San Francisco, California. Location of works, Mariposa county, California.

NOTICE.—There is delinquent upon the following described stock, on account of assessment (No. 8,) levied on the 9th day of November, 1876, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
	COMMON STOCK.		
Adams, Thomas	A 4	50	50 00
Brumagin, J H	unissued	350	350 00
Bound & Co.	unissued	300	300 00
Curless, W B	272	100	100 00
Colom, W T	473	100	100 00
Colom, W T	474	100	100 00
Durbrow, Lamont	unissued	100	100 00
Elston, W A	unissued	150	150 00
Hallgarten & Co	unissued	50	50 00
Harriott & Noyes	1252	100	100 00
Hoyt, E P	1223	100	100 00
Hoyt, E P	1224	100	100 00
Hoyt, E P	1225	100	100 00
Kennedy, Hutchinson & Co.	476	100	100 00
McEwen, John J	441	1	1 00
Moore, Silas H	1215	100	100 00
Read, Leo and Content	unissued	100	100 00
Robbins, Powell & Co.	unissued	1000	1000 00
Rathborne, R Wm	121	100	100 00
Rathborne, R Wm	103	100	100 00
Rathborne, R Wm	378	100	100 00
Stern, Philip	unissued	100	100 00
Stern, Joseph	unissued	200	200 00
Stern, Chas	unissued	100	100 00
Sistare, W H M	116	100	100 00
Smith, Morris H	unissued	200	200 00
Thorpe, Louise E	A 7	1	1 00
Thorpe, Lewis W	A 8	1	1 00
Thorpe, Caroline A M	A 12	1	1 00
Van Shaick & Co.	60	100	100 00
Van Shaick & Co.	70	100	100 00
Van Shaick & Co.	71	100	100 00
Van Shaick & Co.	1333	100	100 00
Van Shaick & Co.	unissued	1000	1000 00
White, Morris & Co.	unissued	350	350 00
Well, Henry	1245	100	100 00
Weil, Henry	1246	100	100 00
Wolbberg & Co.	unissued	200	200 00
Weeks, W A	unissued	600	600 00
	PREFERRED STOCK.		
Ambleman, Edgar M.	unissued	335	335 00
Brown, Geo	A 62	25	25 00
Clark, J P	A 36	50	50 00
Davis, Geo M	1233	100	100 00
Girdler, Chas A	unissued	200	200 00
Hoyt, E P	A 18	20	20 00
Hoyt, E P	A 19	20	20 00
Hoyt, E P	1216	100	100 00
Patton, W L	unissued	67	67 00
Rose, W W	40	100	100 00
Rose, W W	41	100	100 00
Rose, W W	42	100	100 00
Rose, W W	43	100	100 00
Rose, W W	44	100	100 00
Rose, W W	416	40	40 00
Rathborne, R Wm	142	100	100 00
Rathborne, R Wm	157	100	100 00
Rathborne, R Wm	441	2	2 00
Rathborne, R Wm	176	100	100 00
Rathborne, R Wm	177	100	100 00
Rathborne, R Wm	182	100	100 00
Rathborne, R Wm	183	100	100 00
Rathborne, R Wm	184	100	100 00
Rathborne, R Wm	185	100	100 00
Rathborne, R Wm	186	100	100 00
Rathborne, R Wm	187	100	100 00
Rathborne, R Wm	104	100	100 00
Rathborne, R Wm	451	100	100 00
Scott, Wm B	1109	100	100 00
Scott, Wm B	1112	100	100 00
Scott, Wm B	1113	100	100 00
Scott, Wm B	1114	100	100 00
Scott, Wm B	1115	100	100 00
Scott, Wm B	1116	100	100 00
Scott, Wm B	1117	100	100 00
Scott, Wm B & Co	1102	100	100 00
Scott, Wm B & Co	1103	100	100 00
Scott, Wm B & Co	1104	100	100 00
Scott, Wm B & Co	1105	100	100 00
Scott, Wm B & Co	1106	100	100 00
Scott, Wm B & Co	1107	100	100 00
White, A M	unissued	102	102 00
Weil, Henry	241	100	100 00
Weil, Henry	243	100	100 00
Weil, Henry	247	100	100 00
Weil, Henry	248	100	100 00
Weil, Henry	240	100	100 00
Weil, Henry	250	100	100 00
Weil, Henry	251	100	100 00
Weil, Henry	252	100	100 00
Weil, Henry	253	100	100 00
Weil, Henry	453	10	10 00
Weil Henry	A 54	50	50 00
Woodman, Cyrus	unissued	6	6 00
Watson, Augustus E	unissued	300	300 00

And in accordance with law, and an order of the Board of Directors, made on the 9th day of November, 1876, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the Company, Room 33, Nevada Block, No. 309 Montgomery street, San Francisco, California, on Monday the 8th day of January, 1877, at the hour of 1 o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

LEANDER LEAVITT, Secretary.

Office, Room 33, Nevada Block, No. 300 Montgomery St., San Francisco, Cal.

POSTPONEMENT.—At a meeting of the Board of Directors of the Mariposa Land and Mining Company of California, held on the 21st day of December, 1876, the sale of the above delinquent stock was postponed until Monday, the 15th day of January, 1877, at the same time and place.

LEANDER LEAVITT, Secretary.

Office, Room 33, Nevada Block, No. 309 Montgomery St., San Francisco, Cal.

Silver Sprout Mining Company—Principal place of business, San Francisco, State of California. Location of works, Kearsarge Mining District, Inyo County, State of California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the nineteenth day of December, 1876, an assessment of twenty cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the Company in San Francisco.

Any stock upon which this assessment shall remain unpaid on the fifteenth day of February, 1877, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the fourteenth day of April, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale. T. B. WINGARD, Secretary.

Office, Room 20, No. 328 Montgomery street, San Francisco, Cal.

Taylor Mill and Mining Company.—Principal place of business, City and County of San Francisco, State of California. Location of works, Garden Valley Mining District, El Dorado County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 27th day of December, 1876, an assessment of Twenty Cents per share was levied upon the capital stock of the company, payable immediately in United States gold and silver coin, to the Secretary at his office, No. 607 Montgomery street, in the City and County of San Francisco.

Any stock upon which this assessment shall remain unpaid on the 29th day of January, 1877, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, the 23d day of February, 1877, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

SAMUEL S. MURFEY, Secretary.

Office, No. 607 Montgomery street, San Francisco, Cal.

Amusements.

GRAND OPERA HOUSE, Mission Street, near Third. Open every evening with first-class Dramatic Company. Box Office open from 9 A. M. to 10 P. M. Doors open at half past seven. Commence at eight o'clock.

CALIFORNIA THEATER, Bush Street, above Kearny. Open every evening with the best Dramatic Company in the United States. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance. Doors open at half past seven.

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All manufactured from the pure utilized Asbestos Patent Fiber, and under patents granted to J. S. Roseuthal. The packing is in all sizes from one-quarter to three inches in diameter, round, and free from all grit or mineral matter. The

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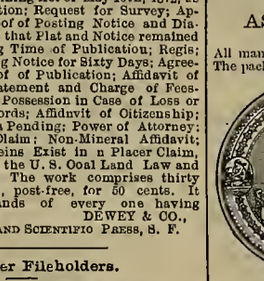

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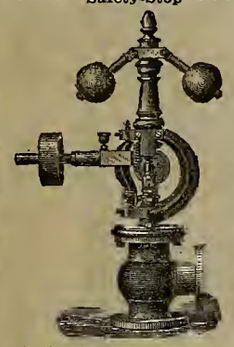

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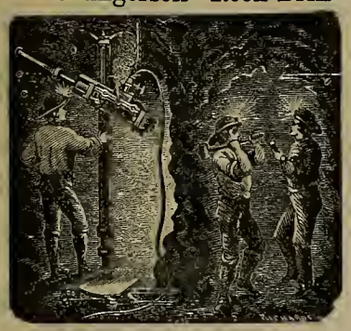

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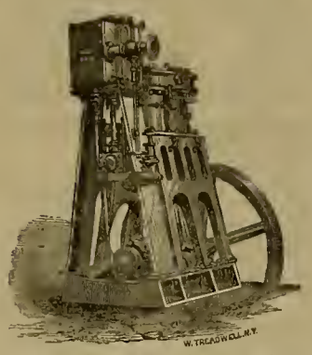

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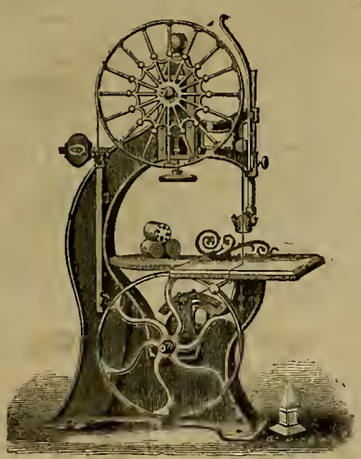

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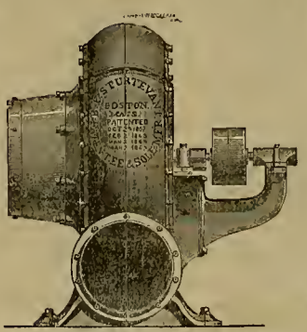

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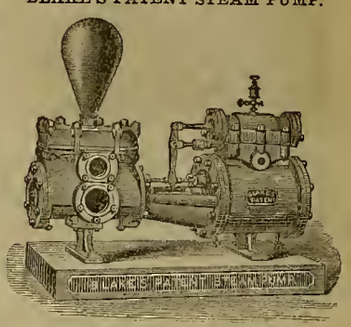

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SEWARD COLE, Manager.

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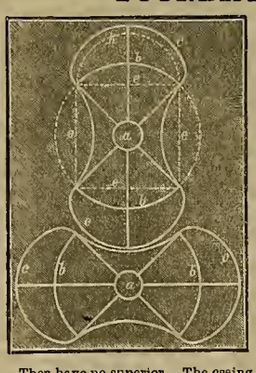

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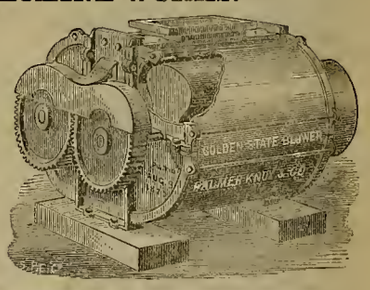

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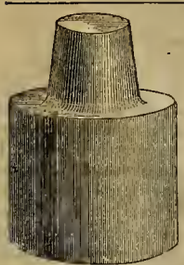

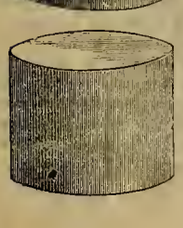

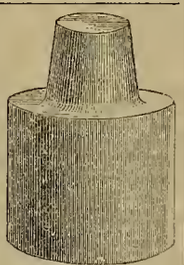

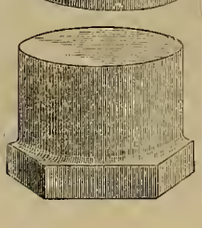

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Owing to our largely increased business, the present low price of Iron from which our Steel is manufactured and the improved facilities for casting and forging, we take great pleasure in announcing that from and after this date we will supply our IMPROVED CAST AND FORGED STEEL SHOES AND DIES FOR QUARTZ MILLS at 12 cents per pound, delivered at San Francisco or Sacramento, instead of 16 cents, as heretofore.

We also furnish Steel Plates for Blake and other Ore Crushers, Steel Cut Gearing, etc., for Mills and Hoisting Works, Steel Pan Shoes, Battery Cams and Tappets, etc.

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GOLD, SILVER AND COPPER MINING, Reducing and Concentration Machinery.

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Hoisting Engines, Diamond Pointed Rock Drills, Manufactured by M. C. BULLOCK,

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—OF THE—

Mining and Scientific Press,

From July, 1876, to January, 1877.

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